Conducting Research and Mentoring Students in Africa

This is a Research Report from the

CODESRIA African Diaspora Project

CODESRIA Working Paper Series

The CODESRIA Working Paper Series disseminates outputs from CODESRIA's research activities. Working papers constitute work in progress. They provide insights into the breadth and depth of work undertaken by the Council's various programmes and research networks. These are published to stimulate discussion and contribute to the advancement of knowledge.

Conducting Research and Mentoring Students in Africa

CODESRIA College of Mentors Handbook

Edited by

Abdul Karim Bangura
Joy A. Obando
Ishmael I. Munene
Chris Shisanya

CODESRIA

Council for the Development of Social Science Research in Africa
DAKAR

Contents

Dedication

A Song of Gratitude

Olabode Victor Akinyemi

The morn' will dawn again!
Tho' wallowing in the smoky night
Like an orphan by the simmering brush
Throttling alone the canvas dark
Africa will sing again
By her warlords the "yo" song of victory!
Yes, the morn' will dawn again!
Cause we are not altogether bereaved
Of hope in the flesh of Heroes past!
Nkrumah, Awolowo, Mandela, and their hosts
Live on in you, the avatars of hope
To give birth to us, the new dawn of hope!
The morn' will dawn again!
And Africa, my Africa

Like the great leopard of Timbuktu
Will mount the tree of destiny
Beyond the claws and fangs of old predators
Who would no longer have her food heinously snatched!
O morning of hope! O morning of hope!
Dawn quickly at our behest!
Africa awaits thy tots
To bear her up this slippery Everest
To rest her feet on the Mont of grandeur
Where her flowers will bloom again!
Thank you madam and sirs! You are the great Avatars of Hope! Africa will surely smile again!

Acknowledgements

About the Editors

Abdul Karim Bangura is a researcher-in-residence of Abrahamic Connections and Islamic Peace Studies at the Center for Global Peace in the School of International Service at American University and the director of The African Institution, in Washington DC, USA; a visiting graduate professor of Regional Integration at the University of Cabo Verde in Praia, Cabo Verde; an external reader of Research Methodology and Municipal Government at the Plekhanov Russian University in Moscow; an inaugural peace professor for the International Summer School in Peace and Conflict Studies at the University of Peshawar in Pakistan; a senior doctoral dissertations mentor of the CODESRIA College of Mentors in Dakar, Senegal; and the international director and adviser of the Centro Cultural Guanin in Santo Domingo Este, Dominican Republic. holds five PhDs in Political Science, Development Economics, Linguistics, Computer Science, and Mathematics. He is the author of more than 90 books and more than 700 scholarly articles. The winner of more than 50 prestigious scholarly and community service awards, he was recently awarded the Cecil B. Curry Book Award for his book titled African Mathematics: From Bones to Computers. This book has also been selected by the African American Success Foundation's Book Committee as one of the 21 most significant books ever written by African Americans in Science, Technology, Engineering and Mathematics (STEM), and listed by the California News Reel and Amazon.com as one of the 47 books ever written by Blacks across the globe as constituting the great African contributions to global civilizations. Bangura is fluent in approximately a dozen African and six European languages, and is studying to increase his proficiency in Arabic, Hebrew, and Hieroglyphics. He is a member of many scholarly organizations, has served as President and then United Nations Ambassador of the Association of Third World Studies, and is a Special Envoy of the African Union Peace and Security Council.

Ishmael I. Munene is professor in the Department of Educational Leadership at Northern Arizona University teaching courses in Comparative Education, Higher Education, and Educational Research. As an experienced scholar in higher education, Munene has written widely on African higher education, higher education governance, education for the marginalized and educational technology. He has edited two volumes on Africa and authored two books in addition to publishing numerous journal articles, book reviews and newspaper commentaries on education and governance. He has also guest-edited a journal on African education. Munene is on the editorial advisory board of Africa Education Review and serves as an article reviewer for several journals. He has held visiting academic fellowships at Kassel University in Germany, Osmania University in India and the Catholic University of East Africa in Kenya along with the Carnegie African Diaspora Fellowship. In 2008, he was honored by the African Studies and Research Forum with the Excellence in Research Award.

Joy A. Obando is an associate professor in the Department of Geography at Kenyatta University. She holds a PhD in Geomorphology from King's College London and studied for her Master's in Geography and Bachelor of Education at Kenyatta University. Obando is a mentor and researcher, and is involved in research, training and community outreach. She is currently the Postgraduate Academic Advisor in the Department of Geography and the Chair of the Academic Advisory Board for the School of Humanities and Social Sciences at Kenyatta University. She is a regional trainer of and expert on the Dialogue on Innovative Higher Education Strategies and Proposal Writing for Research Grants. Obando has facilitated proposal writing workshops for the German Academic Exchange Service since 2009 and has also facilitated other training in grants and scientific writing workshops in the East African region. She coordinates an international Master's programme hosted at Kenyatta University. She has won several national and international research grant awards and has published widely. Her current research focuses on groundwater dynamics and watershed management. She is a member of the steering committee of the International Geographical Union (IGU) Geomorphology and Society Commission as well as the International Advisory Board of Water Resources Research Center. Obando is involved in initiatives aimed at enhancing the quality of the next generation of academicians.

Chris Shisanya is former Chairperson of the Department of Geography and is currently Dean of the School of Humanities and Social Sciences and Full Professor of Geography, specializing in the field of Agroclimatology, at Kenyatta University. Shisanya has worked at Kenyatta University for the last 29 years. His current areas of research interests include climate change and adaptation, climate change and human development, climate change and security, integrated soil fertility management, integrated watershed management, and systems analysis. Over the years, he has successfully supervised 20 PhD and 60 Master's students. He is a prolific researcher, having won over 50 national and international research grant awards in the last 20 years. He has over 60 peer-reviewed journal publications, 30 book chapters, and ten book titles to his credit. Shisanya serves on the editorial boards of various high-impact academic scientific journals.

Preface

This book is an outgrowth of the inaugural session of the Council for the Development of Social Research in Africa (CODESRIA) College of Mentors Institute convened at Kenyatta University in Nairobi, Kenya from 10 to 20 April, 2017. The authors of the book comprise the resource persons and 49 very competitively selected doctoral candidates from across Africa that participated in the Institute. The impetus for the book was the desire to develop a tool that is suitable for conducting research and mentoring students in Africa that other doctoral candidates, other writers, and mentors can use in their pursuits.

The College of Mentors is a part of the activities of CODESRIA's African Diaspora Support to African Universities program. The College is composed of senior academics from the Diaspora and within Africa in higher education, the humanities and social sciences. This component entails linking selected PhD candidates and their supervisors to mentors for purposes of benefiting the candidates in their PhD progress. The mentors are expected to offer advice regarding relevant literature, read and comment on draft chapters of theses in preparation, liaise with the official advisors of the doctoral candidates based at African universities and share their views about the work of the students; and where possible, invite and host the students and the official advisors as visiting scholars. The mentors may also be requested to run various activities under this program such as institutes, research methodology workshops and research networks. A joint workshop of the selected students, their supervisors and mentors are held at the beginning to agree on working modalities. The College seeks to both complement and strengthen the support in capacity building in African universities in which CODESRIA is engaged through the Small Grants Programme for Thesis Writing, the institutes, and the methodology workshops.

CODESRIA's African Diaspora Support to African Universities seeks to mobilize African academics in the Diaspora to contribute to the strengthening of African universities, the nurturing of new generations of scholars in Africa in a

culture of excellence, and the revitalization of the social sciences, higher education studies, and the humanities. The specific objectives of the initiative include the strengthening of PhD programs and the curricula in the social sciences and the humanities (SSH); contribute to the filling of gaps and dealing with shortages in teaching; mentoring of young social science scholars in Africa, more generally; as well as in strengthening relations between African academics in the Diaspora and the institutions where they are based and African universities.

The initiative derives from CODESRIA's mandate as the leading Pan-African social science council of the continent and its responsibility to help address the problem of the shortage of qualified academic staff in many African universities both for teaching and for PhD supervision. This problem has worsened with the creation of hundreds of new public and private universities. The consequences of these shortages include the lack of capacity in most of the social science and humanities departments and schools in African universities to organize quality postgraduate programs and conduct research. In some instances, capacity for postgraduate supervision does not exist, and doctoral and masters students take longer to complete their programs due to a lack or shortage of qualified supervisors and mentors.

On the other hand, the existence of a large African academic Diaspora has been documented in numerous studies. Many of these scholars are willing to lend a hand in the revitalization of universities in their home countries or elsewhere in Africa. Other highly qualified academics are circulating outside the universities, within Africa itself, and it would be important to have an initiative that taps into the knowledge and skills they have. Therefore, one effective way to address the shortage of qualified senior academic staff and PhD supervision capacity in African universities is to mobilize the academic Diaspora to support universities in Africa.

1

Thriving as a PhD Mentee: Mediating Mentor-Mentee Conflicts

Ishmael I. Munene

Introduction

For many, the PhD degree represents the pinnacle of academic success, a distinctive marker that one has made it in the academy as an emerging scholar. The attainment of a doctoral degree is no easy task as many of you can testify: the large number of what Americans refer to as ABDs[1] (All But the Dissertations), which is equivalent in many African universities to the excruciating length of time it takes to complete the degree. It has been estimated that the 'dysfunctional graduate departments, toxic faculty, and the Navy Seal-like brutality of the PhD. process all contribute to the burnout experienced by the estimated 50-plus percent of PhD. students who fail to earn their doctorates' in the United States of America (Yesko 2014). The numbers differ depending on the actual field of study, with 55-64 per cent being in the Science, Technology, Engineering and Mathematics (STEM) field, approximately 56 per cent in the social sciences, and roughly 49 per cent in the humanities, according to the PhD Completion Project (Schuman 2014). Equally, PhD completion rates in Africa are no less depressing. Despite shared optimism on the importance of knowledge economy in national progress, doctoral training is hampered by slow graduation rates. These are the outcomes of a weak research infrastructure alongside inadequate regulatory mechanisms and policies to guide the implementation of research strategies and plans (Garwe 2015; Khodabocus 2016; Molla and Cuthbert 2016).

When Sternberg wrote his classic, *How to Complete and Survive a Doctoral Dissertation* (1981), he was merely echoing the frustration that the United States academia had experienced with an inordinate number of ABDs who had given up after cycles of stop-again, start again, in futile efforts to finish their degrees. While the book explores both the mechanical side of the dissertation writing process and relationships with committee members, the notion that one needs to 'survive' the process is untenable. Doctoral students need not merely survive; they are called upon to thrive and prosper during the entire process. When all the pertinent contextual variables are lined up properly, doctoral studies can be a very fulfilling experience that provides opportunities for career growth and long-lasting professional relationships.

This chapter focuses on how to make the doctoral research program a fulfilling and rewarding experience for the student and his/her committee or mentors. Rather than being a 'how to' self-help guide, the chapter contextualizes the problems inherent in a doctoral research mentorship, highlighting sources of potential challenges and possible solutions to mitigate them. It invites the reader, albeit unconsciously, to reflect on the issues raised and the solutions offered as a way of seeing doctoral research as a process with both back-end and front-end linkages that are essential for its successful completion. The chapter begins by addressing the notion of mentorship as a conceptual framework in doctoral research, working with academic mentors within the institutional framework, and attaining professional growth while undertaking doctoral research.

Why Mentoring?

In many African universities, the term supervisor is used for the faculty assigned to oversee a doctoral or master's student's research project. In American universities, the group of academics assigned the role (ranging from 3 to 5) is known as a dissertation committee. In the African context, the supervisors, usually two to three in number, will guide and supervise the doctoral candidate as he or she writes the thesis. The first supervisor also serves as the internal examiner of the work when it is finally concluded. In the United States context, the dissertation committee has a chair, who serves as the primary overseer of the research and writing process, and other members providing critical input based on their expertise which can either be content or methodology. When the student finishes writing, all committee members become examiners of the dissertation. Another important faculty member encountered during one's doctoral studies in United States universities is the academic advisor. Due to the complexity of doctoral

programs, an academic advisor is assigned to a student at the start of his/her studies to help manage the student's academic progress, including academic planning, adherence to requirements, setting objectives and goals, and degree completion.

Both supervisor and committee nomenclatures presuppose circumscribed roles focused on getting the doctoral candidates to complete writing their research projects, successfully defend their work during the viva examination followed by graduation. At CODESRIA, we prefer to use the notion of 'mentor' to encapsulate the expanded responsibilities that are inherent in guiding doctoral research work. These expanded responsibilities are beyond the formal institutional assignments that are required of thesis/dissertation supervisors or committee members. Not only do mentors serve as student advocates, they also facilitate students' access to other mentors when deemed appropriate. The term 'mentor' is derived from the Greek epic, *Odyssey*, by Homer (composed 8th century BC). In the epic, Mentor served as a surrogate father to Odysseus's son, Telemachus, as he struggled to return home from the Trojan wars. Mentor successfully guided Telemachus who triumphantly returned home.

Put differently, mentors are inextricably involved in the professional development of their mentees. Not only do they oversee the doctoral students' research projects, they also facilitate the mentees' entry into the professions. At its very basic level, a good mentor displays professionalism, demystifies the doctoral experience, and extends their relationship with the mentees beyond graduate school by providing assistance and advice at critical moments during students' careers. Mentors are regarded as problem-solvers, consultants and supporters of their mentees. During the research process, they provide constructive feedback so that their student can graduate on time. They also offer career guidance information, professional contacts, information about research grants, fellowships and job opportunities. They also write letters of recommendation throughout a mentee's professional career. Indeed, numerous cases abound where mentors and mentees have become fervent collaborators in scholarship long after the doctoral studies have been concluded.

Seen from the preceding conception, mentorship is the cornerstone of any good doctoral program. To reach its apex, the mentor-mentee relationship blossoms over the course of the research process from the initial one-on-one meeting to broader mentoring networks and ardent engagement with the discipline and the field. Doctoral students with effective mentors take shorter time to complete their studies, are more productive, have high engagement with the discipline and the field, have better connections professionally, and are more successful in post-graduation careers (Sternberg 1981).

Working with Your Mentors

Timely completion of doctoral studies is a complex process. It involves mediating relationships with university-sanctioned academic mentors, the academic discipline, personal life and, often, a career. Appreciating these relationships is best done within the framework of three interrelated factors: (1) the nature of the academic mentors, (2) the characteristics of a mentee, and (3) the mentorship process during the research phase. These factors are discussed in the following sub-sections.

Nature of Academic Mentors

The process of identifying mentors for a research project can be a messy one. Many factors are at play, not the least being the personality fit as well as discipline specialization. If you are in an institution where mentors are assigned to you, the problem of identifying suitable ones is minimized, although you still have the challenge of building a collegial bond. Where you are required to form your own committee as is common in American universities or you are asked for possible names of supervisors as in some African universities, the task can present significant challenges. In his study on the process of forming his dissertation committee, Hernandez notes the following from one of the respondents:

> The dissertation is only a part of the picture albeit a major feature. Your chair can also be your mentor, someone who can help you take the next few steps in your career... The dissertation process can be a very intense one, so you want to be able to feel comfortable with your chair. Of course there will be times when both sides feel stressed out with the process... If you know a faculty person now and feel like you can talk to that person, then you have a good sense that the relationship part of chairing is there (1996:9).

Arising from the analysis of the data collected from interviewing several faculty members, Harnandez came up with the following as qualities for a dissertation chair:

> Doctorate in Family Therapy or related field required. This is approximately a two-year commitment, although positions can range from one to five years. Previous experience is helpful, but not required. Expertise in systematic thinking, qualitative research, and academic writing is absolutely necessary. Interest in a student's content area (to be refined later) is extremely helpful. Sense of humor, creativity, and ability to generate visionary ideas are necessary for this position. Members must be authoritative yet collaborative, patient yet assertive, and inspirational yet practical. Must be accessible in case of emergency (such as writer's block, flight of ideas, or delusions of grandeur), yet able to "back off" and provide "space" when

necessary. Benefits are not guaranteed; however, benefit potential (in admiration, gratitude, and productivity) is great (1996:11-12).

We glean from these two quotations that good chemistry is integral to a good mentor; he/she should not only be friend, confidant and collaborator, but should also be endowed with skills in critical and systematic thinking. Expertise in subject matter is important but it is not the only consideration. Other ancillary characteristics that are germane to the mentorship context also need to be given due considerations.

Whether the mentor is assigned by the university or you form a committee yourself, you will encounter three types of possible mentors, be it in Africa or elsewhere: (1) senior scholar, (2) mid-career scholar, and (3) junior scholar (Columbia University, 2010 p. 2-3). Working with either of these has enormous implications for a mentor-mentee relationship as well as how soon one will complete the research. The characteristics of each their implications for mentoring are presented as follows:

Senior Scholar: This is a seasoned academic with considerable respect at the institutional level and within the profession. S/he has a well-developed professional network, including former students, which is invaluable for job opportunities, fellowships and grants. The scholar has vast experience in research and access to important sources of funding. The drawbacks of a senior scholar, however, include (a) having less time to devote to you and (b) that they may adopt a more 'laissez faire' approach to advising.

Mid-Career Scholar: This is an academic who is on course to achieving a professional reputation, both at the institutional level and within the discipline. S/he has attained tenure at his/her institution, which means job security is not a major consideration. Because s/he aims to attain the zenith of their academic career, s/he may have the following drawback: (a) limited time to devote to students' research projects due to demands of sabbatical and research leaves along with departmental obligations.

Junior Scholar: This scholar is usually beginning his/her university career, having just completed his/her doctorate degree. As such, s/he has a better grasp of what mentees are going through. Additionally, s/he is preparing for tenure at the universities, so s/he has incentives to publish and mentor graduate students. Nevertheless, a junior scholar has the following constraints as a mentor: (a) limited time to devote to mentees due to pressure to obtain tenure and promotion, (b) less mentoring experience, (c) less access to research funding, and (d) may not have achieved the professional visibility for which a doctorate student may be looking.

In assessing the suitability of your mentors, it is important to ask yourself these essential questions:

a- is the scholar interested in the work I am contemplating doing, and will s/he be patient and dedicated enough to devote time to bring the project to fruition?

b- how good is the mentor's record in working with other graduate students at my level?

c- do you have open communication channels with the mentor, and is s/he easy to interact with?

d- is the mentor able to contribute to your intellectual growth and provide critical feedback to your scholarship?

e- what is the potential of your mentor to initiate and further your professional career goals?

All said, it is better to have a combination of a senior or mid-career scholar with a junior one. This ensures that the mentee gets the intellectual/disciplinary exposure and network resources from the more experienced scholars and a hands-on advice and empathy from the junior scholar.

On Being a Good Mentee

Just as there are problematic mentors, there are also bad mentees; the type that many mentors cringe at the thought of having to work with. In any relationship, there will always be one party who does not adhere to his/her part of the bargain or has unrealistic expectaions. Doctoral research is challenging enough to invite characteristics that are injurious to a healthy mentor-mentee working relationship. A toxic relationship with mentors is one of the major causes of delays in completing doctoral studies besides the low quality of research output.

Being a good mentee requires a proactive stance, a call for discipline and endurance. Being a bad mentee on the contrary, is quite easy. Unprofessionalism and failure to appreciate doctoral research as a journey that entails collaboration and reasonable patience are the triggers of a bad mentee. A bad mentee will epitomize the following attributes: (a) anticipate instant review and attendant feedback of their draft chapters from all their mentors; (b) fail to plan and have a focused agenda for any meetings with their mentors; (c) expect a mentor to be a confidante, a therapist, and a friend; (d) react negatively to constructive criticism of his/her work; criticism, to a bad mentee, is equated to outright rejection of the work; and (e) anticipate explicit instructions on what to research and the write up about the thesis. These characteristics display traits of a mentee who does not

aspire to be a scholar. They also typify a mentee who is academically uninspiring, and scholarly disengaged[2].

It follows, therefore, that a good mentee is one embodied with characteristics antithetical to those exhibited by a bad mentee. A good mentee has realistic expectations from his/her mentors, uses any scheduled meeting time optimally, carefully narrows down the key areas where the mentors will provide the most significant contributions to the work and focuses on these. In Table 1.1, a summary of the key responsibilities that are essential for one to qualify as a good mentee culled from Emory University (2015) are presented.

It should be said that mentors must also be cognizant of the foregoing mentee responsibilities and how they (mentors) can facilitate their successful accomplishment. For instance, it is imperative that mentors be aware of institutional policies and procedures relating to graduate school and doctoral studies. Policies and procedures that touch on milestones and deadlines, curricular requirements, code of conduct, and procedures for resolving conflicts are important for both the mentors and the mentees. Equally, both parties should have a clear understanding on meetings and communications timelines. A consensus on how often to meet, rescheduling meetings, and means of communication (including emergencies) ensures that both parties are in regular contact. Finally, a mentor should also be transparent about the research project dissemination expectations – conference presentation, journal article, or book. Both should have a mutual understanding of authorship collaboration in either one or more of these artifacts.

Table 1.1: Key Responsibilities of a Good Mentee

Area of Mentee Responsibility	Mentee Task
Timeliness	• Mindful & respectful of mentor time; mentors have personal & professional commitments. • Be on time for scheduled meetings; cancel meeting or reschedule in a timely manner. • Note program requirements & deadlines; set goals & develop work plans around them. • Know when to expect feedback on chapters. • Factor agreed timelines for submission and receiving comments when submitting work. • Work with mentor for timeline to work on comments & revisions.

Quality and Professionalism	• Submit a polished and presentable draft; edit it for typos. • Keep mentors appraised of any changes in perspectives, directions in research foci. • Accept feedback offered by mentors as meant to improve work; be professional in discussing differences of opinions. • Summarize main discussion items after meeting mentors and share it with them. Ensures you all on the same page.
Professionalization	• Focuses on success in a doctoral program which students lack on admission – presentation, publication process, research grants & professional networks. Ask mentors: • Which professional association & conference to join • How to prepare project for presentation • How to navigate the publishing process & prepare for submission. • How to locate and apply for research funding from local & international organizations • How to identify, establish and maintain professional networks.

Source: Self-generated by the Author

Framing Mentor-Mentee Conflict in the Research Process

Getting mentors may be the easy part; working coherently as a team, however, is more difficult. Doctoral research mentoring is replete with horror stories of tensions, conflicts, and even abandoned studies. What was initially expected to be a coherent team with a clear focus can often degenerate into an academic contest as egos and important ideas collide. In most cases, differing perceptions of quality and the study's contribution to the academic discipline underlie the conflicts. This section looks at conflicts that may arise between mentors and mentees during the actual writing of the research projects, the prime reason why many doctoral candidates do not complete their doctoral degrees (Nettles & Millet 2006; Bowen & Rudenstine 1992).

Philosophical Differences are Healthy

It is important to caution that diversity of opinions about a mentee's work does not necessarily mean hardened positions and irreconcilable differences. The social science is a minefield with a plethora of theoretical constructs for understanding and interpreting phenomena. Almost any issue will appear as a contested terrain with a multiplicity of interpretations gleaned from a myriad of theoretical schools. A university, for instance, can be analyzed from economic theories, organizational theories, institutional theories, political economy, sociological theory, and psychological theory, among others (Source?). Different perspectives on a research topic on the university could have its genesis on the different theoretical conceptions that mentors hold about the academy.

Getting a variety of perspectives in a form of advice is healthy and, indeed, it is one of the reasons why doctoral candidates have more than one mentor. It is akin to getting a second medical opinion in order to make an accurate diagnosis of a disease. Prior to continuing to the surgical phase of treating an illness, it makes sense to get a second, perhaps third, opinion to forestall major mistakes coupled with costly and ineffective procedures. Different opinions about a research product are akin to multiple peer reviews and are a good preparation for the viva hearing (defense). Providing a perspective on this, Jalongo avers as follows:

> Scholarly work is all about cautiously interpreting results, viewing work from differing perspectives, and responding to peer review. When grappling with advice from more than one individual on how to strengthen the document, the first step is to go through the manuscript one page at a time and look at each committee member's comments on each section. Often, what appeared to be incompatible in terms of recommendations is simply an indication that the section in question was not clear (2007:2).
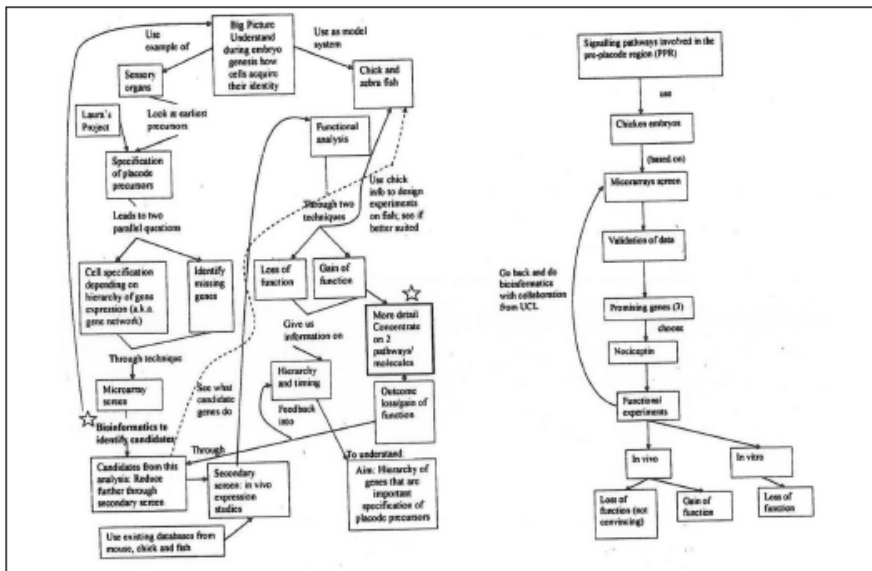
Figure 1.1: Differing Conception of Research between Mentor and Mentee
Source: Kandiko and Kinchin (2012:4) used here with permission

The differing conceptions of the research project between a mentee and their mentor are rooted in the different cultural and educational backgrounds of the two (Kandiko and Kinchin 2012). In their study, Kandiko and Kinchin note that whereas the mentors are interested in students' 'learning' as they undertake research, the students are more focused on 'doing' in order to complete their projects. It is further apparent that while mentors have a more global view of the research project, relating the work to other closely and tangentiallyrelated subfields, mentees may have a more 'check list' approach to what needs to be done in order to complete the thesis as depicted in Figure 1.1. We see in this work that surmountable tensions and differences can arise based on the divergent views of the research work at a doctoral level between the mentors and the mentees. These differences manifest themselves in three areas: (1) appreciating the complexity of the research topic, (2) understanding the research process, and (3) the role of the research thesis.

The revisions required by mentors in the work of doctoral candidates are of two types according to Sternberg (1981). The first is the 'affectively-neutral' revisions and/or additions in methodology or theory. A mentor may advise

additions to the sample, the data collection strategies, or an additional theoretical construct to the study. Where such recommendations do not substantially change the study and are in tandem with anticipated changes, it is best for the mentee to execute them without complaint. Doing so may relieve the candidate of stress down the road. The second type of revision is the 'affectively-laden' revisions and/or additions. These may require extensive work and substantial alteration of the thesis, particularly bringing in a new theory and approach. If all the mentors feel this is then it is in a mentee's best interest to do it. Resistance to incorporating such feedback is sometimes related to the notion of 'magnum opus', writing the perfect thesis/dissertation. In this case, a mentee forgets that the thesis/dissertation is not a political statement about student rights under oppressive mentors but rather a document to enable one to obtain a doctorate degree. A difference of opinion does not mean that the mentors have contempt for the mentee's work; it just shows that there is a different way of looking at the issue which is worth consideration in the prevailing research context. It does not mean a perfect thesis/dissertation is being devalued but rather being enhanced. Simply put, the mentee should not lose focus of the goal of writing the dissertation: to get the doctoral degree, not to write a perfect research.

Pathological Differences are Dysfunctional

No matter how much advice is given or how often strategies are devised to ameliorate conflicts, working on a doctoral research project will likely entail some challenges. In many instances, disagreements on perspectives of the research are anticipated and, in many cases, healthy. They become detrimental when they are frequent and pathological. They become pathological when the differences are personalized; the mentee perceives the differences as an attack on his/her person while the mentor interprets the mentees behavior in a similar manner. The distinction between the healthy philosophical differences and the detrimental pathological differences rests on the personalization. In the former, the differences rest on the content of the work while in the latter differences are attributed to attack on the personality. In such cases, both are detrimental and destructive to the entire enterprise. Indeed, these types of conflicts are the most common reason for many non-completions of doctoral degrees (Source?). One may ask what are the mentors and mentees thinking and doing during the research process that generates these conflicts? Are there decisions that each party may take to mitigate them? These are the issues at the center of this section.

In a dramatic encapsulation of the tension and conflict that can occur in a research supervision setting, Gearity (mentee) and Mertz (mentor) capture the ensuing statements and reflection along these lines in this lived experience phenomenological study:

March 2007

 What a bitch! Who says that to one of your doctoral advisees?

"Brian, if you would be more comfortable with a different chair you are free to do so."

> Why is she telling me that? What good can come out of saying that? I don't have any other options…viable options at least. It's not like I had much choice in picking her to be my dissertation chair.
>
> "I have provided you with an abundance of feedback related to your dissertation prospectus. To be frank, it needs a lot of work. If you would be more comfortable with a different chair you may want to look into that."
>
> There it is again! I wish she would stop saying that. That's the third time. I can't do anything but just sit here and listen to her beat me up; beat up my writing and then tell me I should take a hike in some quasi-polite way. Silence as resistance…this evil woman, Dr. Mertz, must not be having a good day; there must be something wrong with her. *My writing is not that bad* (Gearity and Mertz 2012:6).

This snapshot oftense statements shows how quickly the mentor-mentee relationship can deteriorate to the point that the mentee was convinced that the mentor had a personal vendetta against him. The mentor, on the other hand, wants nothing to do with Gearity's dissertation. Eventually, both the mentor and mentee worked through their initial and ongoing conflicts until Gearity successfully defended his dissertation and was awarded his doctoral degree.As a mentor, Dr. Mertz was a teacher, critic, collaborator, friend, and counselor. Each part of the dissertation process required her to wear one of these hats.

Two types of conflicts can ensue in a supervision context according to Sternberg, (1981). The first type of conflict is that of the structural issues with a committee as a whole. In this type of conflict, the entire set of mentors may be out of sync. This is illustrated in Figure 1.2, whereby one of the members advocates for theory X and the other theory Y, while the head is either neutral or endorses one of the theoretical propositions. The mentee almost looks as if s/he is cast against the entire group of mentors. In most horror stories of failed dissertation or thesis projects, 'philosophical differences' among the committee members is the most cited. One solution would be for the mentee to respectively inform the lone dissenting mentor

that s/he is comfortable writing the work from one angle rather than the other and requires the mentor's support in this effort. An easy solution would be for the mentee to use the university administrative mechanisms to resolve the impasse, but this carries a disproportionate risk to the candidate. The doppelgänger of a 'wounded academic' can leave the mentee exposed to a prolonged snipping battle over the research work or the possible dissolution of the entire committee.
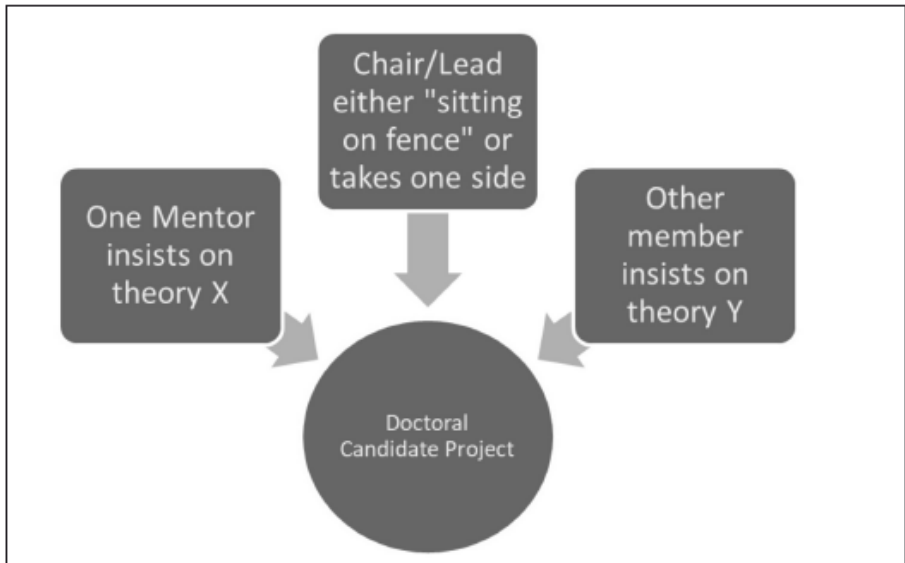
Figure 1.2: Mentors divided over a Candidates Research Project
Source: Self-generated by the Author

It is almost inevitable that a student will encounter a mentor for whom differences of opinion on the quality and substance of the research project become 'personal'. It is, however, important not to characterize every misunderstanding or difference as being 'personal'. Those mentors with a record of mentoring students can easily provide ample evidence of cordial and harmonious working relationships with other doctoral students and mentors in the doctoral program. Protestation against an intransigent mentor bears merit if several ABDs file comparable complaints.

Since problem mentors have the potential to ruin progress towards completion of the research and therefore, doctoral studies, it behooves us to identify the main traits of the various types of problem mentors in higher education. Because the psycho-social disposition of such 'problem mentors' may be injurious to the

completion of the research project, it is best for a mentee to avoid them if one has an advanced knowledge about their history with dissertations/theses or replace them immediately once it becomes apparent they will be problematic. Again, this is not an easy call and a mentee has to weigh the decision in the context of his/her own relationship with the 'problem mentor' and in the larger milieu of the departmental politics. Sternberg (1981) offers the following typology of eight problem mentors encountered by doctoral students:

> *The "Young Turk"*: A recent graduate, with an active research agenda. They are demanding, looking for a perfect research project. With career demands always in the background your work may be the first causualty through inordinate delay in getting feedback.
>
> *The "Career ABD"*: This mentor took a decade or more to complete his/her doctoral studies. This type of mentor will rationalize the delays in such high-sounding phrases like 'soak in it more', 'read more around the issue', and 'scholarship cannot be rushed; like any good cooking, it has to be slow'.
>
> *The "Sadistic" Mentor*: This type of mentor uses the power of a senior scholar to express upon the ABD his/her individual and job-related rages. His/her constant rationalization for this is 'demanding for more rigor', 'upholding standards', and the likes.
>
> *The "Sexist"*: This mentor converts the dissertation/thesis into a flirtation activity. Female students are especially vulnerable to patronizing behavior from their male mentors, sometimes with very few avenues for recourse. As more women have entered the ranks of academia, there have been cases of women mentors patronizing male ABDs.
>
> *The "Hamlet-Complex"*: This type of mentor doubts all versions of the work, including those s/he had endorsed earlier. Doubt and skepticism are important ingredients in academia, but neurotic skepticism that never ends is detrimental to successfully finishing a dissertation/thesis.
>
> *The "Passive-Aggressive"* : This type mentor positions himself/herself as a friend and collaborator in the project but executes sabotage maneuver behind the scene. Psychologically passive-aggressive mentors do not like students and/or obligations accompanying university work such as dissertation/thesis advising. On the other hand, they feel guilty not fulfilling this important obligation.
>
> *The Jealous or Envious*: This mentor senses your potential as a scholar and better in the field than s/he is. The mentor may use every weapon at his/her disposal to frustrate your competition.

Any of these means that both the mentor and mentee will be involved in a long unproductive activity of working through emotional blocks which is detrimental

to the success of a dissertation/thesis. It is advisable that in these situations, the mentee should look for a different mentor. Of course, this will call for a balancing act involving other mentors and possible administrative channels provided.

Conclusion

The doctoral degree is the epitome of scholarship, an aspiring academic's ultimate target. It is every doctoral student's definitive desire to successfully defend his/her dissertation/thesis, walk across the stage after being hooded by his/her academic mentor(s), and forever be endowed with the much coveted title of 'Dr.' in front of his/her name. Yet, many are those who embark on this academic voyage only to fail to complete it at the penultimate stage, forever baptised with that unflattering title of ADB–All But Dissertation.

This chapter has explored the context surrounding the failure to complete the doctoral degree by a good number of candidates in Africa and the USA. I also characterized completing a doctoral degree as going beyond survival; the reader saw the process as one of thriving so that the graduate becomes one who enters into the profession and continues to grow in his/her respective disciplines. Survival implies merely getting through with limited expectation that one will grow in the discipline both in intellectual and practical terms.

Successfully completing doctoral studies, I have argued, entails a process of mentoring rather than supervising or advising. Through mentoring, doctoral students have access to a broad array of supporting structures that are pertinent to a fulfilling doctoral experience that translates into a shortened timeline to complete the degree and successful career paths later. Mentors are not only students' advocates but they also facilitate access to other suitable mentors, model professionalism, assist students enter their profession, as well as provide critical advice during a student's career. Nevertheless, identifying suitable mentors is a deliberate balancing act on the part of the mentee. Similarly, being a good mentee means that the doctoral student has to take proactive measures in order to familiarize himself/herself with the institutional policies and procedures governing doctoral studies and research supervision. Mentees have to aquaint themselves with the basic responsbilities required of doctoral candidates, including timeliness, professionalism, and professionalization.

The most intractable mentor-mentee conflict ensues during the writing process. Structural problems with the committee as a whole may imperil student progress in the dissertation/thesis writing process. Resolving this dilemma requires a balancing act on the part of a mentee and may entail the dissolution of an

entire body of mentors as a last resort. Less drastic, however, would be for a doctoral mentee to work his/her way through the differences with a committee. More problematic are difficulties with a specific mentor, particularly problems that arise due to various psycho-social factors with the mentors. Additionally, mentees require a well-crafted strategy to isolate the problematic mentor from the committee.

Notes

1. Colloquially, ABDs refers to doctoral students who drop out the academic program without ever completing their doctoral dissertation which is a requirement for graduation. Rather than being PhD's if they had completed the work, they are known as ABDs to signify they did not meet the final requirement of the program.
2. Please note that where challenges of life get in the way of completing the dissertation, institutions do have policies and procedures for seeking leave of absence. It is important to take advantage of these provisions.

References

Bowen, William. & Rudenstine, Neil. (1992). *In pursuit of the Ph.D*. Princeton: Princeton University Press.

Emory University, August 2015, 'Building Successful Mentoring Relationships: Student Guide', Laney Graduate School, retrieved on May 04, 2017 from www.gs.emory.edu/uploads/professional.../Mentoring%20Guide_Student_final.pdf

Garwe, Evelyn Chitevo, 2015, 'The Status Quo of Doctoral Education in Universities in Zimbabwe', *Journal of Studies in Education*, 5, 3:23-37.

Gearity, Brian T. and Norma Mertz, 2012, 'From "Bitch" to "Mentor": A Doctoral Student's Story of Self-Change and Mentoring', *The Qualitative Report*, 17, 59:1- 27, retrieved on May 04, 2017 from http://www.nova.edu/ssss/QR/QR17/gearity.pdf

Columbia University, Graduate School of Arts and Sciences Teaching Center. (2010). *The Power of Mentoring.*

Hernandez, Laurie L., 1996, 'In Search of a Dissertation Committee: Using a Qualitative Research to Study a Lived Experience', *The Qualitative Report*, retrieved on May 04, 2017 from http://www.nova.edu/ssss/QR/QR2-4/hernandez.html

Jalongo, Mary Renck, 2007, 'Working with Your Committee: A Behind-the-scenes Look at Sources of Conflict', *Survival Guide*, retrieved on May 04, 2017 from http://www.abdsurvivalguide.com/archives/apr708.htm#feature

Kandiko, Camille and Ian M. Kinchin, 2012, 'Challenges in Cross-Cultural PhD Supervision: Mapping to Facilitate Dialogue', Fifth International Conference on Concept Mapping, Valletta, Malta, 2012, retrieved on May 04, 2017 from http://cmc.ihmc.us/cmc2012papers/cmc2012-p73.pdf

Khodabocus, Fareeda, 2016, 'Challenges to Doctoral Education in Africa', *International Higher Education*, 38:25-27.

Molla, Tebeje and Denise Cuthbert, 2016, 'In Pursuit of the African PhD: A Critical Survey of Emergent Policy Issues in Select Sub-Saharan African Nations, Ethiopia, Ghana and South Africa', *Policy Futures in Education*, 14, 6:635-654.

Nettles, Michael & Millett, Catherine. (2006). *Three magic letters: Getting to Ph.D.* Baltimore: The Johns Hopkins University Press.

Schuman, Rebecca, August 01, 2014, 'ABD Company: What's Worse than Getting a PhD in Today's Job Market? Not Finishing One', *Slate*, retrieved on May 04, 2017 from http://www.slate.com/articles/life/education/2014/08/abds_all_but_dissertation_ph_d_candidates_who_can_t_quite_finish.html

Sternberg, David, 1981, *How to Complete and Survive A Doctoral Dissertation*, New York, NY: St. Martin's Press.

Yesko, Jill, July 25, 2014, 'An Alternative to ABD', *Inside Higher Education*, retrieved on May 04, 2017 from https://www.insidehighered.com/advice/2014/07/25/higher-ed-should-create-alternative-abd-status-essay

2

Revisiting the Basics

Abdul Karim Bangura

This chapter presents the overview of a variety of features needed for a well-crafted doctoral dissertation. These fundamental elements include (a) research approaches, (b) an ideal dissertation structure, (c) preparing a systematic literature review, (d) building a theoretical framework, and (e) a general overview of the types of research methodologies. For the sake of cohesion, these will be discussed separately. Before addressubg these features, however, let us first address the question of why we conduct research in the first place.

We do research for two major reasons. The first reason is to gain *knowledge*: i.e. facts, information, and secondly to acquire skills through experience or education. Figure 2.1 is a diagrammatic representation of the two ways knowledge can be gained:
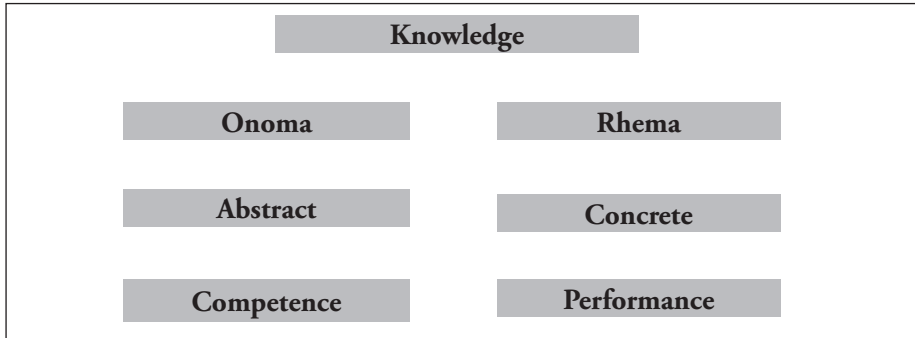
Figure 2.1: A Conceptual Framework of Knowledge
Source: Self-generated by author

Figure 1 suggests that knowledge can be acquired through *Onoma* (meaning naming in Greek) and *Rhema* (meaning doing/action in Greek). The former yields knowledge that is *abstract* (existing in thought or as an idea but not having a physical or concrete existence) gained through *competence*: i.e. the ability to do something successfully or efficiently. The latter yields knowledge that is *concrete* (existing in a material or physical form; real or solid) gained through *performance*: i.e. the action or process of carrying out or accomplishing an action, task, or function. *Onoma* and *Rhema* combined yields *Logos* (i.e. logic: reasoning conducted or assessed according to strict principles of validity).

The second reason we conduct research is to ascribe *meanings* (intensions to convey, indicate, or refer to particular things or notions) to phenomena. There are two types of meanings. The first type is *denotative*, which refers to shared meanings: for example, those found in a dictionary. The second type is *connotative*, which is specialized meaning: for example, jargon used in an academic discipline.

As I also recount elsewhere, there are the following linguistic meanings: (a) *syntactic* meaning referring to sign-sign relations, (b) *semantic* meaning referring to sign-world relations, and (c) *pragmatics* meaning referrign to sign-behavior relations. Semantics traditionally deals with meaning as a dyadic relation while pragmatics deals with meaning as a triadic relation. Pragmatics assumes that the image of meaning is a polyadic (involving four or more elements) relation among conventionality-speaker-situation-hearer. Semantics assumes a triadic (involving three elements) relation among conventionality, language, and to what it refers. If language were natural, meaning would be dyadic; since language is conventional, it is therefore triadic; thus, pragmatics is polyadic (see, for example, Bangura 2002, 2013 & 2015). Now let us begin with the research approaches.

Research Approaches

A research approach refers to the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions. There are at least two major types of research approaches. One is the scientific/systematic/ideal approach and the other is the advocacy/participatory/emancipatory approach. These approaches are explicated in the following paragraphs.

The *scientific/systematic/ideal* approach employs qualitative (emphasis on words), quantitative (emphasis on numbers/numerical values) and mixed/triangulative (emphasis both on words and numbers/numerical values) methods to gain knowledge. Thus, several aspects are involved when using this approach. Following Chava Frankfort-Nachmias, David Nachmias and Jack DeWaard (2014), the first aspect of the approach concerns the modes of knowledge acquisition. According to these scholars, in addition to the scientific mode of gaining knowledge, there also are (a) the authoritarian mode, which involves acquiring knowledge by consulting people who are politically or socially considered as knowledge producers, such as clergy, oracles, kings, scientists, etc.; (b) the mystical mode, which involves gaining knowledge from authorities such as diviners, mediums, and prophets who are perceived to have connections to supernatural powers; and (c) the rationalistic mode, which entails acquiring knowledge by strictly following the forms and rules of logic, based on the belief that 'the human mind can understand the world independent of its observable phenomena and…that forms of knowledge exist that are independent of our personal experiences' (Frankfort-Nachmias *et al.* 2014:3-4).

The second aspect deals with the basic assumptions of science. Frankfort-Nachmias et al. proffer the following six suppositions which, they confess, are unproven and unprovable, albeit neccessary for managing scientific discourse: (1) 'nature is orderly', (2) 'we can know nature', (3) 'all natural phenomena have natural causes', (4) 'nothing is self-evident', (5) 'knowledge is derived from the acquisition of experience', and (6) 'knowledge is superior to ignorance' (2014:5-7).

The third aspect has to do with the aims of social science. Frankfort-Nachmias and her colleagues delineate three aims. The first aim is to provide a scientific explanation–i.e. generating answers for the 'Why?' questions. The explanation can be either *deductive*, which involves '(a) a universal generalization, (b) a statement of the conditions under which the generalization holds true, (c) an event to be explained, and (d) the rules of formal logic,' or *probabilistic/inductive*, which involves an explanation of likelihood (Frankfort-Nachmias et al. 2014:8-9). The second aim is prediction, which involves stating or estimating that a specified thing

will happen in the future or will be a consequence of something. The third aim has to do with understanding, which involves inferring something from information received. Understanding is utilized in two radically different ways: (1) *verstehen,* German word for emphatic understanding; and (2) *predictive understanding* for objective understanding (Frankfort-Nachmias et al. 2014:11-12).

The fourth aspect pertains to the roles of methodology. Before discussing these roles, Frankfort-Nachmias and her co-authors first define a *scientific methodology* as follows: 'a system of explicit rules and procedures upon which research is based and against which claims of knowledge are evaluated' (2014:13). They then go on to state the following several roles of methodology. To begin with, 'methodology provides rules for communication'. Next, 'methodology provides rules for reasoning'. Additionally, 'methodology provides rules for *intersubjectivity*, which involves the sharing of observations and factual information among scientists' (Frankfort-Nachmias et al. 2014:14-15).

The final aspect deals with the research process. Frankfort-Nachmias et al. identify seven main stages of this process, with theory being at the center of them as each stage affects theory and theory in turn affects each stage (2014:20). The following are the eight stages with my brief definitions, since these authors do not provide them, at least not immediately:

1. *Theory* is a generalized logical statement that shows the relationship between two or more hypotheses.

2. *Problem* in science refers to any phenomenon that can be systematically investigated.

3. *Hypothesis* is a generalized logical statement that shows the relationship between two or more variables: i.e. elements, features, or factors that are liable to vary or change.

4. *Research Design* refers to a plan used by a researcher to collect, analyze and interpret observations.

5. *Operationalization of Variables* or *Measurement* [for quantitative studies] is about how the sizes, amounts, and degrees of the commonalities among concepts are ascertained. [For qualitative studies, definitions of major terms or concepts.]

6. *Data Collection* refers to how primary and secondary information is gathered.

7. *Data Analysis* deals with the detailed examination of the elements or structure of the data collected as a basis for discussion or interpretation.

8. *Conclusion* and/or *Generalization* refer to a judgment or decision reached by reasoning and a general statement or concept obtained by inference from specific cases.

Let us now turn our attention to the advocacy/participatory/emancipatory approach.

The *advocacy/participatory/emancipatory approach* is used by researchers who seek to address the needs or situations of groups that are vulnerable or marginalized. The goal of these researchers is to engender concrete changes in the lives of their research subjects. These researchers tend to have a political agenda and, thus, strive to empower the groups they study. To ameliorate the marginalization of the groups they study and to instigate reforms, these researchers include these groups at all stages of the research process (Alzheimer Europe Office 2009). The Alzheimer Europe Office explains,

> The researchers may adopt a less neutral position than that which is usually required in scientific research. This might involve interacting informally or even living amongst the research participants (who are sometimes referred to as co-researchers in recognition that the study is not simply about them but also by them). The findings of the research might be reported in more personal terms, often using the precise words of the research participants. Whilst this type of research could by criticised for not being objective, it should be noted that for some groups of people or for certain situations, it is necessary as otherwise the thoughts, feelings or behaviour of the various members of the group could not be accessed or fully understood (2009:1).

Consequently, researchers who employ the advocacy/participatory/emancipatory approach tend to seek acceptance into the groups they study or demonstrate that they have something in common with the groups they study (Alzheimer Europe Office 2009).

The immediate question as this juncture is the following: What would an ideal dissertation structure comprise? This question is addressed in the next section.

An Ideal Dissertation Structure

That an ideal dissertation, like any other academic writing, should be well structured is hardly a matter of dispute. Learnhigher (2012), an educational organization that provides free teaching and learning resources for staff in United Kingdom higher education, has suggested that a dissertation or thesis structure should evenly connect similar points together.

Thus, an ideal dissertation structure would therefore begin with the front matter. This would be followed by (at least) three preliminary chapters that deal with the topic to be studied, the existing knowledge on the topic and how

the dissertation will add to it, and how the dissertation will be grounded. The subsequent chapters would analyze the results and discuss the findings, most preferably each of these chapters dealing with each of the major research questions and its attendant hypothesis. The chapter to follow would summarize the major findings, draw conclusions, and make recommendations. This chapter would then be followed by a complete bibliography and appendices, if any. What follows is an outline of the suggested structure.

Front Matter

    a. Cover page with university's name, title of dissertation, author's name, date, etc.
    b. Dissertation committee signature page
    c. Acknowledgments page
    d. Abstract
    e. Table of Contents page
    f. List of Tables page
    g. List of Figures page
    h. Preface (if any)

Introduction

    a. Overview: What the Study is about
    b. Brief Background of the Issue
    c. Statement of the Problem
    d. Purpose and Objectives of the Study
    e. Major Research Question(s), Hypothesis/Hypotheses, and/or General Thesis Statement(s)
    f. Definitions of Major Concepts/Terms
    g. Significance of the Study
    h. Limitations of the Study
    i. Organization of the Study

Literature Review

    a. Nature of the Literature
    b. Review Approach Used: Synchronic/Thematic or Diachronic/Chronological (this can also be done either qualitatively or quantitatively)

    c. Systematic Review

    d. Summary and Conclusion: General Strengths and Limitations of the Literature, What/How the Dissertation Adds to the Literature

Theoretical Framework and Research Methodology

These aspects can be separated if there is enough material to do so. Most of the time, there is not enough material for separation and, thus, they can be presented together, albeit separately in a chapter for clarity. They also are logically related, since they are the aspects used to systematically ground a study. Please note that not all the features of these aspects are relevant for every study.

    a. Theoretical Framework

    b. Research Methodology/Methodologies

    c. Research Design(s)

    d. Operationalizations of the Variables

    e. Research Participants

    f. Instrument(s)

    g. Data Collection Procedure(s)

    h. Data Analysis Technique/Techniques

    i. Validity and Reliability

Data Analysis and Discussion of Findings

    a. The number of chapters will depend on the number major research questions and attendant hypotheses

    b. Segment by types or levels of analysis or by themes

Summary, Conclusions, and Recommendations

    a. Summary

    b. Conclusions

    c. Recommendations: Policy and/or Future Research

Bibliography

    a. Thorough, detailed and complete

    b. Consistent with the citation style used

    c. Organized in alphabetical order

Appendices

    a. Clean and legible copies

    b. Organized in the order discussed in the dissertation

Preparing a Systematic Literature Review

M. Ling Pan defines a literature review as "a *synthesis*: i.e. 'the combining of often varied and diverse ideas, forces, or factors into one coherent or consistent complex' (2004:1). Given this defintiion, it is imperative that a good literature review be done systematically. Such a review can be organized in one of two ways, or both when there is abundant literature on the topic. One way to do a systematic literature review is synchronically or thematically according to the competing schools of thoughts, theories, ideological or other positions, etc. The other way to do a systematic literature review is diachronically or chronologically in the order the works were published. This latter approach is appropriate when there are no competing themes, and it allows the reader to see how the ideas on the topic have progressed over time.

Within the thematic approach, as Pan also suggests, literature reviews can be arranged either qualitatively (i.e. narrative) or quantitatively. Arguing that the two approaches 'do not suggest a dichotomy', he states that they 'exist in a continuum from highly qualitative (with little mention of statistics or the research methods used to obtain them) to very highly quantitative (with the final synthesis based on the mathematical averaging of results across various studies reported by different researchers' (Pan 2004:v). No matter which of these two approaches researchers employ to arrange their literature reviews, Pan (2004:5) proffers the following features that undergird both:

    a. introducing the topic and defining key terms,

    b. establishing the importance of the topic

    c. providing an overview of the amount of available literature and its types (e.g., theoretical, statistical, speculative),

    d. describing how they searched for relevant literature,

    e. discussing their selection of literature to include in their review (especially if there is much literature on the topic and not all of it could be covered,

    f. revealing gaps in the literature (i.e. areas that are not covered by the literature),

    g. describing and, if possible, reconciling discrepancies in the literature,

    h. arriving at a synthesis, and

i. Discussing possible implications and directions for future research.

Additionally, Pan suggests the following five significant steps for preparing a literature review (2004:3):

1. Select a topic and modify it in light of the amount of available literature and your audience's needs.
2. Read the selected literature carefully in order to get a broad overview, with attention to the relationship of the literature to theory or theories and establish specific purposes for your literature review.
3. Evaluate and interpret the literature on the topic.
4. Create a synthesis by reconciling similarities and differences in the literature. Consider the implications of possible conclusions and identify fruitful areas for future research.
5. Write a first draft, get feedback on it from others, and revise or rewrite your review.

Furthermore, the University of Southern California Libraries system offers the following valuable suggestions that a researcher must take into consideration when writing a literature review (USC Libraries 2017):

Use Evidence: A literature review section is, in this sense, just like any other academic research paper. Your interpretation of the available sources must be backed up with evidence [citations] that demonstrates that what you are saying is valid.

Be Selective: Select only the most important points in each source to highlight in the review. The type of information you choose to mention should relate directly to the research problem, whether it is thematic, methodological, or chronological. Related items that provide additional information but that are not key to understanding the research problem can be included in a list of further readings.

Use Quotes Sparingly: Some short quotes are okay if you want to emphasize a point, or if what an author stated cannot be easily paraphrased. Sometimes you may need to quote certain terminology that was coined by the author, not common knowledge, or taken directly from the study. Do not use extensive quotes as a substitute for your own summary and interpretation of the literature.

Summarize and Synthesize: Remember to summarize and synthesize your sources within each thematic paragraph as well as throughout the review. Recapitulate important features of a research study, but then synthesize it by rephrasing the study's significance and relating it to your own work.

Keep Your Own Voice: While the literature review presents others' ideas, your voice [the writer's] should remain front and center. For example, weave references to other sources into what you are writing but maintain your own voice by starting and ending the paragraph with your own ideas and wording.

Use Caution When Paraphrasing: When paraphrasing a source that is not your own, be sure to represent the author's information or opinions accurately and in your own words. Even when paraphrasing an author's work, you still must provide a citation to that work.

Building a Theoretical Framework

The University of Southern California Libraries (2017) system defines and characterizes the theoretical framework as the configuration that can accomodate or under gird a theory. The system then goes on to suggest the following six strategies a researcher can utilize to develop an effective theoretical framework (USC Libraries, 2017; parenthetical notes are mine):

1. *Examine your thesis title [hypotheses] and research problem.* The research problem anchors your entire study and forms the basis from which you construct your theoretical framework.
2. *Brainstorm about what you consider to be the key variables in your research.* Answer the question, 'What factors contribute to the presumed effect[s]?'
3. *Review related literature* to find how scholars have addressed your research problem. Identify the assumptions from which the author(s) addressed the problem.
6. *List the constructs and variables* that might be relevant to your study. Group these variables into independent and dependent [also, antecedent, intervening, and mediating] categories.
7. *Review key social science [and other sciences] theories* that are introduced to you in [the literature] and choose the theory [theories] that can best explain the relationships between the key variables in your study.
6. *Discuss the assumptions or propositions* of this theory [these theories] and point out [its] their relevance to your research.

The system concludes by stating that a theoretical framework helps a researcher to restrict the extent of the pertinent data of his/her study by paying attention to the particular variables and defining the particular perspective [framework] s/he will employ to analyze and interpret the data to be collected. The system adds that the theoretical framework also assists the researcher to comprehend the concepts and variables vis-à-vis established definitions and to develop new knowledge by substantiating or questioning existing theoretical propositions (USC Libraries 2017).

To get a good grasp of the theoretical framework building process, the key concepts discussed by the University of California Libraries system need to be defined and discussed, albeit briefly. As defined earlier, a *theory* is generalized logical statement that shows the relationship between two or more hypotheses.

Next, there are two general types of theories. One is *deductive theory* which goes from the general to the specifics. The other is *inductive theory* which goes from the specifics to the general. The following is a diagrammatic representation of the building process of these two types of theories and definitions of their components:

Deductive Theory	Inductive Theory
↓	↑
Hypotheses	Hypotheses
↓	↑
Variables	Variables
↓	↑
Concepts	Concepts
↓	↑
Words	Words
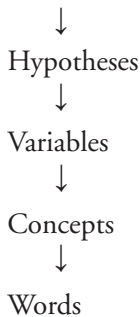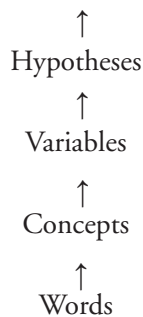
A hypothesis, as defined earlier, is a generalized logical statement that shows the relationship between two or more variables. A variable, as also defined previously, is an element, feature, or factor that is liable to vary or change, and it also shows the commonality among concepts. A concept is a definition of words which can be an abstract idea or a general notion. A word is the smallest element of linguistic meaning.

There are four levels of theory. The first level comprises *ad hoc classificatory systems* in which 'arbitrary categories are constructed in order to organize and summarize empirical observations'. The second level is made up of *taxonomies* in which systems of categories are 'constructed to fit general observations in such a way that relationships among the categories can be described'. The third level is composed of *conceptual frameworks* in which 'descriptive categories are systematically placed in a broad structure of explicit *propositions*, statements of relationships between two or more empirical properties, to be accepted or rejected'. The final level comprises *theoretical systems* which 'combine taxonomies and conceptual frameworks by relating descriptions, explanations, and predictions in a systematic manner' (Frankfort-Nachmias et al. 2014:37-39).

Let us turn our attention now to an overview of the various types of research methodologies. The mainstream or Eurocentric methodologies will first be discussed and then the African-centered types.

A General Overview of Types of Research Methodologies

In this section, I discuss five types of research methodologies: (1) qualitative, (2) quantitative, (3) mixed/triangulative, (4) emergent, and (5) African-centered. The first four types are Eurocentric/Western methodologies frequently referred to as 'mainstream methodologies' and the fifth type comprises those that have been resuscitated and newly developed to serve as alternatives to the four due to their shortcomings in adequately examining and addressing African phenomena. They are discussed separately for lucidity.

Qualitative Methodologies

Qualitative methodologies refer to systems of methods used in particular areas of study or activities by employing data in the form of words to generate descriptions and explanations. In qualitative research, theory arises from the investigation. Theory and conceptual insights derive *from* data collection rather than prior to it. Such qualitative studies generate hypotheses, as opposed to testing them. Qualitative methodologies are more interpretative, historical, and ethnographic than the quantitative approaches. Thus, the critical issues for qualitative methodologies involve scrupulosity, meticulousness, commitment to scholarly rigor in the investigation of research questions, determination to find the truth, and intellectual honesty (Bangura 1994; Bangura and Hopwood 2014; Bangura, Thomas and Hopwood, in press; Bangura and McCandless 2007).

In essence, whereas qualitative studies are basically enumerative, quantitative studies are more causally oriented. Thus, although qualitative studies are as important as quantitative studies, quantitative studies are methodologically more complex than qualitative studies (Bangura 1994; Bangura and Hopwood 2014; Bangura, Thomas and Hopwood, in press; Bangura and McCandless 2007).

Quantitative Methodologies

Quantitative methodologies can be defined as systems of methods used for the systematic or scientific investigations of phenomena and their relationships. Quantitative research tends to be theory driven; uses fixed research designs – the most common being pre-experimental, quasi-experimental, and experimental;

and involves the collection of numerical data. From this perspective, quantitative research involves inquiry into human problems based on the testing or application of theory that is operationalized into variables and analyzed with appropriate statistical or social scientific analytic procedures. Quantitative research is generally approached using scientific methods and processes that include (a) the generation of models, theories, and hypotheses; (b) the development of instruments and methods for measurement; (c) the experimental control and manipulation of variables; (d) the collection of empirical data; (e) the modeling and analyzing of data; and (f) the evaluation of results.

The objective of quantitative research is therefore to develop and use mathematical or representational models designed to indicate systematic patterns of relations, time sequences or causal connections in data, and theories and testing of hypotheses pertaining to natural phenomena. The process of measurement is central to empirical observation and the mathematical expression of quantitative relationships.

In sum, whereas qualitative studies are basically enumerative, quantitative studies are more causally oriented. Thus, although qualitative studies are as important as quantitative studies, quantitative studies are methodologically more complex .

It may appear, however, that the difference between qualitative and quantitative methodologies is a somewhat artificial dichotomy, since each group combines both approaches in its underlying assumptions. This is because the quantitative approach calls for a great deal of qualitative description prior to counting (in order to empirically ground each category) as well as after counting (statistical tendencies have to be interpreted as to what they reveal about causal relations). And the qualitative approach has an implicit notion that 'more is better': that is to say, the more instances of a phenomenon to be found, the more a researcher can trust his/her interpretation of an underlying pattern.

Despite these underlying similarities, qualitative and quantitative methodologies are different in some ways. In addition to some of the more obvious procedural differences (for example, quantitative studies categorize and count occurrences), the two types of approaches differ in their overall orientation toward inquiry: the qualitative focuses more on particularities and the quantitative focuses more on generalities (Bangura 1994; Bangura and Hopwood 2014; Bangura, Thomas and Hopwood, in press; Bangura and McCandless 2007).

Mixed/Triangulative Methodologies

According to Todd Jick, mixed methodologies or triangulation can be broadly defined as 'the combination of methodologies in the study of the same phenomenon' (1978:291). He adds that 'in the social sciences the use of triangulation can be found in the work of social science researchers in the past quarter of the century who developed the idea of multiple operations' (Jick 1978:291). This researcher advanced the argument that more than one method should be employed in the validation process to ascertain that the variance in the operationalization of the data reflects that of the trait and not of the method. There must be an element of truth in the two methods used (Jick 1979:).

Ensuring the reliability and validity of the data to be collected is one of the challenging factors in conducting scientific research. The other challenges include the subjective views of the researcher, unsystematic methods employed in collecting data, and the reliability of the data. Thus, as Robert Bruce Burns states, 'an exclusive reliance on one method may bias or distort the researcher's mental and physical pictures of the particular schema of reality being explored' (2000:42).

Therefore, a triangulative-driven transformative mixed-methods researcher, according to John W. Creswell (2009), utilizes a theoretical perspective that combines both qualitative and quantitative information in a logical sequence. He adds that this triangulative analysis approach means that a convergence across qualitative and quantitative methods will be utilized. The qualitative and quantitative methods can be merged side by side to validate each other (Creswell 2009).

Also, Donna M. Mertens asserts that such a 'transformative paradigm provides an overarching framework for addressing issues of social justice and consequent methodological decisions' (2007:212). The transformative paradigm provides a framework for investigating the assumptions that inevitably deal with matters of power structures, social justice, cultural dynamics and peculiarities throughout a research process. The transformative mixed-methods then allow a researcher to use various quantitative and qualitative methods to determine the research focused on power issues (Mertens, 2007). This theoretical lens directs a researcher to what issues are important (e.g., marginalization, empowerment) and the demographics that need to be examined (e.g., disabled, transient population, minority groups) (Creswell 2009).

Additionally, this lens signifies how a researcher positions himself/herself in a qualitative study (e.g., direct or indirect, unbiased or biased from personal, cultural or historical context) and how the final written accounts need to be documented (Creswell 2009). Creswell argues that the qualitative 'lens becomes

an advocacy perspective that shapes the types of questions asked, informs how data are collected and analyzed, and provides a call for action or change' (2009:62). A researcher is likely to have the knowledge and interest to design and conduct a qualitative study, which allows him/her to utilize and work with a flexible and open research design process. Creswell also asserts that the quantitative approach is a deductive theoretical model applied to test and verify a theory or hypothesis, rather than develop it (Creswell 2009).

Emergent Methodologies

Emergent methodologies refer to nascent systems of methods to be utilized in particular areas of study or activities due to the inadequacies of existing methodologies. Realizing the need for state-of-the-art research methods that address the growing methods-theory gap within the behavioral and social sciences, sevearl research methodologists have embarked upon the task of developing new methodologies. I have elsewhere summarized the nature of these emergent methodologies as follows (Bangura 2011:11):

a. they combine theoretical and empirical approaches;
b. they focus on methodological issues within and between disciplines;
c. they offer very broad perspectives of the possible uses and issues surrounding research techniques and methods; and
d. they challenge researchers to build bridges that link new research questions with innovative methods that can address issues of power, authority, and representation in the research process.

After discussing 25 emergent methodologies, I concluded by stating that these systems of methods stress a strong theory-practice mix. Essentially, they comprise a refreshing attempt to forge behavioral theory and praxis to expand human capacities for problem-solving (Bangura 2011).

African-centered Methodologies

After almost three centuries of employing Eurocentric/Western methodologies, many African communities in the continent and the Diaspora remain marginal. It is obvious that these Western methodologies, which are not indigenous to Africans, have done relatively little good for Africans. Thus, I have proposed in many works that the salvation for Africans in both the continent and the Diaspora hinges upon resuscitating old, employing contemporary and developing new authentic African-centered methodologies for their use. In light of this proposition, at least

two major questions emerged: (1) Why have Western methodologies not yielded much benefit for Africans? (2) Did Western methodologies infiltrate African societies because Africans lacked their own? The following paragraphs attempt to answer these questions (Bangura 1994, 2011, 2015, in press).

In response to the first question, as Kofi Nyidevu Awoonor (1990) has suggested about African political systems and I (Bangura 2002) have done similarly about African educational systems, Western systems are incompatible with African systems because the former are based on a concept that fragments African life derived from a Eurocentric division of labor theory. This theory in turn separates education from politics, religion, economics, and the social institutions of family, or group, or people. This fragmentation theory emanates from Eurocentric epistemology and a fundamental approach to existence which has its genesis in Greco-Roman and subsequently Judeo-Christian thought (see also Bangura 2011, 2015, in press).

Thus, one of the major tenets that guide my suggestion for the use of authentic African-centered methodologies to investigate African phenomena is that before we attempt any description of the thought process of Africans, it will be necessary to locate its total personality within the boundaries of its own self-perception; this means delineating African philosophy and its view of the world, both visible and invisible, its fundamental habits of thought, and its attitude towards its physical and spiritual existence (Bangura 2011, 2015, in press; see also Awoonor 1990).

As Awoonor (1990) and I (Bangura 2002) have also stated, the African life concept is holistic–i.e. it is based on an integrative world view. All life to the African is comprehensive; all human activities are closely interrelated. This has as its underlying principle the sanctity of the person, her/his spirituality and essentiality. This essentialist view of the person confers value to her/his personhood. All else–her/his labor and achievements–flow from this value system. Even personal shortcomings cannot invalidate it (see also Bangura 2011, 2015, in press).

For Africans, politics defines duties and responsibilities alongside obligations and rights. All these relate to the various activities that have to do with survival. The survival concept is continuing, dynamic and dialectical. The fundamental principle that is at the basis of this conception is a moral one. Moreover, the African moral order never defined rigid frontiers of good and evil. Good and evil exist in the same continuum. Whatever is good, by the very nature of its goodness, harbors a grain of evil. This is a guarantee against any exaggerated sense of moral superiority which goodness by itself may entail. The notion of perfection, therefore,

is alien to African thought. Perfection, in itself, constitutes a temptation to danger, an invitation to arrogance and self-glorification. The principle of balance defines the relationship between good and evil. As life operates in a dialectics of struggle, so also does good balance evil and *vice versa* (Awoonor 1990; Bangura 2002, 2011, 2015, in press).

In response to the second question, as Davidson Nicol (1965) stated that the University of Sankore in Timbuktu, which flourished in the 16th Century, is very important to Africans. To most people in Europe and America, the history of Africa begins with the slave trade; but increasingly, Africans feel that the latter was simply an incident in a long history of the continent and that one must look beyond that. Sankore was a Muslim institution, or a series of institutions, where law, philosophy, and theology were taught, and it bore similarities to the present Al Azar University in Cairo–another Muslim university – that medieval Oxford does to present day Oxford (cited also in Bangura 2002, 2011, 2015, in press).

Nicol (1965) further revealed that Al Azar University would in fact be a convenient point from which to start from a premise of African nationalism. It is one of the focal points which have been used to unite Muslims all over the continent. Scholarships are given to attend it, and students there are taught Arabic, Islamic theology, and law. Upon graduation, they go back to spread their knowledge and Islamic culture in the various African countries (cited also in Bangura 2002, 2011, 2015, in press).

But even before the advent of the universities in Timbuktu and Egypt, as Ado K. Tiberondwa (1978), among others, has argued, the absence of Western education in pre-colonial Africa does not presuppose that education was lacking on the continent. As long as humans have been on earth, each community has evolved its own forms of education based on the religious, social, political, economic and cultural values of that community. Traditional forms of education existed all over Africa, based on ethnic and clan units and covered both the theoretical and practical fields. Education was part of living, but not everyone had to go to a 'school building' to be educated. The whole process of living was a process of learning (cited also in Bangura 2002, 2011, 2015, in press).

We can begin by acknowledging that a *true* African-centered research paradigm must first and foremost be built on a sound spiritual basis that highlights those aspects of African spiritual life that have enabled African people all over the world to survive as a human community throughout the centuries. It should go beyond European classical humanism with its class, socio-economic and geographical limitations based on Greece and the Athenian city-state, which was based on a

system of slavery. African-centered research must lead to 'enlarged humanities' and recapture that original meaning of humanity which Western scholars, beginning with Plato, in their hollow and lopsided search for material progress, abandoned. By privileging 'reason' above everything else and abandoning the spiritual aspects of life, including the idea of the immortal soul, Western scholarship embarked on a path that is increasingly bringing humanity to the brink of destruction through violence and ecological destruction (Nabudere 2002; see also Bangura 2002, 2011, 2015, in press).

The task of African-centered research must be to critique the Eurocentric 'idea' and 'general philosophy' in their metaphysical belief that European humanism is superior to that of the African people. This falsehood, which Europe and America perpetuated and still do, in so many ways, is based on the idea that the rest of humanity must be forced to believe like Europe and America in order to be 'humanized' into a singular humanity (Nabudere 2002; see also Bangura 2002, 2011, 2015, in press).

Indeed, as the preceding discussion makes evident, a good dissertation must be based on the eight components of the scientific/systematic approach: i.e. (1) problems definition, (2) theory, (3) hypothesis, (4) research methodology, (5) definitions of major concepts or operationalization of variables, (6) data collection techniques, (7) data analysis, and (8) conclusion drawing and/or generalization. At the core of the process is theory, around which the other seven componets revolve. Also, throughout this process, literature is continuously reviewed.

References

Alzheimer Europe Office, August 21, 2009 'The Four Main Approaches: Types of Research', retrieved on April 27, 2017 from http://www.alzheimer-europe.org/Research/Understanding-dementia-research/Types-of-research/The-four-main-approaches

Awoonor, Kofi Nyidevu, 1990, *Ghana: A Political History*, Accra, Ghana: Sedco Publishing Ltd. And Woeli Publishing Services.

Bangura, Abdul Karim, in press, *Falolaism: Epistemologies and Methodologies of Africana Knowledge*, Durham, NC: Carolina Academic Press.

Bangura, Abdul Karim, 2015, *Toyin Falola and African Epistemologies*, New York, NY: Palgrave Macmillan.

Bangura, Abdul Karim, 2011, *African-Centered Research Methodologies: From Ancient Times to the Present*, San Diego, CA: Cognella Press.

Bangura, Abdul Karim, 2002, *Sojourner-Douglass College's Philosophy in Action: An African-Centered Creed*, San Jose, CA: Writers Club Press.

Bangura, Abdul Karim, Alice Thomas and Junior Hopwood, in press, *A Comprehensive Introduction to Research Methods Volume 2: Qualitative Methods*, San Diego, CA: Cognella Press.

Bangura, Abdul Karim and Junior Hopwood, 2014, *A Comprehensive Introduction to Research Methods Volume 1: Quantitative Methods*. San Diego, CA: Cognella Press.

Bangura, Abdul Karim and Erin McCandless, 2007, *Peace Research for Africa: Critical Essays on Methodology*, Geneva, Switzerland: United Nations University for Peace Press.

Bangura, Abdul Karim, ed., 1994, *Research Methodology and African Studies Volume I*, Lanham, MD: University Press of America.

Burns, Robert Bruce, 2000, *Introduction to Research Methods*, Thousand Oaks, CA: Sage Publications.

Creswell, John W., 2008, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* 3rd ed., Thousand Oaks, CA: Sage Publications.

Frankfort-Nachmias, Chava, David Nachmias and Jack DeWaard, 2014, *Research Methods in the Social Sciences* 7th ed., New York, NY: Worth Publishers/Palgrave Macmillan.

Jick, Todd D., 1979, 'Mixing Qualitative and Quantitative Methods: Triangulation in Action', *Administrative Science Quarterly* 24, 4:602-611.

Learnhigher, January 09, 2012, 'How to Structure Your Writing', *Academic Writing'*, retrieved on April 28, 2017 from http://www.learnhigher.ac.uk/writing-for-university/academic-writing/how-to-structure-your-writing/

Mertens, Donna M., 2007, 'Transformative Paradigm: Mixed Methods and Social Justice', *Journal of Mixed Methods Research* 1, 3:212-225.

Nabudere, Dani Wadada, 2002, 'The Epistemological and Methodological Foundations for an All Inclusive Paradigm in the Search for Global Knowledge' Occasional Paper Series, Volume 6, Number 1, published by the African Association of Political Science, Pretoria, South Africa.

Nicol Davidson, 1965, 'Politics, Nationalism, and Universities in Africa,' in L. G. Cowan et al., eds., *Education and Nation-Building in Africa*, New York, NY: Praeger.

Pan, M. Ling, 2004, *Preparing Literature Reviews* 2nd ed., Glendale, CA: Pryczak Publishing.

Tiberondwa, Ado K., 1978, *Missionary Teachers as Agents of Colonialism*, Lusaka, Zambia: Kenneth Kaunda Foundation.

University of Southern California (USC) Libraries, April 21, 2017, 'Literature Review,' *Research Guides*, retrieved on April 29, 2017 from http://libguides.usc.edu/writingguide/literaturereview

University of Southern California (USC) Libraries, April 21, 2017, 'Theoretical Framework', *Research Guides*, retrieved on April 29, 2017 from http://libguides.usc.edu/writingguide/theoreticalframework

3

Epistemological Paradigms in Social Research

Chris Shisanya

Introduction

In this chapter, I explain what a research paradigm is, which includes ontology, epistemology, and methodology, and why it is important for PhD research. The chapter is a summary of my understanding of the research paradigm, which I hope will be helpful. I forewarn the reader that there are many disagreements among philosophers and epistemologists about what a paradigm is and there is, therefore, no one answer that is acceptable to everyone.

The Meaning of Paradigm

The word paradigm has been so overly-defined that many people do not understand its full meaning. The origin of the term can be traced to the 15th Century via late Latin from Greek *paradeigma*, from *paradeiknunai* 'show side by side', from *para/*'beside' + *deiknunai* 'to show' (Iacob et al. 2015). The *Merriam-Webster Dictionary* (2008) defines paradigm as (a) a model or pattern for something that may be copied; and (b) a theory or a group of ideas about how something should be done, made or thought about (www.merriam-webster.com). The *Thesaurus Dictionary* defines paradigm as (a) a set of forms all of which contain a particular element, especially the set of all inflected forms based on a single stem or theme; (b) an example serving as a model; pattern; (c) a framework containing the basic assumptions, ways of thinking, and methodology that are commonly accepted by members of a scientific community; and (d) a cognitive framework shared by

members of any discipline or group (www.dictionary.com). Bob Proctor in his book titled *It's Not About Money* (2009) sees paradigm as nothing more than a multitude of habits. Essentially, a paradigm is a collection of beliefs that are held by a group of people.

From the preceding definitions, we can conclude that a paradigm is the way you see something, your point of view, frame of reference or belief. It is the way we perceive, understand and interpret the world. A paradigm is like a *map* in our head. We assume that the way we 'see' things is the way they really are or the way they should be. The following are listed as synoptic views of paradigm: (a) a mental model; (b) a way of seeing; (c) a filter for one's perceptions; (d) a framework of thought or beliefs through which one's world or reality is interpreted; and (d) a commonly held belief among a group of people, such as scientists of a given discipline (Howell 2014).

Paradigmatic Shift

In 1962, Thomas Kuhn wrote *The Structure of Scientific Revolution* and fathered, defined and popularized the concept of *paradigmatic shift* (1962:10). Kuhn argued that scientific advancement is not evolutionary, but rather is a 'series of peaceful interludes punctuated by intellectually violent revolutions', and in those revolutions 'one conceptual world view is replaced by another' (p. 10). One can think of a paradigmatic shift as a change from one way of thinking to another. It is a revolution, transformation, a sort of metamorphosis. It just does not happen, but rather it is driven by agents of change.

Research Paradigm

A research paradigm is 'the set of common beliefs and agreements shared between scientists about how problems should be understood and addressed' (Kuhn 1962:43). According to Gubba and Lincoln (1994) and TerreBlanche and Durrheim (1999), a research paradigm consists of the following components (see Figure 3.1 for a diagrammatic representation):

a. *Ontology*: Assumptions about the nature of reality. What is reality? The term ontology refers to a branch of philosophy concerned with articulating the nature and structure of the world (Gubba and Lincoln 1994: 9). It specifies the form and nature of reality and what can be known about it.

b. *Epistemology*: How a researcher comes to know a reality. How do you know something? Epistemology refers to the nature of the relationship between

a researcher (the knower) and it denotes 'the nature of human knowledge and understanding that can possibly be acquired through different types of inquiry and alternative methods of investigation' (TerreBlanche and Durrheim 1995:10).

c. *Methodology*: How a researcher accesses and reports what is learnt about a reality. How do you go about finding out? Methodology refers to how the researcher goes about practically finding out whatever s/he believes can be known.
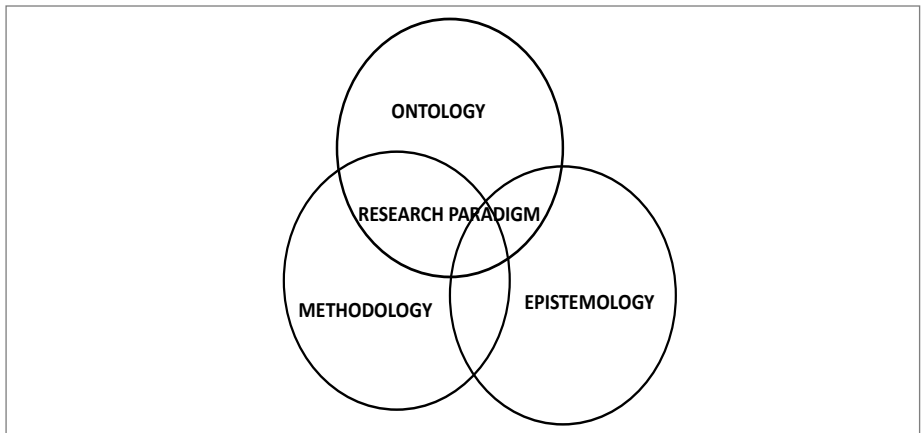
Figure 3.1: Components of a Research Paradigm
Source: Self-generated by the Author
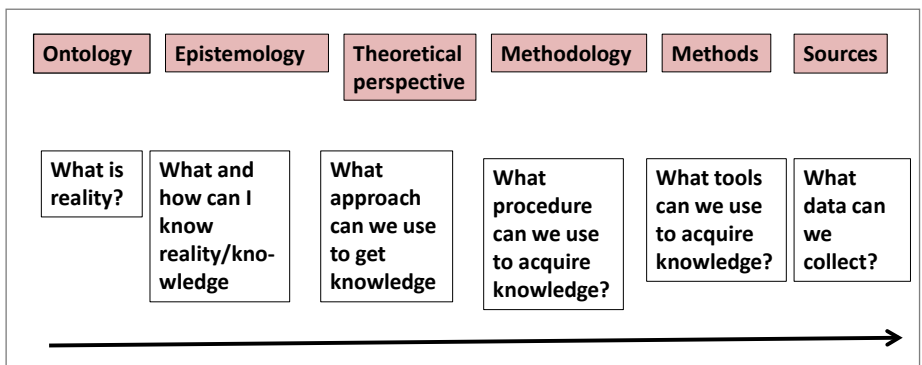
Figure 3.2: The Relationships among the Components of a Research Paradigm
Source: Self-generated by the Author

The origin of the term *ontology* can be traced to the early 18th Century from modern Latin *ontologia*, from Greek *on*, *ont*/'being' + *logy*. Ontology is the starting point of all research, after which one's epistemological and methodological positions logically flow. A dictionary definition of the term on the one hand may describe it as the image of social reality upon which theory is based. The term epistemology on the other hand originated in the mid-19th Century from the Greek *episteme* 'knowledge', from *epistasthai* 'know, know how to do'. Epistemology is the branch of philosophy that studies knowledge, by attempting to distinguish between 'True' (and adequate) knowledge and 'False' (inadequate) knowledge (Erikson and Kovalainen 2008:14).

The Importance of a Research Paradigm

One view on the importance of a research paradigm is that a researcher's intentions, goals and philosophical assumptions are inextricably linked with the research s/he conducts. Grix (2004) warns that people who want to conduct clear, precise research and evaluate others' research need to understand the philosophical underpinnings that inform their choices of research questions, methodologies, and intentions. Therefore, how researchers view the constructs of social reality and knowledge affects how they will go about uncovering knowledge of relationships among phenomena and social behaviours, and how they evaluate their own and others' research. Crotty (1998) opines that researchers can select which stage to begin their research, ontology, epistemology, or methodology. Other authors are of the view that research is best carried out by identifying your ontological assumptions first. According to Grix (2004:68), research is done by 'setting out clearly the relationship between what a researcher thinks can be researched (his/her ontological position) linking it to what we can know about it (his/her epistemological position) and how to go about acquiring it (his/her methodological approach)' (see also Figure 5.2 above).

Your ontology and epistemology establish a holistic view of how knowledge is perceived and how we can see ourselves in relation to this knowledge, and the methodological strategies we use to uncover or discover it. Awareness of philosophical assumptions will increase the quality of research and can contribute to the creativity of a researcher.

Types of Research Paradigms used in Social Science Research

In simple terms, the four common research paradigms used in social science research are as follows: (1) Positivism = Quantitative: discovery of the laws that govern behavior; (2) Constructivist = Qualitative: understandings from an insider perspective; (3)

Critical-Postmodernism: investigate and expose the power relationships; and (4) Pragmatic: Interventions, interactions and their effect in multiple contexts (Grix 2004:68). These research paradigms are elucidated in the subsections that follow.

Positivism

The positivist paradigm is also called the scientific paradigm. The purpose of research in this paradigm is to accept/validate or reject/invalidate a hypothesis. Other characteristics of positivist research include a strong emphasis on the scientific method, statistical analysis, and generalizable findings. Positivist research normally has a control and experimental group and a pretest and post-test method. Thus, positivism does not allow for the subjective opinions of a researcher as the approach deals with verifiable observations and measurable relationships between those observations, not with speculation and conjecture. It is, therefore, the more scientific perspective with no room for the subjective opinions of a researcher as the approach deals with verifiable observations and measurable relations among them.

The term positivism was first coined by August Comte (Cohen et al. 2007), a French philosopher who believed that reality could be observed. Cohen et al. claim that 'Comte's position was to lead to a general doctrine of positivism which held that all genuine knowledge is based on sense experience and can be advanced only by means of observations and experiment' (Cohen et al. 2007:9). Positivism maintains that a scientist is an observer of an objective reality. From this understanding of ontology, the methodology for observation in the natural sciences was adopted for social science research. Table 3.1 highlights the main thinkers who espoused positivism and the concomitant philosophies, all of which were influential in some way to the formation of present-day positivism.

Table 3.1: Positivist Thinkers and Philosophies

Main proponent	Underpinning philosophy
Aristotle	Deductive reasoning
Descartes	Realism
Galileo	Scientific method
Auguste Comte	Positivism
Vienna Circle	Logical positivism
Francis Bacon	Inductive reasoning
Karl Popper	Post positivist

Source: Self-generated by the Author

The typical positivist research questions include 'What?', 'How much?', '[What is the]Relationship between?' '[What] Causes this effect?' These questions are best answered with numerical precision, often formulated as hypotheses. Reliability reigns high as some results can be obtained at different times by different researchers. Validity, too, is paramount as results accurately measure and reliably answer research questions.

The ontological and epistemological assumptions of this positivist paradigm tend to overlap. Thus, as Crotty notes, 'to talk of the construction of the meaning is to talk of the construction of meaningful reality' (1998:10). The ontological and epistemological assumptions of positivism can be summarised as follows: (a) reality is external to a researcher and represented by objects in space; (b) objects have meaning independent of any consciousness of them; (c) reality can be captured by our senses and predicted; (d) methodology of the natural sciences should be employed to study social reality (Mack 2010:7); (e) truth can be attained because knowledge rests on a set of firm, unquestionable, indisputable truths from which our beliefs may be deduced (Iacobs et al. 2015); (f) knowledge is generated deductively from a theory or hypothesis; and (g) knowledge is objective (Iacobs et al. 2015).

Positivists' View of the Research Process

Table 3.2 and Figure 3.3 provide an overview of how a positivist approaches the social science research process.

Table 3.2: Positivism and Research

Aspect	Positivism
	Independent, objective
The researcher	Detached, irrelevant
Human interest, intuition, reflection	Demonstrate causality
Research process	Progress made through hypotheses and deductions
Concepts and variables	
Unit of analysis	Must be operationalized for measurement and quantitative analysis
Generalization patterns	Identifiable and reduced to simplest terms
Sampling requirements	Probability sampling with adequate sampling size

Source: Self-generated by the Author

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────┐        ┌──────────────────────────┐    │
│  │ Stock of Theory and  │───────▶│ Central Research Question │    │
│  │ Research; Established │        │         (s)              │    │
│  │ Methodological        │        └──────────────────────────┘    │
│  │ Standards            │                    │                    │
│  └──────────────────────┘                    ▼                    │
│         ▲                          ┌──────────────────┐           │
│         │                          │ Research Design  │           │
│         │                          └──────────────────┘           │
│         │                                    │                    │
│         │                                    ▼                    │
│         │                          ┌──────────────────┐           │
│         │                          │ Data Collection  │           │
│         │                          └──────────────────┘           │
│         │                                    │                    │
│         │                                    ▼                    │
│         │              ┌──────────────────────────────────┐       │
│         │              │ Emerging Interpretation of the    │       │
│         │              │ Data                             │       │
│         │              └──────────────────────────────────┘       │
│         │                                    │                    │
│         │                                    ▼                    │
│         │              ┌──────────────────────────────────┐       │
│         │              │ Analysis and Theory Building      │       │
│         │              └──────────────────────────────────┘       │
│         │                                    │                    │
│         │                                    ▼                    │
│         │    ┌──────────────────────────────────────────────┐     │
│         └────│ Formulate Findings and Conclusions and Write  │     │
│              │ Up                                            │     │
│              └──────────────────────────────────────────────┘     │
└─────────────────────────────────────────────────────────────────┘
```
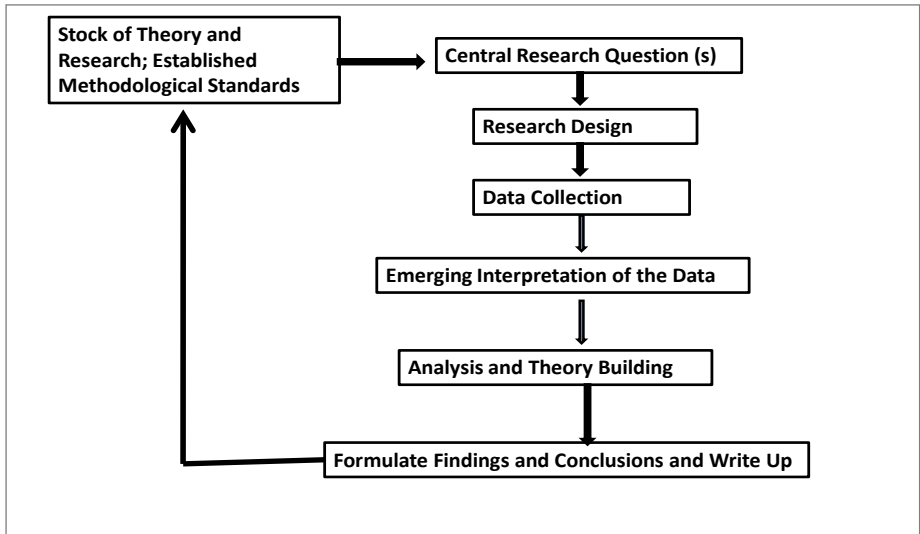
Figure 3.3: Positivist View of The Research Process
Source: Self-generated by the Author

Post-positivism

There has been criticism (Guba and Lincoln 2005; Biesta and Barbules 2004) of the positivist paradigm for applying the scientific method to undertake research on human affairs. These opponents have argued that uniform causal links that can be established in the study of natural science cannot apply in the world of the classroom situation where instructors and learners construct meaning (Guba and Lincoln 2005)). Karl Popper, however, argued that we should not quickly disregard all the good qualities of the scientific method. Rather, we can make small adjustments that can be improved upon to provide objective research within the social sciences. In his famous book, *The Logic of Scientific Discovery* (1959), Popper declared that there are no absolute truths. Moreover, he claimed that scientific theories cannot be confirmed but only falsified. Theories can never obtain the real truths but can only get closer to the truth (Popper 1959). Today, positivism 'claims a certain level of objectivity rather than absolute objectivity and seeks to approximate the truth rather than aspiring to grasp it in its totality or essence' (Crotty 1998:29). Generally, when people refer to themselves as positivists, they are talking more about probability than absolute certainty.

Some Criticisms of the Positivist Approach to Social Science Research

It is impossible for any theory in social science to be simple and precise because the world in which we live, and people's multiple perspectives and interpretations of events make theories complex and chaotic (Mack 2010). There are myriad variables that affect different events and people's actions that it is impossible to determine an absolute truth. Thus, the following criticisms have been leveled against the positivist paradigm: (a) it treats individuals as if they are passive and unthinking–human beings are less predictable than positivists suggest; (b) interpretivists argue that people's subjective realities are complex and this demands in-depth qualitative methods; (c) the statistics positivists use to find their 'laws of society' might themselves be invalid because of the bias in the way they are collected; and (d) by remaining detached, we actually get a very shallow understanding of human behaviour. These criticisms led to the development of a different paradigm–i.e. the interpretivist paradigm discussed in the ensuing subsection.

Interpretivist or Constructivist

Interpretivism, also known as post-positivism, is a term given to a contrasting epistemology to that of positivism (Bryman 2008:16). It concerns the theory and method of the interpretation of human action. While the positivist's point of departure is to explain human behaviour, the social sciences are more concerned with understanding human behaviour. As Max Weber (1864-1920) stated, the time has come for us to 'understand' social dynamics (translated from the German word *verstehen*, meaning 'to understand') and not simply to 'measure' it. Interpretivism is a philosophical position within an epistemological stance that treats reality as being fluid, knowledge is subjective, everyone has a 'common sense thinking', and the truth lies within the interpretation of a person's reality upon which s/he accordingly acts, reacts, and interacts with that 'reality'. This phenomenon is subject to a person's beliefs, values, culture, standing, language, shared meaning, and consciousness (see, for example, Bryman 2008:17; Grbich 2010). Interpretivism or Interpretive Theory, according to Charmaz (2006), calls for the imaginative understanding of the studied phenomenon. This type of theory assumes emergent, multiple realities, indeterminacy, facts and values linked, truth as provisional, and social life as processual (Chamaz 2006). The interpretivist paradigm has been heavily influenced by hermeneutics and phenomenology. Hermeneutics is the study of meaning and interpretation of historical texts (Ernest 1994). This meaning-making cyclical process is the basis upon which the interpretivist paradigm was established (Ernest 1994). Another strong influence

is the philosophical movement of phenomenology. A phenomenologist advocates the 'need to consider human beings' subjective interpretations, their perceptions of the world (their life-worlds) as our starting point in understanding social phenomena' (Ernest 1994: 25).

Therefore, the ontological assumptions of interpretivism are that social reality is seen by multiple people and these multiple people interpret events differently, leaving multiple perspectives of an incident. Table 3.3 shows some of the main thinkers and their philosophies associated with interpretivism.

Table 3.3: Interpretivist Thinkers and Philosophies

Main Thinkers	Underpinning Philosophy
Edmund Husserf, Arthur Schulty	Phenomenology
Wilhelm Dilthey, Han-Georg Gadamer	Hermeneutics
Herbert Blumer	Symbolic interaction
Harold Garfinkel	Ethnomethodology

Source: Self-generated by the Author

Interpretivism's main standpoint is that research can never be objectively observed from the outside; rather, it must be observed from inside through the direct experience of the people. Furthermore, uniform causal links that can be established in the study of natural science cannot be made in the world of the classroom where teachers and learners construct meaning. Therefore, the role of the scientist in the interpretivist paradigm is to 'understand, explain, and demystify social reality through the eyes of different participants' (Cohen et al. 2007:19). Researchers employing this paradigm seek to understand rather than explain phenomena. The main epistemological and ontological assumptions of the interpretivist paradigm can be summarised as follows: (a) reality is indirectly constructed based on individual interpretation and is subjective, (b) people interpret and make their own meaning of events, (c) events are distinctive and cannot be generalized, (d) there are multiple perspectives of an incident, (e) causation in the social sciences is determined by interpreted meaning and symbols, (f) knowledge is gained through a strategy that 'respects the differences between people and the objects of natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action' (Mack 2010:8), (g) knowledge is gained inductively to create a theory, (h) knowledge arises from particular situations and is not reducible to

simplistic interpretation, and (i) knowledge is gained through personal experience (Iacob et al. 2015).

The typical interpretivist research questions include the following: Why? How does a subject understand? What is the 'lived experience'? What meaning does the intervention have? To answer these questions, the methodology entails a combination of qualitative methods including, but not limited to, narrative, key informant interviews, focus group discussions, observations, ethnography, case study, and phenomenology.

The Interpretivist View of the Research Process

Table 3.4 and Figure 3.4 provide an overview of how an interpretivist approaches a social science research process.

Table 3.4: Interpretivism and Research

Aspect	Positivism
The researcher Human interest, intuition, reflection Research goal Research process Concepts and variables Unit of analysis Generalization patters Sampling requirements	Part of what s/he is studying Crucial to research process and investigation Increase general understanding of situation Probing rich data to increase understanding May include complexity of whole theoretical abstraction May be non-probability sampling method with a small number of cases for specific reasons

Source: Self-generated by the Author
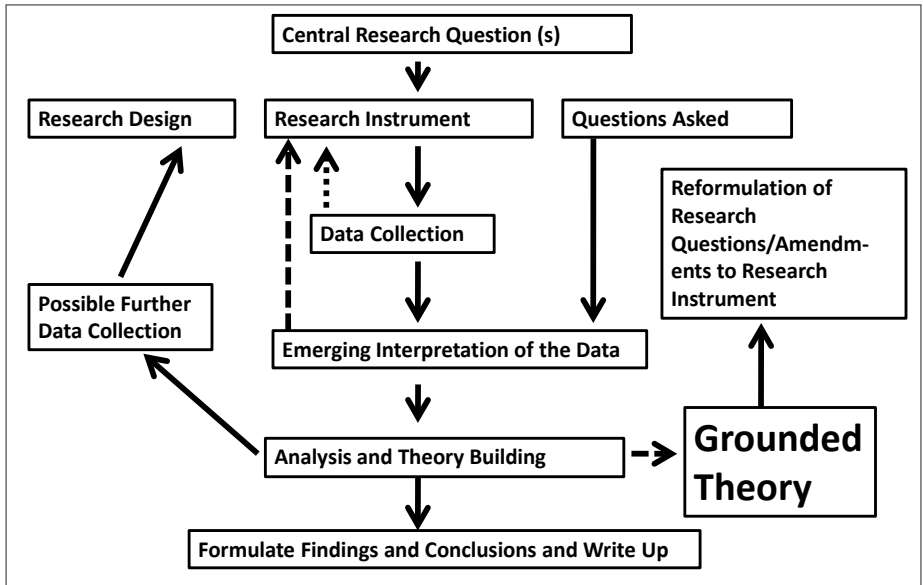
Figure 3.4: Interpretivist View of the Research Process
Source: Self-generated by the Author

Limitations of the Interpretivist Approach to Social Science Research

One of the limitations to interpretive research is that it abandons the scientific procedures of verification and therefore, results cannot be generalized to other situations. Therefore, many positivists question the overall benefit of interpretivist research. We respond to this question by pointing out that the research will resonate with other teachers, so it will be similar to other peoples' work. For example, action research, one of the methodologies from the interpretivist paradigm, shows teachers how issues can be interrogated and addressed in practical ways. It deliberately intervenes in the research setting to achieve change or improvement. Its goal is the development of local theories for practice rather than generalizable findings. Another criticism of interpretivism is that its ontological assumption is subjective rather than objective. As mentioned in the positivist paradigm section, I believe that all research is subjective. By selecting your paradigm, you are being subjectively oriented toward one way of doing research. You cannot divorce yourself from your perspective as a researcher. In qualitative research, you are being more subjective in the sense that you are not using a hypothesis and you are involving yourself in the research. However, interpretivists still take an objective

stance when analysing the data they collect. By bracketing their assumptions, they look at the data thoroughly so that the data informs them about what is going on in the environment, instead of their own perceptions.

Perhaps, the strongest criticism of interpretivism is that it neglects to acknowledge the political and ideological influences on knowledge and social reality. Moreover, interpretivism is not radical enough. While the positivist seeks to explain social phenomena and the interpretivist seeks to understand social phenomena, a researcher who seeks to change and to challenge social phenomenon is not represented.

The Critical Paradigm

In contrast to positivist or post-positivist perspectives oriented to understanding or explaining the world, critical theory is oriented toward critiquing and changing society as a whole. The critical paradigm stems from critical theory and the belief that research is conducted for 'the emancipation of individuals and groups in an egalitarian society' (Coehen et al. 2007:26). The critical paradigm embodies ideologies such as postmodernism, neo-Marxism, and feminism. Table 3.5 highlights the main thinkers and their philosophies that are associated with the critical paradigm.

Table 3.5: Critical Theorist Thinkers and Philosophies

Main Thinker	Underpinning Philosophy
Theodor Adorno, Max Horkheimer, Herbert Marcus, Erich Fromm	Frankfurt School and Critical Theory (1930s)
Karl Appel, Jurgen Habermas	Critical Theory (1970s)
Paulo Friere	Critical Pedagogy
Michel Foucault	Structuralism
Alastair Pennycook	Critical Applied Linguistics
Norman Fairclough	Critical Discourse Analysis
Eve Kosofsky Sedgwick, Judith Butler	Queer theory
Simone de Beauvoir, Betty Friedan	Feminism
Thomas Kuhn, Jacques Derrida	Post modernism

Source: Self-generated by the Author

Critical theory originated from the criticism that educational research was too technical and concerned itself only with the efficiency and rationality of the research design, neglecting social inequalities and issues of power (Gage 1989). According to the critical theorists, researchers should be looking for the 'political and economic foundations of our construction of knowledge, curriculum and teaching' (Gage 1989:5). Schools play an explicit part in this construction of knowledge-based power in society. In other words, education serves the interests of those who have power, usually the rich. Schools function to reproduce these inequalities and maintain the status quo (Gage 1989). Educational research in the critical paradigm should challenge these reproductions of inequalities. People must challenge dominant discourses. Educational research and schools, 'like other social institutions, such as the media and legislatures, must be the scenes of the necessary struggles for power' (Gage 1989:5). Moreover, this research paradigm has an agenda to change the participants' lives or the structures of the institutions. The main epistemological and ontological assumptions of critical theory can be summarised as follows: (a) social reality is defined by persons in society; (b) social reality is socially constructed through media, institutions and society; (c) social behaviour is the outcome of "particular illegitimate, dominatory and repressive factors, illegitimate in the sense that they do not operate in general interest—one person's or group's freedom and power are bought at the price of another's freedom and power" (Mack 2010:9-10); (d) knowledge is socially constructed through media, institutions and society; (e) 'What counts as worthwhile knowledge is determined by the social and positional power of the advocates of that knowledge'; and (f) knowledge is produced by power and is an expression of power rather than truth (Cohen et al. 2007: 26-27).

The typical critical paradigm's research questions include the following: Who gains power? How can this injustice be rectified? Can the exploited be helped to understand the oppression that undermines them? Who benefits from or exploits the current situation?

Critical Theorists' View of the Research Process

In critical theory, a researcher takes on the role of facilitator, raising not only their own level of consciousness about the object of study but also that of others. A researcher may facilitate change in the study group by providing greater insight into its members' situation and providing a stimulus for their community to take control of their future and initiate action and change. A novice critical researcher must first be 'resocialised' from previous exposures to positivism. This involves the conscious re-education about positivism and post-positivism and their limitations.

New researchers need to understand the perspective differences and understand both quantitative and qualitative methods so that they can understand how the perspectives differ and how the research is conducted. New researchers also need to understand the role that social issues have in the context and structure and uphold the values of empowerment and altruism in their work.

Limitations of the Critical Paradigm to Research

Critical theory is criticized for its elitism. By assuming that everyone needs to be emancipated, critical theorists proffer the view that they have been emancipated and therefore are better equipped to analyse society and transform it than anyone else (Iacob et al. 2015). Furthermore, there is a lack of evidence that illustrates what happens when you become emancipated and gain a critical consciousness. Is there any evidence that shows that once someone attains a critical consciousness, s/he stops reproducing inequalities that subtly oppress people? Furthermore, positivists criticize critical researchers for their deliberate political agenda and failure to remain objective neutral researchers.

Pragmatism

Pragmatism is not committed to any one system of philosophy or reality. Pragmatist researchers focus on the *what* and *how* questions of a research problem (Creswell 2003:11). Early pragmatists 'rejected the scientific notion that social inquiry was able to access the 'truth' about the real world solely by virtue of a single scientific method' (Mertens 2005:26). While pragmatism is seen as the paradigm that provides the underlying philosophical framework for mixed-methods research (Tashakkori and Teddlie 2003; Somekh and Lewin 2005), some mixed-methods researchers align themselves philosophically with the transformative paradigm (Mertens 2005). It may be said, however, that mixed methods could be used with any paradigm. The pragmatic paradigm places 'the research problem' as central and applies all approaches to understanding the problem (Creswell 2003: 11). With the research question being 'central', data collection and analytical methods are chosen from those most likely to provide insights into the question with no philosophical loyalty to any alternative paradigm. Therefore, Morgan points out that 'Pragmatism presents a radical departure from age-old philosophical arguments about the nature of reality and the possibility of truth' (2014:1049).As Hall also sconcluded, pragmatism offers 'an alternative epistemological paradigm. (2013:19). In this new worldview, knowledge consists of warranted assertions (Dewey 1941/2008) that result from taking action and experiencing the outcomes.

Three types of pragmatism have been distinguished. The first is *functional pragmatism*, which entails (a) knowledge should be gained and used for action, (b) knowledge should be useful for action and change, and (c) functional means that knowledge should be useful and applicable in action. The second is *referential pragmatism*, which encompasses (a) knowledge about action and (b) describing the world in action-oriented ways. It is postulated that 'the essence of society lies in an ongoing process of action, not in a posited structure of relations. Without action, any structure of relations between people is meaningless. To be understood, a society must be seen and grasped in terms of the action that comprises it' (Blumer 1969: 19). Action-oriented theories include social action theories, symbolic interactionism, activity theory, structuration theory, speech act theory/communicative action theory, affordance theory, and socio-instrumental pragmatism. The third is *methodological pragmatism*, which comprises (a) knowledge gained *through* action; (b) we learn about the world through action; (c) knowledge is based on actions, experiences, and reflections on actions; and (d) the 'true' nature of phenomena is shown first when we try to change them.

Methodology and Paradigms

In my own research, I was surprised to discover that a large number of texts did not provide definitions for the terms *methodology* or *method*. Some texts use the terms interchangeably and others present them as having different meanings. According to the third edition of the *Macquarie Dictionary,* 'methodology is the science of methods, a branch of logic. One which deals with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry' (2001:718) . This definition is consistent with much of the literature from Leedy and Ormrod 2005and Schram 2006, despite it being a generic definition as opposed to one which is discipline or research specific. Somekh and Lewin define methodology as both 'the collection of methods or rules by which a particular piece of research is undertaken' and the 'principles, theories and values that underpin a particular approach to research' (2005:346), while Walter argues that methodology is the frame of reference for the research which is influenced by the 'paradigm in which our theoretical perspective is placed or developed' (2006:35). The most common definitions suggest that *methodology* is the overall approach to research linked to the paradigm or theoretical framework while the *method* refers to systematic modes, procedures or tools used for the collection and analysis of data.

Matching Paradigms and Methods

Readers are advised by the literature that research which applies the positivist or post-positivist paradigm tends to predominantly use quantitative approaches (methods) to data collection and analysis, although not necessarily exclusively, while the interpretivist/constructivist paradigm generally operates using predominantly qualitative methods (Mertens 2005). The pragmatic paradigm provides an opportunity for 'multiple methods, different worldviews, and different assumptions, as well as different forms of data collection and analysis in the mixed methods study' (Creswell 2003:12). Likewise, the transformative paradigm allows for the application of both qualitative and quantitative research methods. Deconstructivist, and, in particular, poststructuralist research 'seeks to understand the dynamics of relationships between the knowledge/meaning, power and identity' (MacNaughton et al. 2001:46) applying data collected and analysed using qualitative methods. Poststructuralists emphasize the local nature of knowledge placing strict limits on the validity of the knowledge gathered and produced (MacNaughton et al. 2001). Table 3.6 provides a summary of the ways in which research paradigms transcend knowledge-claim boundaries.

Table 3.6 Summary of Paradigms, Knowledge Claims and Methods

Research Approach	Knowledge Claims	Strategy of Inquiry	Method	Use of These Practices of Research as a Researcher
Quantitative	Post-positivist assumptions	Experimental design Quasi-experimental design	Predetermined Closed-ended questions Performance, attitude, observation and census data Statistical analysis	Tests or verifies theories or explanations Identifies variables to study Relates variables in questions or hypotheses Uses standards of validity and reliability Observes and measures information numerically Uses unbiased approaches Employs statistical procedures
Qualitative	Constructivist assumptions	Ethnographic design	Emerging methods Open-ended questions Field observation, document data Text and image analysis	Positions himself or herself collects participant meanings Focuses on a single concept or phenomenon Brings personal values into the study Studies the context or setting of participants
Qualitative	Advocacy/ Participatory assumptions	Narrative design	Open-ended interview and audio-visual data Text and image analysis	Validates the accuracy of findings Makes interpretations of the data Creates an agenda for change/reform
Mixed Methods	Pragmatic assumptions	Mixed-methods design	Both predetermined and emerging methods Both open and closed-ended questions Multiple forms of data drawing on all possibilities Statistical and text analysis	Collects both quantitative and qualitative data Develops a rationale for mixing Presents visual picture of the procedure in the study Employs the practices of both qualitative and quantitative research

Source: Self-generated by the Author

Conclusion

From the discussions presented in this chapter and the literature reviewed, it should be clear to readers that paradigms as positions about epistemology, ontology and axiology, exert significant influences on the methodology to be used in a research project. Because each paradigm is undergirded by specific assumptions as discussed earlier, choice of a paradigm for your research implies that the research will be nested in a particular epistemology, ontology, and axiology, and that these elements will therefore guide you towards a particular methodology. Thus, the choice of a paradigm implies a near certainty about particular methodologies that flow from that paradigm. This relationship is very important because the methodological implications of paradigm choice permeate the research question/s, participants' selection, data collection instruments and collection procedures, as well as data analysis. Thus, research located in any of the four primary paradigms has a wide range of research methodologies to choose from. It is also worth noting, that it is quite possible to combine several research methodologies within one research paradigm. However, choice of the right methodologies needs to be informed by a good understanding of the different aspects of research paradigms discussed in this chapter.

References

Biesta, Gert, Barbules, Nicholas, 2004, *Pragmatism and Educational Research*, New York, NY: Rowman & Littlefield.

Bryman, Allan, 2008, *Social Research Methods 4th ed.*, Oxford, UK: Oxford University Press.

Charmaz Kathy, 2006, *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*, London, UK: Sage Publications.

Cohen, Louis, Lawrence Manion and Keith Morrison Keith, 2007. *Research Methods in Education* 6th ed., London, UK: Routledge.

Creswell, John William, 2003, *Research Design: Quantitative, Qualitative and Mixed Approaches*, Thousand Oaks, CA: Sage Publications.

Crotty, Michael, 1998, *The Foundations of Social Research: Meaning and Perspective in the Research Process*, London, UK: Sage Publications.

Dewey John, 2008 (original work published in 1941), 'Propositions, Warranted Assertibility and Truth', in J. Boydston, ed., *The Later Works of John Dewey, 1925-1953*, Carbondale, IL: Southern Illinois University Press.

Eriksson, Paivi and Anne Kovalainen 2008, *Qualitative Methods in Business Research 2nd ed.*, Helsinki, Finland: Sage Publications.

Ernest, Paul, 1994, 'Social Constructivism and the Psychology of Mathematics Education', in E. Ernest, ed., *Constructing Mathematical Knowledge: Epistemology and Mathematics Education*, London, UK: Falmer Press.

Gage, Nathaniel Lees, 1989, 'The Paradigm Wars and Their Aftermath: A 'Historical' Sketch of Research on Teaching Since 1989', *Educational Researcher* 18, 7:4-10.

Grbich, Carol, 2010, *Qualitative Data Analysis: An Introduction*, London, UK: Sage Publications.

Grix, Jonathan, 2004, *The Foundations of Research*, London, UK: Palgrave Macmillan.

Guba, G. Egon and Yvonna S. Lincoln, 2005, 'Pragmatic Controversies, Contradictions, and Emerging Confluences', in N. K. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research,* Thousand Oaks, CA: Sage Publications.

Guba, G. Egon and Yvonna S. Lincoln, 1994, 'Competing Paradigms in Qualitative Research', in N. K. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research,* Thousand Oaks, CA: Sage Publications.

Hall, Jonathan, 2013,'Pragmatism, Evidence and Mixed Methods Evaluation' (Special Issue: Mixed Methods and Credibility of Evidence in Evaluation), *New Directions for Evaluation*, 138:15-26.

Hirschheim, Rudy, Heinz K. Klein and Kalle Lyytinnen, 1995, *Information Systems Development and Data Modeling: Conceptual and Philosophical Foundations*, Cambridge, UK: Cambridge University Press.

Iacobs, Silvia, Popescu Constanta and Ristea Ana Lucia, 2015, 'The Role of Epistemological Paradigms in Research in Social Sciences and Humanities', *Theoretical and Applied Economics* 4, 605: 247-252.

Howell, Jennifer, 2014, *Teaching & Learning: Building Effective Pedagogies*, London, UK: Oxford University Press.

Kuhn, Thomas S., 1962, *The Structure of Scientific Revolution*, Chicago, IL: The University of Chicago Press.

Leedy, Paul D. and Jeannie Ellis Omrod, 2005, *A Handbook for Teacher Research from Design to Implementation*, Upper Saddle River, NJ: Pearson Education.

Mack, Lindsay, 2010, 'The Philosophical Underpinnings of Educational Research', *Polyglossia* 19:5-11.

Macquarie Dictionary (3rd edition), n.d., North Ryde, Australia: Macquarie Library, retrieved on May 24, 2017 from https://www.macquariedictionary.com.au/

McNaughton, Glenda, Sgarne A. Rolf and Iram Siraj-Blatchford, 2001, *Doing Early Childhood Research: International Perspectives on Theory and Practice*, Canberra, Australia: Allen & Unwin.

Mertens, Donna, 2005, *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative and Mixed Methods* 2nd ed., Boston, MA: Sage Publications.

Morgan, David L., 2014, 'Pragmatism as a Paradigm for Social Research', *Qualitative Inquiry* 20, 8:1045-1053.

Popper, Karl, 1959, *The Logic of Scientific Discovery*, London, UK and New York, NY: Routledge.

Proctor, Bob, 2009, *It's Not About Money*, Scarborough, Canada: Burman Books Inc.

Schram, Thomas Heinz, 2006, *Conceptualizing and Proposing Qualitative Research* 2nd ed., Upper Saddle River, NJ: Pearson Education.

Somekh, Bridget and Cathy Lewin, 2005, *Research Methods in Social Sciences*, London, UK: Sage Publications.

Tashakori, Abbas and Charles Teddlie Charles, eds., 2003, *Handbook of Mixed Methods in Social & Behavioral Research*, Thousand Oaks, CA: Sage Publications.

TerreBlanche, John Martin and Kevin Durrheim, 1999, *Research in Practice: Applied Methods for the Social Sciences*, Capetown, South Africa: University of Capetown Press.

Walter, Magiie, 2006, *Social Science Methods: An Australian Perspective*, Oxford, UK and New York, NY: Oxford University Press.

Wand, Yair and Ron Webern, 1993, 'On the Ontological Expressiveness of Information Systems Analysis and Design Grammars', *Information Systems*, 3, 4: 217-237.

4

Brief Descriptions of Qualitative Research Methods

**Ishmael Munene, Chris Shisanya, Joy Obando and
Doctoral Scholars**

This chapter provides brief descriptions of many approaches within the following qualitative methodological strands: Action Research, Archival Research, Case Study, Discourse, Ethnomethodology, Feminist, Field Research, Interpretive, Interview, Narrative, Reflexive, Symbolism, and Miscellaneous.

Action Research Methodology

In building specific research processes, action research has been used to provide a suitable methodology (Mcmanners 2016). Action research has been used to generate knowledge that has enabled organizations, people and communities to develop and grow. It has enabled research communities to link together diverse groups of practitioners, scholars and institutions in a multilingual and multimedia way (Bradbury 2013). According to Reason and Bradbury, action research is "a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview...It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities" (2001:125).

Action research is seen more of an orientation to inquiry and it is applicable across a wide range of fields that include, agriculture, architecture, gender and

race, educational development, and social work (Bradbury 2013), to name a few. In the book titled *Action Research: A Methodology for Change and Development* (2005), Somekh describes Action Research as a methodology which researchers in the social sciences can use to overcome the difficulties and limitations of traditional methodologies. Two Action Research methods have been developed: (1) Participatory Action Research and (2) Teacher Action Research. Brief descriptions of these methods follow.

Participatory Action Research

In the book edited by Reason and Bradbury (2001), Robin McTaggart defines the Participatory Action Research method as "a process through which members of an oppressed group or community identify a problem, collect and analyse information, and act upon the problem in order bring solutions and to promote social and political transformation" (McTaggart 2001:1). Participatory Action Research is seen as a practical way of solving practical problems in communities and as one way of empowering marginalized and poor groups in society toward shifting political power in their favor (Selener 1997).

Asuquo and Etowa (2016) used the Participatory Action Research method to identify ways in which nurses in Nigeria could work together to actively engage in research productivity and policy development. They focused particularly on issues that affected mother-to-child transmission of HIV/AIDS.

Teacher Action Research

Teacher Action Research is different from traditional research and it challenges traditional researchers' views, particularly where social issues are concerned. It takes into consideration emotions, creativity, and intuitions (Brydon-Miller et al. 2003; Vula and Saqipi 2015). In traditional research, the researcher normally considers the independence of data and s/he cannot influence the data, while in Teacher Action Research, the researcher is part of what is being investigated. Teacher Action Research enables teachers to re-examine and change their knowledge by participating in joint activities (Miller and Pine 1990; Koshy 2009).

For example, Vula and Saqipi (2015) use Teacher Action Research to examine the impact of teachers' self-confidence and their role as researchers towards fostering collaboration amongst peers, as well as in improving their classroom teaching practices. In the article titled "Critically Conscious Learning: Using Participatory Action Research Methods to Engage Students" (2016), Shahnazarian uses the Teacher Action Research method to identify ways in which educators

can engage students in class to raise their critical consciousness. He believes that critical consciousness in students can enable them to become active agents in both their daily lives and in class. The result of his experiment was positive as he realized the gradual development of students to be able to eliminate those factors that systematically oppressed them.

Archival Research Methodology

Archival Research Methodology is a qualitative approach that includes a broad range of activities applied to facilitate the investigation of documents and textual materials produced by and about organizations. Classically, the archival research method entails the study of historical documents: that is, documents written at some point in the relatively distant past, providing us access that we might not otherwise have to the organizations, individuals, and events of that earlier time (e.g., birth certificates, diaries, marriage records, and letters). However, archival methods are also employed by scholars engaged in non-historical investigations of documents and texts produced by and about contemporary organizations, often as tools to supplement other research strategies (field methods, survey methods, etc.). The two strands of Archival Research Methodology have been (1) Document Analysis and (2) Archival Strategies and Techniques (Shenhay 1999). These are briefly illustrated in the subsections that follow.

Document Analysis

Document Analysis is a form of qualitative research method in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Shenhay 1999). Analyzing documents calls for coding content into themes similar to how focus group or interview transcripts are analyzed. A rubric can also be used to grade or score a document. There are three primary types of documents:

1. Public Records: the official, ongoing records of an organization's activities. Examples include student transcripts, mission statements, annual reports, policy manuals, student handbooks, strategic plans, and syllabi.
2. Personal Documents: first-person accounts of an individual's actions, experiences, and beliefs. Examples include calendars, E-mail, scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers.
3. Physical Evidence: physical objects found within a study's setting (often called artifacts). Examples include flyers, posters, agendas, handbooks, and training materials.

Some studies such as that by Salancik and Meindl (1984) have employed the Document Analysis method by using the content analysis technique to analyze annual reports to identify and test claims about attributions of blame for losses, reduced earnings, or other turbulence in shareholder expectations. Shenhav (1999) used this content analysis technique to examine professional engineering and union publications at the turn of the century to understand the engineering origins of modern management concepts and practices.

Archival Strategies and Techniques

Archival Strategies and Techniques simplify the evaluation and assessment of models and associations. They add ineffectual maintenance, administration, securing and application of information resources (Cliggett 2012). Digital data have three generally accepted archival strategies which are technology (1) protection, (2) emulation, and (3) migration. In technology protection, original information is retained with the software or hardware which is used to access it. The only danger is that technology is dynamic, and the hardware/software may become obsolete (Lancaster 1986). The emulation approach is mostly centralized in updating outdated technology to prevailing technological systems. This strategy is less recognized for archaeological archives (Michelson and Rothenberg 1992). Lastly, migration is based on normalization and refreshment. Thus, it involves transferring data to software-autonomous structures and thentransferring that information through uninterrupted technical structures over time (Hedstrom 1991).

Strategies for both technical and non-technical archival data also include a transparent outline of the purposed backup and archiving. This is done to promote long-term retention and to address the challenges of overwriting and continuously evolving material (Roberts 1994). Establishing a robust archiving system allows for the storage of information on different tools such as flash drives, repositories, E-mail and other online sources (Bikson 1988). This addresses the needs of accessibility, privacy, and duplication. Combining backup and archive storing addresses the needs for recoverability, data updating, and relevancy. Storage and application intelligence must be utilized to identify and group information together (Michelson and Rothenberg 1992). This is because information carries intrinsic value whose archiving can be an unclear and controversial process. The implementation of value-based data conserving policies allows for efficiency in the capturing, maintenance and migration of information (Roberts 1994).

Techniques for archiving include keeping data for long-term use using tools such as digital repertories or diaries (Moore 2010). Privacy, confidentiality and

anonymity must always be maintained. Qualitative researchers have a right to control the access of information and systemized anonymization of information (Cliggett 2012). In studies utilizing qualitative data analysis tools, the use of non-proprietary digital formats is encouraged to stabilize the data format: for example, the use of XML (a metalanguage which allows users to define their own customized mark-up languages, especially in order to display documents on the Internet) for text data sets (Moore 2010).

Case Study Methodology

There are many definitions of Case Study Methodology. According to Bormley, it is a systematic inquiry into an event or a set of related events that aims to describe and explain a phenomenon of interest (1990:302). The unit of analysis can vary from an individual to a corporation. While there is utility in applying this methodology retrospectively, it is often used prospectively. Data come from documentation, archival records, interviews, observations, participant observation and artefacts (Yin 1994). It is often called case review, case report, and used loosely in scientific and professional literature.

A case report may consist of a summary of a report relating to a patient's record or a law case. For example, case studies in health research involve in-depth interviews with patients or a key informant, review of medical reports, and observations and syntheses of patients diaries. The Case Methodology can be descriptive, explanatory, or exploratory, as described in the ensuing sub-sections.

Descriptive Case Study

The Descriptive Case Study method makes its difference from other types of case study methods in the sense that it is a qualitative approach that illustrates facts focusing on a single or specific nature of a phenomenon. According to Tobin(2012),a descriptive case study is one that is focused and detailed on propositions and questions about a phenomenon that is carefully scrutinized and articulated at the outset. This articulation of what is already known about the phenomenon is called the Descriptive Theory. In the same line, Jack (2008) states that a Descriptive Case Study method is a means to provide tools for researchers to study complex phenomena within their contexts. When the approach is applied correctly, it becomes a valuable method for health science research to develop theory, evaluate programs, and develop interventions.

The main goal of the Descriptive Case Study method is to assess a phenomenon in detail and in depth, based on an articulation of the Descriptive Theory. This

theory must respect the depth and scope of the case under study, which is conveyed through robust propositions and questions such as 'What is?', 'Where is?', 'How is' and 'When was?' If the Descriptive Theory cannot be developed easily before a case study, then the researcher may want to consider whether the case is more of an exploratory case study. Descriptive studies seek to reveal patterns and connections, in relation to theoretical constructs, in order to advance theory development. Some researchers refer to descriptive case studies as intensive or focused case studies. These are semantically helpful terms for directing the researcher's desired level of intellectual penetration of the phenomenon (Jack 2008).

The Descriptive Case Study method is applied in studies that are primarily concerned with finding out 'what is' and the 'role of' in qualitative studies such as observational (behavioral) studies. Some medical scientists use this approach to illustrate the development, the particularity, and the evolution of certain diseases in relation to others. It helps to specify the boundaries of the case, and it contributes significantly to the rigor of the finished case study. The power and promise of a descriptive case study lie in its potential for mining for abstract interpretations of data and theory development.

This approach has been used laboriously in the social and medical sciences to illustrate patients' attitudes and behaviors towards certain therapeutic measures (curative or preventive) (Ayoh 2015). The case of HIV has been very prominent. It was used by Ayoh (2015), for example, to describe the female ritual called *Tekoumbeng* used as a socio-cultural therapy in the Mbu community of the North West region of Cameroon. She demonstrates how social ills were prevented or treated by using the ritual practice. The description of the various stages in the ritual practice exposes the perceptions and significance given to this ritual and the outcome, which is fear of infliction of pain.

Explanatory Case Study

The Explanatory Case Study method is used to connect ideas to understand cause and effect relating to a particular phenomenon (Fisher 2004). It is a research tool employed across the social science disciplines and fields of urban planning, public administration, public policy, management science, social work, and education applicable where the number of variables far outstrips the number of data points. The method is used to investigates the uniqueness of cases, with an aim to answer the 'how' and 'why' questions. According to Mills (2012), the method presents data bearing cause-effect relationships explaining how events happened and how they are connected to formulate a theory.

Explanatory Case Study method has also been used to research complex systems in order to look for explanations of the nature of certain relationships. Taylor (2014) argues that the degree of uncertainty about the research problem determines the methods that will be implored to provide an understanding of the relationships that exist between variables.

Explanatory case studies should consist of an accurate description of the facts of a case, considerations of alternative explanations, and a conclusion based on credible explanations that are congruent with the facts. This is where a researcher determines something specific that s/he wants to explain to the audience using data (Mills 2012). Explanatory case studies should follow an outline that clearly indicates the priorities to be explored and demand some type of flowchart that portrays the patterns to be investigated to ensure that the investigation stays on track (Taylor 2012). Developing such logic at the beginning of a research project can guide investigators as to what topics need to be explained to develop a theory.

In a study of explanatory models of hypertension among Nigerian patients at a University Teaching Hospital (2010), Taylor conducted semi-structured in-depth individual interviews and focus groups with 62 hypertensive patients. Later, the interviews and focus groups were audio-taped and transcribed verbatim guided by phenomenology and content analysis using the qualitative research software ATLAS.ti ("a powerful workbench for the qualitative analysis of large bodies of textual, graphical, audio and video data") to develop some themes. Another example is that of Nadkani (2013) who explored coping strategies among university students with alcohol use disorders. Interviews were conducted to determine the coping strategies and to understand the problem and influence of the patient's journey.

Exploratory Case Study

The Exploratory Case Study method is designed to conduct research about a problem when there are few or no earlier studies to refer to with the intention to identify key issues and key variables (Mselleb 2017). The focus is on gaining insights and familiarity for later investigation or undertaken when problems are in a preliminary stage of investigation.

The method might involve a broad literature search or conducting focus group interviews to learn more on the subject (Mansur et al. 2015). The exploration of new phenomena in this way may help a researcher's need for better understanding, may test the feasibility of a more extensive study, or determine the best methods to be used in a subsequent study.

An explorative qualitative study was undertaken in Malaysia by Mansur et al. (2015) to explore patients' perspectives and satisfaction regarding treatment and services at the Cure and Care Centre in Kota Bharu. A convenience sample of 20 patients was recruited to participate in semi-structured in-depth interviews. Content analysis was used to identify the salient themes that the study generated.

Discourse Methodology

Discourse Methodology deals with a set of utterances which constitute a recognisable speech event: for example, conservation, a joke, a sermon, an interview, a debate (Benvenisce 1971). It is used to analyze a formal and orderly and usually extended expression of thought on a subject, a connected speech or writing, and a linguistic unit larger than a sentence. The two varieties of the methodology – i.e. (1) Conversational Analysis and (2) Discourse Analysis – are briefly discussed in the subsections that follow.

Conversational Analysis

The Conversational Analysis method is a primarily inductive and micro-analytic qualitative approach for studying language as it is used in social interaction. Conversational analysis focuses on language as a resource for social action and its procedure of basing analyses on the details of participants' own behaviors. The method consists of the collection and duration of instances of an interactional occurrence, the case-by-case analysis of that phenomenon, and the production of a formal account of its operation (Hoey and Kendrick 2015:3).Conversational analysis studies the methods to which participants orient when they organize social action through talk. It investigates rules and practices from an interactional perspective and studies them by examining recordings of real-life interactions (Mazeland 2006:5).It tries to comprehend the meanings and hidden rules or structures that establish such an order in a conversation.This type of analysis is employed to determine how participants in a natural conversation understand and respond to one another when it is their turn to talk.

Conversational analysis can be applied by employing technical transcripts of audio and video recordings of everyday and institutional talk of various kinds. It includes the analysis of how people take turns in conversation, how turns at talk are designed, what it means to overlap with another speaker or produce a delayed response, how people make reference to one another, how actions (e.g., complaining, questioning, assessing, inviting) are accomplished, how people develop and move through courses of action, how people solve problems in hearing,

speaking and understanding, and a range of other conversational phenomena (Aceron 2015:2). For instance, Mazeland notes that "If the current speaker selects another participant as next speaker before her turn has arrived at its first possible completion point, the selected party has both the right and the obligation to begin the next turn at this point. If no other speaker is selected, another participant may self-select as next speaker. If none of these options is used the current speaker may continue"(2015:5). Also, Aceron (2015) used the technique to examine interactions between judges and lawyers in courtroom encounters.

The Conversational Analysis method has been applied in judicial settings as a data collection technique through the use of audio and video recording. This is instrumental because in courtrooms, communication varies from time to time, based on the desired goal of every party involved. In court interactions, talk seems to be the heart of conversation. There is interaction if the talk takes place between the parties (both counsels) with the judge in the court. All utterances in talk can be transcribed and recorded. Conversational talk in interaction can be audio or video recorded as these keepings and recordings may provide a complete and accurate record of facts and details of the utterances (Aceron 2015:2).

Discourse Analysis

The Discourse Analysis method entails a detailed exploration of political, personal, media or academic 'talk' and 'writing' about a subject, designed to reveal how knowledge is organized, carried and reproduced in particular ways and through particular institutional practices (Muncie 2011). Discourse analysis is a generic term covering a heterogeneous number of theoretical approaches and analytical constructs. It derives, in the main, from linguistics, semiotics, social psychology, cultural studies, and Post-structural Social Theory. It is primarily a qualitative method of 'reading' texts, conversations and documents that explores the connections among language, communication, knowledge, power, and social practices. In short, it focuses upon the meaning and structure (whether overt or covert) of acts of communication in context (Muncie 2011).

Potter and Wetherell (1994) identify three key concerns which characterize the research practice of discourse analysis: (1) locating talk and texts as social practices (2) identifying processes of action, construction and variability and (3) recognizing the rhetorical or argumentative organization of talk and texts (Muncie 2011). By interacting with text/talk, we interpret experience through structures already available to us and in doing so lend those structures a solidity and normality which are difficult to bypass (Mills 1997). In different ways, all of

us are regularly addressed by discourses that position us. They remind us of who we are and what might be expected of us in different social situations (Muncie 2011).

The Discourse Analysis method does not provide a tangible answer to problems based on scientific research, but it enables the researcher access to the ontological and epistemological assumptions behind a project, a statement, a method of research. The method allows us to view the "problem" from a higher stance and to gain a comprehensive view of the "problem" and ourselves in relation to that "problem." This method is meant to provide a higher awareness of the hidden motivations in others and ourselves and, therefore, enable us to solve concrete problems, not by providing unequivocal answers, but by making us ask ontological and epistemological questions (Muncie 2011) that seek information for which there are no single answers.

Numerous types of discourse-based research can be identified. For example, a branch of linguistics might be concerned with providing systematic accounts of conversational exchanges in particular settings, whilst some areas of psychology might explore the effect of discourse structure on recall and memory. However, the broad appeal of discourse analysis to social researchers lies in its ability to reveal how institutions and individual subjects are formed, produced, given meaning, constructed and represented through particular configurations of knowledge (Muncie 2011).

The revelation of how text and talk produce identifiable subject positions is one of the basic skills of the discourse analyst. Data may be collected from any number of sources from legal statutes and media reports to diaries and personal testimonies. Identifying their explicit and implicit discourses can be achieved in many ways. For example, in deconstructing policy documents, the researcher might ask the following questions: What are the conditions out of which this text emerged? What are the social, cultural and political conditions which made this text possible? What traces of other texts (intertextuality) are evident in the text? How consistent, contradictory, or coherent is the text? How are contradictions managed? How are people, objects and thoughts categorized? Who and what are included or excluded? Who and what are viewed as normal, natural, and common sense? Are there any gaps, silences, or 'absent presences'? What is presented as legitimate or illegitimate? Who are assumed to be the primary readers of the text? What assumptions are being made about the audience? What are the likely social effects of the text? What alternative readings might be made by different social groups? (Muncie 2011).

The preceding questions will force a researcher to look beyond the immediate message of a text to reveal how it produces and disseminates particular ways of knowing. Importantly, this does not simply end at a level of identifying multiple interpretations but in gaining insights into how some discourses come to be taken as more legitimate than others. In other words, discourses not only have tangible material effects, but they can also be contested and resisted by counter discourses and social practices (Muncie 2011).

Frohmann (1992) introduces the Discourse Analysis method as applied to the field of Library Science to analyze the debate between proponents of various research methods. In so doing, he deconstructs the claims and arguments made by each proponent and provides his own interpretation of the "yearning for natural-scientific theory" in the field. He perceives this yearning as dominating the discourse of research in Library Science and expands his critique to the dominance of modern capitalist discourse in society.

Ethnomethodology

Ethnomethodology encompasses a variety of methods utilized to analyze how individuals use everyday conversation and gestures to construct a common-sense view of the world. These methods are described in the ensuing subsections. It should be noted here that while Conversational and Discourse Analyses reflect the subject matter of Ethnomethodology, the former focus on the communicative competencies that undergird ordinary conversation and looks more objectively at the structures of interaction, the latter is interpretative.

Critical Ethnography

The Critical Ethnography method is an approach that attempts to link the detailed analysis of ethnography to wider social structures and systems of power relationships. It is similar to conventional ethnography in that it attempts to illicit subjects' meanings and grasp their points of view. What is important for critical ethnography, however, is that the probing of the subjects' meanings is not the end of the story. The subjects operate in a socio-historically specific milieu and are not independent of structural factors. Their meanings may appear to be group-centered but are mediated by structural concerns. Critical ethnography must stay alert to these structural elements.

Critical ethnography makes use of the usual ethnographic data collection processes such as in-depth interviews, semi-structured interviews, and unstructured interviews, particularly dialogic interviewing, as well as participant and non-

participant observation. These tend to be developed in specific ways in critical ethnography

The Critical Ethnography method applies a critical theory-based approach to ethnography. It focuses on the implicit values expressed within ethnographic studies and, therefore, on the unacknowledged biases that may result from such implicit values (en.wikipedia.org). It has been called Critical Theory in practice. In the spirit of Critical Theory, the approach seeks to determine symbolic mechanisms, to extract ideology from action, and to understand the cognition and behavior of research subjects within historical, cultural and social frameworks.

Critical ethnography incorporates reflexive inquiry into its methodology. Researchers employing this approach position themselves as being intrinsically linked to those being studied and, thus, inseparable from their context. In addition to speaking on behalf of subjects, critical ethnographers will also attempt to recognize and articulate their own perspectives as a means of acknowledging the biases that their own limitations, histories, and institutional standpoints bear on their work. Furthermore, critical ethnography is inherently political as well as pedagogical in its approach. There is no attempt to be purely detached and scientifically objective in reporting and analysis. In contrast to conventional ethnography which describes what is, critical ethnography also asks what *could be* in order to disrupt tacit power relationships and perceived social inequalities (Anderson 1989).

There are three ways of undertaking critical ethnographic research. The first is to consider the subject group in a wider context. This is the weakest form of critical ethnography and may not strictly be critical if, for example, the contextualization merely takes the form of analyzing functional relationships between the subject group and the wider social milieu. The second is to focus on the wider structural relations and examine the ways in which the social processes that are evident in the subject group are mediated by structural relations. The third is to incorporate ethnography directly into a dialectical analysis. In this approach, the understanding developed from the ethnographic study is integrally related to the deconstruction of the social structures. Ethnographic techniques are thus used to elaborate an understanding that goes beyond surface appearance and thereby specifies the nature of the essential relationship of the structure under analysis.

In the first two approaches to critical ethnography, there is a tendency to explore a group and then situate it. In the third, the tendency is to begin with the structural relationships and then undertake an ethnographic enquiry in order to facilitate structural analysis. Marxists, feminists and Black perspectives have all

adopted critical ethnography of one kind or another to get a closer understanding of the subjects' perceptions with a view to elaborating a critical analysis designed to show how these perceptions relate to wider social structures of oppression (Anderson 1989).

Sensory Ethnography

The Sensory Ethnography method is informed by an understanding of the interconnected senses. It incorporates 'innovative methods' to go beyond listening and watching, using multiple media; it goes beyond the use of writing in ethnographic representation, looking towards arts practice. Sensory Ethnography entails new ways of understanding the products of ethnographic methods, from collecting data to producing knowledge to knowing in practice. It embodies a move 'beyond text' to the tacit, unspoken, non-verbal from writing, to documentary film and photography to new engagements with arts practice. A critical look at research shows a shift from academic research to applied ethnography, to public ethnography, requiring new ways of engaging (with) research participants and audiences. The idea of Sensory Ethnography responds to three contemporary theoretical challenges that disrupt the idea of ethnography being about watching and listening: (1) emplacement – mind-body-environment (see Howes 2005); (2) the interconnected senses, sensory perception and sensory categories (see Ingold 2000); and (3) knowing in practice and knowing that we cannot necessarily express in words, all the time (see Wenger 1998; Harris 2007).

The theoretical impulse of the method across disciplines has produced understandings of experience, practice, and knowledge as multisensory involving all the senses, and understanding the senses as interconnected, thereby rendering the conventional focus on observing, listening and writing/reading insufficient. The methodological demand of the approach has led to innovative techniques being developed and a need to understand the sorts of knowledge they produce through a paradigm that recognizes the sensory experiences they involve. The public/applied/knowledge transfer aspect has birthed a context whereby in order to engage non-academics and wider publics with the findings of ethnographic research that require going beyond conventional written articles and reports, one can turn instead to participatory arts and other types of encounters.

There is also the serendipitous sensory learning of being there (e.g., in long-term ethnographic research, in research that involves intensive participation in everyday or work activities, or festive events). Add to that the ethnographer as sensory apprentice (e.g., in learning sporting, dance or other skilled practices).

Based on such participation, the ethnographer then has to unravel the academic implications of such learning and of the ways of knowing s/he has experienced. Learning through apprenticeship requires an emplaced engagement with the practices and identities that one seeks to understand. This involves a reflexivity and self-consciousness about this learning process, establishing connections among sensory experience, specific sensory categories, and philosophical, moral and other value-laden discourses (and the power relations and political processes they might be connected to), and creating relationships between these and theoretical scholarship. Ethnographers have used different methods of participating as apprentices and of documenting their experiences of apprenticeship, including visual methods (fixed and hand-held cameras).

Further examples of how the method has been applied include the works of Lee and Ingold's (2006) walking ethnography in Aberdeen; Adams and Bruce's (2008) walks in Manchester; Lund's work on Walking in Spain (2008) and in Scotland (2006); and Sarah Pink's (2007) work on 'Walking with Video' and 'The Urban Tour' (Pink 2008). Thus, the Sensory Ethnography method is the latest in a series of revisions of ethnography that respond to theoretical developments and applied/ public research agendas. It acknowledges the interconnectedness of the senses and the importance of research that goes beyond watching, listening, and writing. It reflexively uses 'innovative methods' and multiple media in research and in the communication of research to diverse audiences. It establishes new possibilities for interdisciplinary collaborations. The Sensory Ethnography method is still an emergent field of practice. Finally, interest in this area is growing considerably, but there has been surprisingly little reflection on the use of sensory techniques in existing literature. It is an emergent field of methodological interest, and more discussion is needed. Anyone doing sensory ethnography should not just report on his/her findings but should also document and reflect on how the method can contribute to its development.

Team Ethnography

Team Ethnography is the act of formulating a team of active participants to perform a group task that speaks to the research. Given the diverse nature of interdisciplinary subjects, team work provides a platform that convergesthese multiple subjects into a focused idea (Schlesinger et al. 2015). Erickson and Stull (1998) state that the making of a team with all the complex negotiations and arrangements that follows thereof provides a deliberative process and a positive forum to test the research topic under deliberation. In essence, their argument advances the strength of unity in diversity.

Platt (1976) applied the team ethnographic approach and reported that in every given research project, the strength is determined by "the point of intersection of several careers" and such determination needs to be addressed as fairly as possible. Clerke and Hopwood (2014) expound that the team ethnographic approach provides a good framework for the enhancement of organizational management. The approach provides an opportunity for stakeholders and related constituents to express their views on practical issues affecting their professional environment. In return, the institutional or organizational management becomes enlightened about problem areas that call for reform. Whereas Team Ethnography provides a good methodological approach necessary for the attainment of best results, there is a pending risk as to how this approach should be applied. Clerke and Hopwood (2014) encourage democracy in the exercise of Team Ethnography to the extent that every participant, stakeholder and/or constituent is given the opportunity to air out their views. This democratic approach eliminates bias and promotes equity among team members. Filled with such sense of belonging, they put in their best to advance the institutional or organizational agenda.

An example of Team Ethnography is the composition of the Council for the Development of Social Science Research in Africa (CODESRIA) College of Mentors. The organization hosts a team of mentees from multiple disciplines across the social science research network. United in diversity, the team of interdisciplinary mentees works to develop comprehensive research methodological approaches suitable for conducting research in the social sciences.

Ethnographic Methodology

Ethnographic Methodology refers to the study of people considering their culture, social meanings and day-to-day activities of their society. Thus, Ethnographic Methodology is not a particular technique of data collection but a style of research that is distinguished by its objective. In addition to this, Denzin and Lincoln (2011) note that Ethnographic Methodology, emerging from anthropology, and adopted by sociologists, is a qualitative methodology that lends itself to the study of the beliefs, social interactions, and behaviors of small societies, involving participation and observation over a period of time, and the interpretation of the data collected.

Ethnographic Methodology is used to study social interactions, behaviors, and perceptions that occur within groups, teams, organizations, and communities. Its roots can be traced back to anthropological studies of small, rural (and often remote) societies (Reeves et al. 2008). In short, the method is utilized to study a people's or society's culture, interaction, day-to-day activities, behavior, and social meanings.

This methodology is a central aspect in studying people or a society's culture, behavior, and day-to-day activities. Therefore, applying this method requires intensive involvement of the researcher and the participants. Since the central aim of ethnography is to provide rich, holistic insights into people's views and actions, as well as the nature (i.e. sights, sounds) of the location they inhabit, through the collection of detailed observations and interviews (Reeves et al. 2008), applying this method in history, health, entrepreneurship, family business, cultural and social issues is recommended.

The method may also inculcate real-time methodology, in-depth interviews also referred to ethnographic interviews, participant observation, personal document and discourse analysis of language. Applying Ethnographic Methodology requires three basic concepts: (1) *field work* – a researcher in the field setting with the community, village, and institution participating and observing the day-to-day activities and behaviors of the people where the research is conducted; (2) *participant observation*; (when a researchers investigates the life of a group by participating in its activities) and (3) *key informants*. As a result, the task of ethnographers is to document the culture and the perspectives and practices of the people in these settings. The aim is to 'get inside' the way each group of people sees the world, and ethnographers typically gather participant observations, necessitating direct engagement and involvement with the world they are studying. Owing to the complex nature of social life, ethnographers need to record a variety of elements in their field notes. Finally, analysis of ethnographic data tends to be undertaken in an inductive, thematic manner: i.e. data are examined to identify and to categorize themes and key issues that 'emerge' from the data. Through a careful analysis of their data, using this inductive process, ethnographers generate tentative theoretical explanations from their empirical work.

An example of a way to use Ethnographic Methodology is to apply it in the investigation of traditional conflict resolution mechanisms of a selected ethnic group. The essentiality of the tenets and applications of such mechanisms will be better captured by using such a methodology.

Ethnographic Analysis of Visual Data

An ethnographic study may involve an in-depth examination of what people say or do as captured visually through movies, images from Closed Circuit Televisions (CCTV) footage, archived films, photographs, diagrams, video-taped records, and television news. Image is a primary tool for ethnographers as it represents perspectives, experiences and influences of individuals. Indeed, video cameras, camcorders and webcams offer novel ways of data collection in ethnographic studies

(Schnettler and Raab 2008). This is because not all research participants are able to express themselves verbally, while some prefer visual expression. Visual data can be used alone or in combination with other information sources. Unique ethical issues with visual data include (a) ensuring confidentiality as participants may be identified by others even when the images have been altered, (b) informed consent (i.e. permission granted in the knowledge of the possible consequences, typically that which is given by a patient to a doctor for treatment with full knowledge of the possible risks and benefits) – some situations that need capturing may not get informed consent from participants, (c) copyright ownership of the images, and (d) negative interpretation of images. Visual data can be analyzed using software like NVivo and CAQDAS (Computer Assisted Qualitative Data Analysis).

In a study by Mckee (2011) titled "A Story of High school Inclusion: An Ethnographic Case Study", the researcher used photographs and video recordings to shadow the life of a physically challenged student in a high school. The data collected were analyzed using NVivo computer software. The tool allowed the researcher to navigate the abundant amount of data to show that "there was broad agreement among all the school participants, academic and administrative, but that strong tensions arose between the student's parents and the school personnel" (Mckee 2011:1)

Ethnographic Decision Tree Modeling

This is a machine learning algorithm that partitions the data into sublets. The process begins with a binary split and continues until no further splits can be made. The aim of this method is to encapsulate data in the smallest possible tree; it is the simplest possible explanation of phenomena, produces decisions faster than other methods and is easy to look at and understand. Barlett (1989) listed the practical uses of this method as:

a. *Segmentation*: identify persons likely to be members of a particular class – e.g., PhD students in the humanities and social sciences.
b. *Stratification*: assign cases into one of several categories – e.g., high, medium, and low risk groups for infection of sexually transmitted diseases.
c. *Prediction*: establish rules and use them to predict future events – e.g., how many girls are likely to drop out of school at primary/elementary level.
d. *Data reduction and variable screening*: select a useful subset of predictions from a large set of variables for use in building a formal parametric model – e.g., the perception of professional women over forty years to voting in a general election.

e. *Interaction identification*: identify relationships that pertain only to specific subgroups and specify these in a formal parametric model – e.g., how physically challenged children engage in social interactions.

f. *Category merging and banding continuous variables*: recode group predictor categories and continuous variables with minimal loss of information.

Ethnography in Organizations

The Ethnography in Organizations method is used to evaluate the wide range of ethnographic research that is usually conducted in organizational settings (workplace) such as bank, hospital, public and private firms, etc. Organizations seem to have rigid structures and strict hierarchical systems that can sometimes affect human relations, productivity, creativity, and generate fear/humour in the lives of workers and customers. The method is employed to provide a rich description of everyday life, symbols and the cultural norms and values of a workplace, together with an understanding of the social relations and structures of a community (Yanow et al. 2011-2012).

The method requires the full participation of a researcher and the researcher is expected to appraise himself/herself with a general understanding of the organization's culture. This enables the researcher to produce valid explanations for the behaviours of its members. The research is conducted in a natural context so that social events and processes can be explained in terms of their relationships to the context in which they occur. Structured interviews are also applied in the data collection processes. The method is expected to discover interests in some types of social phenomenon and/or in some theoretical issues or practical problems and to evaluate the situation in order to improve the organization's efficiency.

A study conducted by Heracleous (2001) examined an ethnographic study of culture in the context of organizational change. He adopted an ethnographic research approach and other clinical elements to discover the nature and role of culture in the context of organizational change. The study was conducted at the operations of a global human resources consulting firm, People Associates, in the United Kingdom. Heracleous recognized some cultural assumptions and values and looked at how they related to behaviors, using his relationship with the organization as a rich data source. Two main contributions are acknowledged in his work. First, his work shows how an organizational culture develops historically, is internally coherent, and has strong effects on behaviors that should be studied and understood by managers and clinicians undertaking organizational change programs. Second, it highlights and illustrates how researcher reflexivity and subject reactivity can be useful sources of data for understanding an organization.

Living the Ethnographic Life

This method is based on the fact that Ethnograpy is more than just a methodological approach; it is also a way of life (Powdermaker 1966; Spradley 1970; Hannerz 2003). As Walters states,

> The ethnographer depends on sustained relationships that are developed over a period of time to develop the trust and confidence of respondents that will enhance the collection of reliable and truthful data...When such relations are handled properly they provide the entry to observations and discussions that truly illuminate the activities under study. Because gaining entry to groups whose members often distrust or dislike outsiders is so difficult and time consuming, it tends to be one of the ethnographer's most satisfying accomplishments (Walters 1979:1).

The issues of access and trust also are evident in Spradley's 1970 work. According to him, trust is necessary to gain access to information about social deviants such as drunks. He tries to establish a relationship between drunkenness and homelessness and these individuals' expereinces with law enforcement systems (Spradley 1970).

Also, educational research has been traditionally dominated by quantitative and experimental conceptions of research. Ethnography, which involves participation and observation, and which is systematic, comprehensive and topic-oriented, could provide the opportunity for mutual relations of interaction between ethnographers and sponsors of educational research. With systematic and comprehensive information about the community to be studied in an educational context, ethnographers will be able to test hypotheses in the field of educational research (Hymes 1977).

Examples of research that employed the Living the Ethnographic Life method include those investigations that utilized unusual informants, social rejects, informants trying to understand the way of life of a marginal population, drunks, etc. (Spradley1970). Other examples include the study of the Akan using ethno-historical data concentrating on Bono Queen Mothers (Meyerowitz 1951, 1972 and 1995) and the ethnography of conflicts in Northern Ghana (Awedoba 2010).

Meta-Ethnography

Noblit and Hare (1988) define the Meta-Ethnography method as a synthesis of interpretive research. According these scholars, the prefix "meta" indicates intent to focus on the synthesis enterprise. The method is also defined by Wolcott (1980) as a uniquely interpretive approach to research synthesis which enables a rigorous procedure for deriving substantive interpretations about any set of interpretive

studies. Additionally, according to Glass et al. (1981), Meta-Ethnography can be considered "a complete study in itself" as it compares and analyzes texts, thereby developing new interpretations in the process.

In essence, Meta-Ethnography as a way of synthesizing a study is basically a demonstration of how interpretive studies may be reduced, compared, and translated. As a basic approach within interpretivism, the Meta-Ethnography method is common to anthropologists and sociologists and social scientists at large (Glass et al. 1981).

Noblit and Hare (1988), who are grounded authorities in Meta-Ethnography, outline a seven-step process for conducting research using the method. The steps are as follows: (1) getting started, (2) deciding what is relevant to the initial interest, (3) reading the studies, (4) determining how the studies are related, (5) translating the studies into one another, (6) synthesizing translations, and (7) expressing the synthesis.

The Meta-Ethnography method was employed for a study conducted by Campbell et al. (2011) on lay experiences of diabetes and diabetic care. Herein, ten qualitative studies of adult patients' perspectives of diabetes were purposefully selected (purposive sampling is a non-probability technique used to select a study's subjects based on the population's characteristics and the objective of the study) and questions proposed by the critical appraisal skills program (CASP) adapted and used to assess papers prior to the synthesis. Each study was reviewed independently by two experienced social scientists. The level of agreement between reviewers was determined. Three papers were excluded: one because it turned out not to be qualitative research, one because the quality of the empirical work was poor, and one because the qualitative findings reported had also been recorded in another paper already included. The synthesis, which had two distinct elements, was conducted using the Meta-Ethnographic method. First, four papers containing typologies of patient responses to diabetes were synthesized. Second, six key concepts were identified from all seven papers as being important in enabling persons with diabetes to achieve a balance in their lives and to attain a sense of well-being and control. These included time and experience, trust in self, a less subservient approach to care providers, strategic non-compliance with medication, effective support from care providers, and an acknowledgement that diabetes is serious. The evaluation confirmed that the Meta-Ethnography method can lead to a synthesis and extension of qualitative research in a defined field of study. Additionally, a practical method of qualitative research assessment evolved. This process was promising but required further testing and evaluation before it could be recommended for more widespread adoption.

Selecting Ethnographic Information

Ethnographic data refer to information about a particular culture or group, as gathered from the native/community members, about their own perspectives and unique worldviews. They are meant to provide the researcher with an insider understanding of norms, culture, language, health conditions, power and political realities, religion, economic conditions, and worldviews. Ethnographic data can be gathered by anyone who is trained to be a participant or non-participant observer or even members of the community who are trained in interviewing and other data collection techniques (Rabinowitz 2016). This is important because it enables a researcher to select the right information in order to gain insights into the lives of the people s/he studies – thus, the import of the Selecting Ethnographic Information method.

The kinds of data that a researcher is to select and gather for an ethnographic study is dependent on the kinds of questions the researcher wants answered, from whom to gather information, how long it will take to gather the data, and what methods s/he will use to gather the information (Rabinowitz 2016). Also, the kinds of data that one can select and gather for an ethnographic study include artefacts, languages, narratives, and visual information like archived photographs and relics. To select and gather ethnographic information, the researcher should (a) make a decision about the kind of information needed, (b) determine whether s/he has the resources to enable him/her to gather the data, (c) gain the trust of the group s/he engages, (d) plan his/her field study, and (e) conduct his/her fieldwork and keep field notes for analysis (Rabinowitz 2016).

Understanding Ethnographic Texts

The Understanding Ethnographic Texts method enables a researcher to read a text as a context embedded output and its epistemological contribution to the theory or social, political, or economic practice. This involves understanding the uniqueness of the study, the concepts used, the wording used, or practices described (Atkinson 1999). Therefore, the method allows a researcher of an ethnographic study to understand the positionality of a text in scholarly work and its discourse with scholarly traditions.

The utility of the Understanding Ethnographic Texts method is achieved through active reading, which is the conscious thinking of the text as an artefact. The researcher has at the back of his/her mind how claims are made, what legitimizes the claims, and how evidence is used to build a case/argument/description.

An example of the application of the Understanding Ethnographic Texts method is the re-reading of Thomas Lawrence's *Lawrence of Arabia* by Ali Mazrui (2006). In this work, Mazrui identified many inaccuracies which were influenced by Lawrence's positionality as a British soldier and a writer caught between two literary and cultural traditions: that is, the Islamic and the Eurocentric/Western.

Feminist Methodology

According to Nancy Naples, "Feminist Methodology is the approach to research that has been developed in response to concerns by feminist scholars about the limits of traditional methodology to capture the experiences of women and others who have been marginalized in academic research. Feminist methodology includes a wide range of methods, approaches, and research strategies" (Naples 2007). The two methods that have emerged from Feminist Methodology, and illustrated in the following subsections, are Feminist Ethnography and Feminist Fieldwork.

Feminist Ethnography

The Feminist Ethnography method is an intense feminist participant-observation approach whose product is an integrated cultural/contextualized account. Feminist ethnographic literature identifies four elements of feminist ethnography: (1) an integrative tendency, (2) transdisciplinarity, (3) an emphasis on contextualized theory, and (4) a focus on women's everyday lives (experiential). These are in response to "dualisms, abstractions, and detachment of positivism, rejecting the separations between subject and object, thought and feeling, knower and known, and political and personal, as well as reflection in the arbitrary boundaries of traditional academic disciplines" (Stacey 1988). Hence, general concerns of the literature have been on representation of women, and social change, which reflect a characteristic of postmodern debates.

Feminist Ethnography focuses on women's lives in natural settings taking into consideration the eminent limitations and challenges and opportunities of representation, highlighting their experienced oppression. According to Schrock, all these processes are emancipated in their own lives and "feeling an ethical responsibility towards the communities in the researchers work" (Schrock, 2013).

Feminist studies on apartheid have shown that apartheid was an attack on the home and family. Focusing on women showed the disproportionate suffering of women in situations of conflict and war. Also, Yacob-Haliso (2010) shows how the notion of forging a home for Liberian returning refugee women is important for thinking and planning about immigrant repatriation from sites of difference.

Feminist Fieldwork

The Feminist Fieldwork method refers to an approach used by, for, and about women (Knight and Ruddock 2009). Feminism is not only a mode of thought or body of theory, but also an identity for the researcher that carries with it a moral element, an agenda forcritique and change. Feminists are concerned not only about gender but also about the inequalities associated with race, sexuality, class, and other differences. However, a debate has emerged about whether men can be feminists (Adichie 2015). This is a general characteristic of the crisis in identity politics between its inclusive and exclusionary potential. Feminist Fieldwork teaches researchers how to think in terms of feminine perspectives and how to translate their research into feminine practice and analysis (Kleinman 2007).

The method is also quite relevant towards understanding changes in the gender division of labor within certain national economies (George 2005). Feminist Fieldwork also plays a major role in explaining the impact of transnational migration on women's class position (Pratt 2004; Stephen 2007; Keogh 2015) and women's opportunities for cross-class solidarity and grassroots-based organizing (Mohanty 2003). Feminist Fieldwork has also been utilized to address the restructuring of work and its impact on women and gender culture as an effect of neo-liberal economic adjustments (Ferguson 2008).

Feminist Fieldwork has therefore emerged as a qualitative approach that is ideal for capturing the lived realities of women. For example, the method has been employed in studies of breast cancer crisis among women and engaging women in telling their own stories and experiences.

Field Research Methodology

Field Research Methodology comprises a variety of methods utilized to collect and analyze primary (i.e. original or unavailable) information collected outside a laboratory, library, or workplace. The many strands of the methodology are described in the following subsections.

Analyzing Field Reality

This method provides a new way of thinking about the analysis of fieldwork that aids researchers in many disciplines. It provides a researcher with the means for understanding meaning in the field. The author presents a typology of realities articulated and structure which shapes not only the understanding of interaction in a given setting but that of the ethnographer as well (Gabrium and Hostein 2009).

Analyzing Field Reality is crucial in identifying the existing conditions of a given research environment. This includes strengths which can be viewed as a resource, a unique approach, or capacity that allows an entity to achieve its defined goals, or weaknesses, which would limit and impede progress toward defined goals (Kim 2005). The study of military reconnaissance is an example of analyzing field reality before the actual military operations.

Emotions and Fieldwork

In qualitative research, the researcher is a key player in the process of data collection and analysis. As a method, Emotions and Fieldwork emphasizes the value of the researcher's emotion (i.e. natural instinctive state of mind deriving from his/her circumstances, mood, or relationships with others) as a process of understanding a phenomenon under study. The method places value in use of emotions of both the researcher and the subjects in knowledge production (Holland 2007). The method also adds power in understanding, analyzing and interpreting given data. This is contrary to the positivist approaches that classify emotions as human inefficiency for social scientific research.

According to Kleinman and Copp (1993), researchers' feelings about their professional identities, their works, and the people they study affect the way final analyses are processed. Sometimes the emotions are so strong that they become crucial in the researchers' observations, conversations, and the way they theorize concepts or phenomena.

The Emotions and Fieldwork method is commonly applied in studies that involve researchers in activities either with which they have direct connections, or which exhaustively engage their feelings. Examples include women involved in understanding gender issues around women's discourse, researchers involved in outlaw emotions such as studying about prisons, and medical studies involving patients as informants. An example of a study in which emotions were utilized as an integral part of the methodology is that by Arditti, Joest and Lambert-Shutte titled "The Role of Emotions in Fieldwork: A Self-study of Family Research in a Corrections Setting' (2010).

Dangerous Fieldwork

Most qualitative studies involve some form of risks to researchers. This is because some researchers have to work in unfamiliar environments. The sources of danger may range from an obvious situation to some that are blurred. This is common for researchers conducting studies in environments involving violent social conflicts.

Conducting qualitative research ischallenging, but the obstacles are even greater if a study is done in highly violent settings which can affect successful outcomes and research safety. The predisposing factors to violence that a researcher is likely to face are influenced by, for example, and not limited to race, age, or sexuality (Goldstein 2014).

The Dangerous Fieldwork method is common in the fields of anthropology, sociology, criminology, nursing and health care, drugs and alcohol, and law. With Dangerous Fieldwork, we examine the kinds of dangers researchers face and provide strategies for reducing any risks in perilous situations: for example, researchers who work among various groups such as outlaws, prostitutes, youth gangs, and those infected with HIV/AIDS. Here, we discuss the hazards of working with informants in inherently dangerous occupations. The documented, but increasingly important, subject of sexual harassment and assault is addressed as well. These emphasize the importance of carefully appraising research settings for possible dangers.

These are studies common in areas involving violent environments like street crimes, including armed robbery and murder, youth gangs, street children, drug gangs, and mafias. Other examples include studies on alcohol and drug-related phenomena, and those infected with HIV/AIDS.

Clinical Perspective of Field Research

The Clinical Perspective of Field Research method involves intervention by the researcher in a company, in an organization, or in a research field. The researcher does more than just observe; he intervenes on the prevailing problem. The clinical model involves observation, data collection, and reporting to affected clients, organizations, or companies.

The method enables organizations and their management to define and gain a deeper understanding of their problems. Two important aspects in clinical research relate to (a) process consultation that guides the clients in solving their problems and (2) expert consulting that literally prescribe solutions (Karlsson 2016).

For example, Spradlin (2012) used this method to help more than 100 corporations, government agencies, and foundations to improve the quality and efficiency of their innovation efforts and, as a result, their overall performance. Through this process, which he calls "challenge-driven innovation," clients define and articulate their businesses, technical, social, and policy issues and present them as challenges to a community of more than 250,000 problem-solvers – scientists, engineers, and other experts from 200 countries.

Gender and Field Research

The Gender and Field Research method is an approach for carrying out a baseline study to gain practical knowledge of how gender issues affect a study's participants. This method is applied when researchers work within local communities facing multiple vulnerabilities: those emerging from conflict or displacement, or gender, social or economic marginalization (Williams et al. 2010).

Williams et al. (2010) interviewed three graduate students who had engaged in community-based gender research and encouraged them to reflect on their experiences. The interviewees had some things in common: they all recently graduated from The Fletcher School of Law and Diplomacy, all conducted their research during summer in various parts of the African continent, and they worked both independently and with the support of local and/or international organizations. Each came to his/her respective project with a different background and unique perspective. What links them all is their determined application of a feminist curiosity to human security issues.

Membership Roles in Field Research

When conducting research, it is necessary for researchers to detach themselves from their academic or everyday life roles to be able to have an active role in securing the trust of the group being studied, thereby becoming a participant in their research. Such research calls for a range of well-defined tools such as informal interviews, direct observation, participation in the life of the group, collective discussion, analyses of personal documents produced within the group, self-analyses, results from activities undertaken off or online, and life histories (Marek 1985; Bolton 1995).

The Membership Roles in Field Research method is exemplified two important studies. One such study is that of Marek (1985) which explored prison subculture as a political prisoner in communist Poland. The other work is that of Bolton (1995)on sexual minority subcultures by anthropologists and sociologists who are themselves lesbian, gay, bisexual, or transgender.

Methodology of Field Reality and Research

Often in field research, a researcher encounters methodological challenges which may be unforeseen. Thus, what the researcher has identified in the literature review is at variance with the reality on the field. S/he may sometimes face embarrassing and awkward situations while trying to get into field sites. This, in

turn, raises issues of the emotional closeness that field research requires. Before the actual fieldwork, a researcher does not often envisage the extent to which the process takes him/her away from his/her comfort zone and restriction on access to participants and how much time and energy the fieldwork requires. However, his gratification lies in the legitimacy of his data and, by extension, his research (Kleinman and Copp 1993). The Methodology of Field Reality and Research method therefore allows a researcher to identify such variations through a pilot study which will better inform the research instrument.

Politics and Ethics of Fieldwork

Field research has produced substantial social benefits, while also posing some troubling ethical questions. Intensive fieldwork involves the negotiation of trust between a researcher and the researched. It is an occasion of trust-making and breaking among the many parties who are actively engaged in a research project and taking the different cultural contexts into consideration. Thus, as with any form of research dealing with human subjects, a researcher must ensure that ethical boundaries are never crossed. A researcher must have clearly established boundaries before the outset of the study and have guidelines in place in case any issues cross the line of ethical behaviour.

The Politics and Ethics of Fieldwork method comes into play when the researcher decides to obtain informed consent from every individual in the group of study; obtain the informed consent for participant observation from the leadership of the group being studied; or not inform anyone of one's true purpose of the study for fear of influencing the attitudes of members, thereby skewing the observations recorded. It is also maintained in the Belmont Report of 1979 that above anything else, it is the researcher's responsibility to ensure that the participants of the study do not suffer any ill effects directly or indirectly from a study. Participants must be informed of their rights as subjects of the study, and that they, as a group, were justly chosen for study. DeWalt, DeWalt and Wayland (1998) employed Politics and Ethics of Fieldwork as their method of inquiry when they engaged in research involving minors and research among a population where illegal activities may have occurred.

Psychoanalytic Aspects of Fieldwork

Rational, dispassionate, an emotional outsider, and someone unaffected by the field setting are the traditional views of the fieldworker. This view, however, is changing because contemporary literature has pointed to the fieldworker's own personal stake

and involvement in the research setting. Thus, the psychoanalytic exploration of fieldwork pays particular attention to the psychodynamic dimension of the research encounter and how unconscious processes structure relations among a researcher, a subject, and the data gathered; hence, there is a need to show how the fieldworker's unconscious mind often shapes the interaction between researcher, subject, and setting (the role played by affective and cognitive processes in research).

The Psychoanalytic Aspects of Fieldwork method is a fascinating and challenging reminder to a qualitative researcher of the complexities of working in the field. Hunt (1989) takes an assertive step in facilitating the capacity of investigators in the field to make effective use of their inner emotional resources which is in divergence from classical and interactionist sociological theory because it applies the psychoanalytic perspective to the fieldwork process. Drawing upon her experiences and in-depth interviews with some of her colleagues, Hunt (1989) convincingly demonstrated that unconscious strivings, aversions, and emotional conflicts within the investigator played a major role in the process of selecting, studying, and constructing hypotheses around target populations.

Semiotics and Fieldwork

Semiotics is a broad term that pertains to communication and meaning in a social-cultural context. Thus, one of the forms of qualitative inquiry is a combination of semiotics and field work. The method is used to explore the study of sign and sign processes (semiosis), indication, designation, likeness, analogy, allegory, metonymy, metaphor, symbolism, signification, and communication (Darle 1998; Hodge and Kress 1988; Vanini 2007).

Semiotics refers to the assessment of signs and symbols to interpret data (Shanks and Darke 1998). Two forms of semiotics have been identified: (1) structural and (2) social semiotics. These are mostly employed by ethnographers, interpretivists, interactionists, and other groups of qualitative researchers. Hence, fieldwork may be conducted to study the role of signs as part of social life: the nature of science and the laws governing them. It is mostly applied in linguistic studies.

Structural semiotics in qualitative research assists in the evaluation of how signs, symbols and structures of semiotic rules explain people, rather than in understanding how people make, use, and renegotiate semiotic rules (Hodge and Kress 1988). Thus, researchers emphasize the importance of structures because they believe that the interrelations of semiotic systems hold the codes or rules that direct the conventions of signification, whether these are in kinship, etiquette, mathematics, or art (Vannini 2007). Social semiotics attributes meaning to power

instead of merely attributing power to meaning (Hodge and Kress 1988:2) and locate the origin of meaning within the field of semiosis or, in other words, within the process of context-bound and conflict-laden interpersonal interaction (Hodge and Kress 1988). For social semiotics, much like for symbolic interactionism, meaning emerges out of the concerted intercourse of humans, each with differing motives, goals, and outlooks (Vannini 2004).

The Semiotics and Fieldwork method was used by Manning to show that ecology, technology and subculture in the police communications system (PCS) affected communication semiotics (Atkinson 2001). It was observed that the textual information (message) developed by the operators was shaped and altered systematically through technology (the contact or channel), the operators' and dispatchers' message-work (connotative, static, and metalingual), and the meanings attributed to the message received by the officers on the ground. Selectively sent forward and put in new contexts (with new referents), the signs (or words) used by citizens to describe a 'life situation' or quasi-emergency were transformed into a 'job' by officers.

Interpretive Methodology

Interpretive Methodology is a collection of methods used by researchers to demonstrate that individuals' knowledge of reality is socially constructed by them which, by extension, is also true for researchers. The four variants of Interpretive Methodology are briefly described in the proceeding subsections.

Interpretive Biography

The Interpretive Biography method can be described as an unfolding and expanding orientation to qualitative social science research that draws inspiration, concepts, processes, and real-life experiences. Interpretive Biography, or "autoethnography, re-tells and re-performs past life experiences in a sequential manner. The life story becomes an invention, a re-presentation, a historical object ripped or torn out of its contexts. It means to seize hold of a memory as it flashes up at a moment of danger" (Benjamin 1968:257) to see and rediscover the past, not as a succession of events but as a series of scenes, inventions, emotions, images, and stories (Ulmer 1989).

In applying the Interpretive Biography method, conditions for rediscovering the meanings of a past sequence of events are established (Ulmer 1989). In so doing, the author develops new ways of performing and experiencing the past. To represent the past this way does not mean to "recognize it 'the way it really

was.' It means to seize hold of a memory as it flashes up at a moment of danger" (Benjamin 1968:257) to see and rediscover the past, not as a succession of events but as a series of scenes, inventions, emotions, images, and stories (Ulmer 1989).

Where a victim recounts his or her past experience, say for example September 11, 2001 in the United States, a researcher who wants to understand what was going through the mind of the victim can use the Interpretive Biography method. It could be a victim putting the past events in his or her autobiography (Denzin 1989).

Interpretive Phenomenological Analysis

The Interpretative Phenomenological Analysis method is an approach to psychological qualitative research with an idiographic focus, meaning that it aims to offer insights into how a given person, in a given context, makes sense of a given phenomenon (Denzin 2012). The aim of the method is to explore in detail how participants make sense of their personal and social world. The main currency for a study using this method is the meanings that particular experiences, events, and states hold for participants.

Studies based on this method focus on examining how individuals make meaning of their life experiences. A detailed analysis of personal accounts followed by presenting and discussing the generic experiential themes is typically paired with a researcher's own interpretation, which is an expression of double hermeneutics in practice. The method draws upon phenomenology, hermeneutics, and idiography.

In applying the method, a researcher follows the assumption that people try to make sense of their own experiences and are experts in these experiences. For example, if an interviewee is talking about caring for his/her partner then s/he is the expert in that situation not the interviewer. From the interview, the researcher will then produce an analysis of the interviewer's interpretation of the participant's experiences. This involves reading and re-reading a transcribed text of the interview to identify common themes presented throughout the interview; one such theme may be something along the lines of emotions.

Phenomenological studies will thus focus on how people perceive and talk about objects and events, rather than describing phenomena according to a predetermined categorical system, conceptual and scientific criteria. This involves 'bracketing' one's preconceptions and allowing phenomena to speak for themselves

Interpretive Policy Analysis

The study of policy analysis is one of the social science fields that have been growing rapidly. It emerged to better understand policy-making processes and to supply

policy-makers with reliable policy-related knowledge about specific problems. Policy-making is equivalent to representation where it also means intervention in a specific social, economic, or political issue. The Interpretive Policy Analysis method therefore begins with observation (Freeman n.d.). Policy analysts research a policy issue to advise policy-makers on some decision relative to that issue (Yanow 2000). For Wagenaar (2015), interpretive approaches to political studies focus on meanings that shape actions and institutions and the ways in which they do so. Critical elements encompass political actions and institutions. However, interpretive analysis is situation-specific; hence, it does not entail general laws or policy contexts.

The Interpretive Policy Analysis method is a source of reflection rather than direction or prescription for policy-makers (Freeman n.d.). It assists policy actors to learn about what they do. The likely outcome of the methodology is renewed attention to process instead of a product of policy-making in any context. According to Freeman (n.d.), the method generates among policy-makers a second order of awareness of what they do and what they might do differently. The method is not primarily concerned with findings or outcomes. Its impact is felt in process, as the research is conducted, in interviews, conversations and communications with policy-makers and practitioners. Policy analysis has traditionally been undertaken in advance of legislative or other policy decision or acts. However, it has also been extended to evaluating policies after they have been developed and to the evaluation of implementation activities themselves (Yanow 2000).

Fischer, Miller and Sidney (2007) edited a handbook that utilised the Interpretive Policy Analysis method that highlights the evolution of the field, stages in policy-making, as well as the role of political advocacy and experiences in the processes. Freeman (n.d.) also attempted to explain the meaning and application of the Interpretive Policy Analysis method, while Yanow (2000) wrote widely about policy analysis as a research methodology in policy-making.

Phenomenological Research Method

According to waters (2016), Edmund Husserl is one of the early pioneers of the Phenomenological Research Method in the early 20th Century. It is a qualitative method that is essentially concerned with the description of a lived experience of a phenomenon.

The method is applied by asking respondents through interviews to relay full descriptions of their experiences such as memories, thoughts, feelings, and much more. Clarification of details on self-reports given by the respondents is also made by asking follow-up questions for further description of the details.

Mallon and Webb (2006) applied the Phenomenological Research Method to evaluate 25 game players' reported experiences and framed criteria by which the players judged those games. Results from the study yielded prescriptions on good narratives to assist game designers. However, it is essential that an analytic, descriptive framework of traditional narrative elements in games be established for designers to consider prescriptions for good narratives based on them (Mallon and Webb 2006).

Interview Methodology

Interview Methodology comprises several methods used by researchers to ask participants a series of questions in order to gain knowledge. Described in the subsections that ensue are the three methods that encompass Interview Methodology.

Active Interview

The Active Interview method is a form of interpretive practice involving the respondent and interviewer as they articulate ongoing interpretive structures, resources, and orientations with what Garfinkel (1967) calls "practical reasoning". The method considers the interviewer and the respondent as equal partners in constructing meaning around an interview event. Here, the interview subject is not objectified and constructed as a passive individual; rather, the Active Interview method emphasizes the interaction as significant (Holstein & Gubrium 2004).

The method is designed in such a way that a researcher can tell his/her respondent what the study is about and convince the respondent of its utility. This method can be applied when a project is centered on the quality of care and quality of life of nursing home residents, for example.

Life Story Interview

The Life Story Interview method is a qualitative approach for gathering information on a person's entire life. The method can be used in an interdisciplinary study to understand single lives in detail, how an individual plays various roles in society, and how individuals' lives interact as a whole. It is transferable across disciplines and from one researcher to another (Dan 2008; Robert 1998 and 2002).

The application of the Life Story Interview method requires a chronological path of the interview: i.e. from the subject's childhood to the present. The method usually ends up yielding a short autobiography and the finished product is a first-person narrative (Dan 2008; Robert 1998 and 2002).

The Life Story Interview method has been employed by many researchers to get narratives from individuals and to understand human society. It was first used to understand the ways of life of Native Americans. It was later used to interview criminals and prostitutes in Chicago, and it was also used to explore how the historical moment influences lives: for example, studies of Martin Luther King and Mahatma Gandhi conducted by Erik Erikson (1958 and 1969).

Long Interview

How do social actors define their experience? What does "home" mean to the elderly? What is "innovation" for management? Qualitative methods have the unique power to answer such questions by giving the investigator a penetrating glimpse into the minds and lives of their respondents. The Long Interview method focuses on one of the most powerful and efficient variants of these methods: i.e. the intensive interview – a sharply focused and rapid process that seeks to diminish the indeterminacy and redundancy that attends more unstructured research processes. In his thorough and concise presentation, McCracken (1988) presents the special strengths and advantages of this most useful and important qualitative research technique and presents the necessary tools that enable the researcher to take full advantage of this method.

The Long Interview method provides clear and comprehensive coverage of the processes and issues involved in intensive interviewing. Key issues in qualitative methodology in general and the Long Interview in particular are discussed. The four steps of the Long Interview process are carefully elaborated ways to maintain and judge the quality of qualitative work are presented, and strategies for writing up results are suggested. Included are appendices designed to simplify research design, preparation, and training such as a sample questionnaire for biographical data, standard ethics protocol, and a list of budget considerations. These appendices are combined with a discussion of key theoretical and methodological issues in qualitative research in general to provide both researchers and their students with an invaluable reference manual for their research toolkit (McCracken 1988).

Narrative Methodology

Narrative Methodology entails interpretive storytelling methods. The object of a study becomes the story which focuses on how groups or individuals make sense of actions and events in their lives. Narrative inquiry contests the thinking behind quantitative methods and questions the idea of "objective" data (Boje 2001). Illustrated in the following subsections are the four strands of Narrative Methodology.

Narrative Analysis

The Narrative Analysis method, according to Earthy and Cronin (2008), refers to the interrogation of data basically aimed at understanding why and how people in society talk about their lives as a series of stories or a single story. It is a process of gaining additional understanding of societal environment and the (re)construction or production of data (Earthy and Cronin 2008; Gilbert, 2008).

Narrative Analysis has been used in the study of education, organizational behavior, cognitive science, sociology, and knowledge theory, among others. It uses techniques which rely primarily on oral representation, visual representation, or documentation of human life (Boje 2001).

Narrative Approach to Organizational Studies

From a broader perspective, the Narrative Approach to Organizational Studies method utilizes organizational storytelling which conceptualizes strategy, management and organizational studies. It could also be seen, on the one hand, as an intentional instrument used to conduct research on business-oriented individuals while, on the other hand, it is a process of interpreting, as well as understanding organizational life. This method is therefore used mainly to reconstruct the organizational structure of a study through the utilization of the storytelling approach. As a result, it has emerged as a major tool for researchers in the fields of sociology, management, public administration, education, political science, and anthropology (Czarniawska 1997).

Narrative Methods for the Human Sciences

According to Riessman (2008), Narrative Methods for the Human Sciences set out three levels of inquiry and analysis in narrative research. These include (1) stories told by research participants, (2) interpretive accounts by investigators (narrative of narrative), and (3) readers' reconstructions (narrative of narrative of narrative). These levels broadly correspond to the three stages of (1) fieldwork, (2) analysis, and (3) write up. Riessman (2008) also delineates the following four main methodological approaches which cut across different types of narrative research:

1. *Thematic Analysis:* This is a situation where content is the exclusive focus (minimal focus on how the narrative is spoken or written). This form of analysis is close to Grounded Theory but keeps the story intact and often uses prior theoretical concepts. Thematic meanings and understanding the 'point' of the narrative are emphasised over language and form. Narratives are often situated in their macro context while the local context is neglected.

2. *Structural Analysis:* In addition to analysing content, structural approaches pay attention to narrative form and attempt to draw out the underlying meanings inherent in communicative acts. Structure can refer to genre, a larger storyline, or linguistic form, and often entails great attention to details of speech in order to understand how the narrative is composed. This focus on how content is organised can generate insights beyond what is simply 'said' in a narrative.

3. *Dialogic/Performance Analysis:* Here, questions around who narrates, when, and why, come to play. Seeing narrative as dialogically produced and performed, dialogic/performance analysis views stories as social artefacts which say as much about society/culture as they do about a person/group. This analytic approach is a hybrid of different traditions that emphasize the interactional nature of social reality.

4. *Visual Narrative Analysis*: This approach integrates words and images (photos, paintings, video, collage, etc.) in examining how individual and collective identities are composed and performed visually. Riessman (2008) suggests that three aspects for analysis need to be incorporated into visual narrative analysis: (a) the story of the production of the image, (b) the image itself, and (c) how it can be read. Each of these aspects implies different attitudes towards epistemological assumptions about interviewing techniques, the role of the transcript, validation, and positionality.

Quantitative Narrative Analysis

"Words are beautiful: Why turn them into numbers?" This is a question asked byan audience member after a researcher madehis presentation on the Quantitative Narrative Analysis method. In search of actors in the study of social protest and violence, Franzosi explored new methodological approaches with emphasis on social actors rather than variables. This approach involves taking stories of conflict from mostly newspaper articles and turning the words into numbers (Franzosi 1984, 1989 and 2004). The approach allows researchers to structure information contained in narrative texts in such a way that makes it possible for statistical analysis (Franzosi 2015).

The Quantitative Narrative Analysis method exploits the invariant (unchanging) linguistic structural properties of narrative which includes the sequential order of narrative clauses and their simple linguistic structure of Subject-Verb-Object (henceforth, SVO). In a narrative, Subjects are conceptualized as social actors, Verbs are social actions, and Objects are either social actors or physical objects.

The characteristics of both Subject and Object, such as the name, organization, or type of actor, and the contexts of action, such as time and space, or reason and outcome are also attributes that each SVO element can have. These attributes of an SVO element provide an invariant structure of narrative that is also known as "story grammar."

Reflexive Research Methodology

Reflexive Research Methodology simply means "an insight of actors in their social or contextual consciousness about the difference between strategic action and systemic results" (Alvesson and Skoldburg 2000). The methodology involves delineating the all-round relation between cause and effect. It is the act of 'self-reference' where investigation or examination of a study has a return effect or dictates "the entity instigating the action or examination." The individuals shape their collective lifestyles. Alvesson and Skoldburg (2000) assert that this form of research methodology plays a significant role in the practice of research, process and outcomes of research, and mutual interaction between the individual and objective of study throughout the research process. They add that this form of research entails a "subjective process of self-consciousness inquiry and the study of social behavior with reference to theories about social relationships" (Alvesson and Skoldburg 2000). This is done through reflexive research and systematic self-observation briefly discussed in the subsections that follow.

Reflexive Research

The Reflexive Research method focuses on the process of reflection, which takes itself as the object; in the most basic sense, it refers to reflecting on oneself as the object of provocative, unrelenting thought and contemplation. Reflexivity makes a claim to self-reference (Davies 1998). According to Myerhoff and Ruby, reflexivity generates "heightened awareness and vertigo, the creative intensity of a possibility that loosens us from habit and custom and turns back to contemplate ourselves" (Myerhoff and Ruby 1982). As a term, reflexivity is ambiguous, poorly articulated, with scant substantial research evidence to back it up, and it is used as a passé part of a tool for referring to auto-critical thought and works. According to Ross, reflexivity presents "a concern with images and representations, the fluid and constructed nature of meaning, and whether one can really get beyond representations to an ultimate truth" (Ross 2004). The looking glass metaphor has been used in relation to reflexivity: one may view reflexivity as an inversion rather than a direct reflection of self, like in the magic world of Alice in Wonderland (Herzfeld 1987). It is multidimensional and

takes multiple points of view. Reflexivity can be individual or collective, private or public, implicit or explicit, partial or total (Babcock 1980). Therefore, the Reflexive Research method is an approach that does not leave the subject lost in its own concerns; it pulls one toward the other and away from isolated attentiveness toward oneself. The method requires subject and object, breaking the thrall of self-concern by its very drive towards self-knowledge and inevitably considers a surrounding world of events, people, and places (Myerhoff and Ruby 1982).

In a much more popular jargon, reflexivity refers to self-critique, meta-textualization, meta-narrative (Nazaruk 2011), which means that the Reflexive Research method is best used when a researcher is doing a self-critique of a research work. The method is applied when there is awareness that the researcher and the object of study affect each other mutually and continually throughout the research process (Alvesson and Skoldburg 2000). It is like describing the visual experience of standing between two mirrors where you will see an infinite reproduction of your image.

Considering the effectiveness of the Reflexive Research method by some researchers, it can be used to conduct and process data collection. Researchers can use it to reinterpret and revise their methodological positions to consider such issues as ethics, power relations, or use of language (Alvesson and Skoldburg 2000).

One example of a work that has employed the Reflexive Research method is that of Nazaruk (2011) who provided a narrative of Pirandello's play of 1921. In this play, the actors seek a narrator for their plight to meta-textualize their existence: the narrator stands outside a text that begs for an author – the image of the narrator is redoubled, the narrator outside the texts reflects on the role of the author inside the text, his mirrored image.

Another example is that of Norman Rockwell, a popular artist, who developed an image of himself by painting the *Saturday Post* cover of the magazine: the cover of the magazine shows him painting the cover through an emboîtement of sorts, in which the image is seized and transformed inside another image, to tell a different contingent story. Such examples of self-referential self-critiques through images within images are now quite a common practice in books, films, and other media (Nazaruk 2011).

Another example can be found in the work of MacRae (2007) in which he used the Reflexive Research method to demonstrate the initial subjective position. He used it to understand various roles in the field and also to recognize the significance of place or purpose in the field and when working through emotions and closeness

Systematic Self-observation

The Systematic Self-observation method is a valuable approach used by social scientists to gather information about those social actions that are hidden, restricted, or subjective. The advantage of using self-observation over other research methods such as interviewing for these types of actions is that the observed is treated as the observer in Systematic Self-observation. This is the only way one can successfully measure thoughts, emotions, and other attributes that are not always openly displayed (Rodriguez and Ryave 2001).

Rodriguez & Ryave (2002) provide a practical explanation and instruction to conduct a systematic self-observation study. They include case studies of four aspects of hidden or elusive everyday social actions: lying, telling secrets, withholding compliments, and feeling envy.

Symbolism Research Methodology

Symbolism Research Methodology is a compilation of methods that use symbols (i.e. attributes used as conventional representations of objects, functions, or processes) to represent ideas or qualities. The focus of these approaches is on the symbolic meaning attributed to natural objects or facts. The three methods that have been birthed in this endeavor are briefly presented in the ensuing subsections.

Organizational Symbolism

The term "organizational symbolism" holds a variety of meanings and interpretations within the organizational community. The term refers to those aspects of an organization (business, universities, etc.) that its members use to reveal or make comprehensible the unconscious feelings, images, and values that are inherent in that organization (Dandridge, Mitroff and Joyce 1980:77). According to Dandridge, Mitroff and Joyce, organizational symbolism can be broadly groupedinto three categories, namely (1) verbal, (2) action, and (3) material symbols. Verbal symbols include storytelling, myths, creeds, jokes, rumors, legends, slogans, and names. Action symbols may include ritualistic special acts (repeating/nonrepeating) parties, breaks, starting the day, rites of passageand meals, while material status or object symbols include company products, logos, awards, company badges, pins, and flags (1980:79). There isalso a varying function of symbolism for an organization. The Organizational Symbolism method is therefore used to describe, control, maintain, and sustain organizational goals. The phrase, "a picture is worth a thousand words," is analogous to the function a

symbol can serve for description (Benzies and Allen 2001:544).

The use of the Organizational Symbolism method can be diverse and based on various subjects and issues in organizational discourse. Examples include the function of jokes for tension reduction, the impact of rites of passage (orientation programs, separations, etc.), and guiding acceptable patterns of change. Another example could be a study of the extent to which members experience the logo as expressing central characteristics of an organization (Dandridge, Mitroff and Joyce 1980:80)

Ornstein (1986) designed a laboratory study to examine the meanings connoted by various organizational symbols and the influence of those symbols on individuals' perceptions of the psychological climate of fictitious organizations. Also, Kuumba and Ajanaku (1998), in their study titled "Dreadlocks: The Hair Aesthetics of Cultural Resistance and Collective Identity Formation" examine cultural issues and identities that hair precipitate.

Operational Symbolism

The Operational Symbolism method refers to the use of diagrams, numbers, letters, abbreviations, color, or any combination of these, to identify and distinguish a particular group, military unit, activity, or installation. These symbols are used on operational graphics, situation maps, and overlays. As an approach in communication research, operational symbolisms are useful when they are clear, concise, standardized, and uniform. Operational symbols are used on operational graphics, situation maps, and overlays (Edwan 2009).

Operational symbolisms are graphic representations of units, installations, equipment, control measures, and other elements relevant to groups, individuals, or military organizations. Research in the field of Military and Arms Studies utilizing the Operational Symbolism method employ a form of military shorthand which is used in the context of a map, such as a situation map, to describe the disposition of units on that map. Works that have used the method include Edwan's "Symbolic Interpretation of the Lines of Effort through the Theory of Strategic Ambiguity" (2009) and Vego's "The Problem of Common Terminology" (2006), both of which utilized the Operational Symbolism method to study United States army operations.

Sensitizing Concepts

The Sensitizing Concepts method is drawn from a tentative analytical frame, as the sensitization of concepts is said to reflect current theoretical ideas. The research method is widely used in the fields of sociology, anthropology, and

healthcare (Bowen 2006). Some researchers merge Grounded Theory with sensitizing concepts in their research. According to Bowen (2006), Grounded Theory is an approach to qualitative research in which sensitization is one of the major approaches. Researchers in sociology now aim to view sensitizing concepts as interpretive devices and as a starting point for qualitative research (Glaser 1978; Padgett 2004). The approach draws attention to essential features of social interaction as well as providing guidelines for research in precise settings. Blaikie (2000) argues that any research that is basically concerned with the generation of theory may require sensitizing concepts without any hypotheses. It must be noted that sensitizing concepts can be improved, refined. and tested (Blumer 1954). Although many researchers are using Grounded Theory not necessarily to improve, refine, and test sensitizing concepts, the concepts may be simply used to lay the foundation for the analysis of data. Furthermore, a researcher might also employ sensitizing concepts in examining substantive codes with an analysis developing thematic categories from such data (Blumer 1954).

It is germane to bear in mind that sensitizing concepts may alert a researcher to some other important facets of research situations. They may also direct attention away from another germane aspect, as asserted by Gilgun (2002).

The method has been used to study issues of race, identities, multiculturalism, cultural appropriation, group behaviour, and linguistic tendencies, among others. For example, Bowen (2006) demonstrates the application of sensitizing concepts in a study of community-based antipoverty projects in Jamaica. It was an exploratory qualitative project which was supported by the Social Investment Fund of Jamaica. The study later generated a substantive-formal theory of stakeholder collaboration.

Miscellaneous Approaches

Miscellaneous Approaches are composed of different kinds of methods that could not be subsumed into the preceding methodological categories. These methods are discussed separately in the subsections that follow.

Calendar and Time Diary Life Course Research Methods

These qualitative research methods, according to Farral and Weller (2012), are employed to instigate sequential reportage of events that respondents undertake over a period of time. They also are research processes which allow a researcher to collect additional important information relating to the activity and the nature of the place where the activity occurred (Farral and Weller 2012).

Although these methods are commonly used during data collection, since they share a similar technique, which is the collection of timeline data, there exists a slight difference (Stafford 2009). While the diaries are specifically used to collect 24-hour timeline data, calendar, also called event history calendar, is used to collect data on events over a longer period of time (Stafford 2009). Therefore, diaries cover immediate or daily actions which are generally out of the scope of the calendar method. It must be noted that both methods (Diary and Calendar) complement the shortcomings of each other.

These methods of data collection are commonly used in the field of psychology. This is because psychology concerns itself basically with life and life events. "Thus, diaries are designed to capture the "little experiences of everyday life that fill most of our working time and occupy the vast majority of our conscious attention" (Bolger, Davis and Rafaeli 2003:579). It is suggested that one of the fundamental benefits of these methods is that they permit a psychology researcher to "examine reported events and experiences in their natural, spontaneous context, and providing information complementary to that obtainable by more traditional design" (Bolger, Davis and Rafaeli 2003:579).

These methods are mostly used in the collection of sociological data. The methods provide diaries in the field of psychology with a powerful set of studying various human phenomena, including personality processes. An example of the utility of these methods can be seen in the work of Weller (2012) who used the Calendar and Time Diary Life Course Research Methods in conducting life course research.

Doing Media Research

Doing Media Research is a multidisciplinary method that focuses on the media and their role in society. Media have attracted much research attention because they are an important agent of socialization and they are located at the centre of both local and international power relations. The perversity of the media makes media researchers rely on the methods of other fields such as anthropology, sociology, psychology, computer science, and other disciplines, as well as on home-grown methods (Priest 2009; Wimmer and Dominick 2013). Media research focuses on the technology of media, the content of media, the audience of media, the interaction between or among these aspects, and their implications for different aspects of societal life. Media technologies include the traditional media of print (newspapers, magazines, etc.) and broadcast (television and radio), and the new computer-based media of the Internet and other adjunct technologies such as Web

2.0 and social media. Media contents include text, talk, signs and symbols used to represent reality. Also, media audiences are the passive, active, and interactive receivers of the diverse media messages.

The multidisciplinary nature of media research endows it with an array of research methods used in many other research fields. Priest (2009) highlights how media research accommodates both qualitative and quantitative research approaches. In the quantitative approach, media research prominently uses surveys, experiments, and quantitative content analysis. In the qualitative approach, it uses methods such as participant observation, interviews, focus groups, qualitative content analysis, and discourse analysis, among many others. New and diverse methods of big data analytics are also emerging alongside the conventional methods for new media research (Priest 2009; Wimmer and Dominick 2013).

Media scholars have utilized this array of methods to study different aspects of the human society as mediated and affected by the media. For example, Okunna (1996) used content analysis and focus groups to examine whether the portrayal of women in Nigerian home video films is a form of empowerment or subjugation. Lin, Hsu, Chen and Fang (2017) utilized factor analysis, a quantitative method, to study the gratifications for social word-of-mouth spread via mobile social networking sites. Also, Çetin, Wai, Altay and Bushman employed the method to demonstrate that "the commonly held perception that gifted children can make it on their own or are insulated from negative effects is not always true as shown by this study" (2016:284). Furthermore, Dekker and Scholten (2017) combined both qualitative and quantitative framing analyses to establish how media representations of Dutch immigration policy issues affect the policy-making process.

Employing Qualitative Methods in the Private Sector

This qualitative method uses Grounded Theory in analyzing and interpreting data. Fisher and Kalbaugh (2012) emphasize that Grounded Theory is the best research method to use in the study of the private sector in order to specifically analyze and interpret data derived from it.

The method has been used extensively in the study of health care service delivery, human resource management, advertising, quality control analysis, investigating employee participation practices in the *private sector, and leadership styles in organizations, among others. An ex*ample of a study that effectively used the method is that of Fisher and Kalbaugh titled "United States Private-Sector Physicians and Pharmaceutical Contract Research: A Qualitative Study" (2012). The study combines observation and semi-structured interview tools.

Linking Qualitative Data

In light of contemporary theoretical and methodological advances, the Linking Qualitative Data method is used to delineate the ways in which substantive problems and research issues can be tackled effectively through the inter-relationship of quantitative and qualitative data. It also involves a discussion of multi-method research which is critical of the naive assumption that using several different methods necessarily ensures the validity of research findings. This is one of the most common forms of methodological interrelations, a frequent combination being participant observation and ethnographic interviews (Nigel et al. 2011). Cicourel (1981) observes that qualitative researchers seldom acknowledge their limited capacity for processing the rich detail of their materials. The danger is that of reifying the data, attributing excessive significance to limited segments of data, or drawing on unacknowledged bits of information from other sources of knowledge than the data at hand to the reader (Cicourel 1981 in Nigel et al. 2011); hence, the need for linking data.

Linking qualitative data occurs in academic research but also increasingly in applied research (Nigel et al. 2011). Zelditch (1962, in Nigel et al. 2011) suggested that the need to interrelate data is actually inherent in field methodology, because a field study is not a single method gathering a single kind of information. In particular, the use of informants in relation to observational work is imperative for investigating complex structures. An example of a research project that utilized the Linking Qualitative Data method is that of the many in-house evaluation studies conducted to determine the functioning of welfare institutions such as old people's homes, juvenile delinquency treatment projects, and "therapeutic communities" in mental health settings by Nigel et al. (2011).

Microcomputer Applications in Qualitative Research

Microcomputer hardware and software can play a useful role in qualitative research, but only if the limitations of the technology especially, its potentially negative or constraining impact is kept in mind throughout (Pfaffenberger 1988; Leo et al. 1992).Qualitative research often requires the analysis of large quantities of unstructured data. Research questions are addressed using data in the forms of interviews, observations, field notes, journals, and video and audio tapes. In order to deal with this type of information, qualitative researchers had to rely on paper, index cards, markers, hole punchers, scissors, and tapes. However, in contemporary research, computers are aiding the process. The most common software tool supporting qualitative research is the word processor, especially

Microsoft Office (Thomas and Lyn 1992).The nature of computer software programs, however, tends to be highly structured. This may pose a problem to the qualitative researcher trying to fit unstructured data into a highly structured computer environment. A solution to this problem may exist in the form of a uniquely designed text analysis program known as Metamorph. This program can manipulate raw data without imposing the classical, computerized logic (Thomas and Lyn 1992; Leo et al, 1992). Metamorph is a computer software program designed to work with large quantities of unstructured text.

Typically, the Microcomputer Applications in Qualitative Research method is used to quickly scan documents, manuals, and unstructured records to find information. As an example, Metamorph is used by attorneys as they look for documented support in legal cases. By historically retracing the information searching process, we can see the benefits of the Metamorph technology (Leo et al., 1992). It is currently being used in many fields and areas of inquiry such as (a) medicine (e.g., cancer and AIDS databases), (b) air mishap analysis, (c) law, (d) Bible study, and (e) government contract and procurement tracking (Leo et al.1992).

Geographic Information System (GIS)

Geographic Information Systems (henceforth, GIS) was originally a research area in geography using quantitative analysis until very recently when it was extended to other areas of study in the social domain and equally incorporated qualitative information. It is a digital technology that integrates hardware and software to analyze, store, and map spatial data. According to Verd and Porcel (2012), GIS can be defined as a set of methods, software and technologies developed for the storage, analysis and mapping of geographic information which is used in the study of socio-spatial phenomena. Thus, it integrates social and territorial information in quantitative research. As a qualitative analytical tool, the GIS method is a way of knowing and experiencing places alongside the numeric summative attributes of places (Burns 2012). Jung and Elwood (2009) state that the GIS method is used to do three things: (1) interpret qualitative data cartographically, (2) connect external qualitative data artefacts to GIS-based objects through hyperlinks, and (3) modify existing technologies on the software level to quickly handle qualitative data. Thus, the method is important because it connects socio-spatial processes that encompass several domains of social sciences (Verd and Porcel 2012).

GIS integrates software analytic processes with practical experiences (empirical evidence) in research. It is very useful to social workers by making clearer the environmental context of their clients.The relevance of this research method lies in

the fact that space is a salient but implicit factor in sociological investigations where social activities are situated. For example, Verd and Porcel (2012) used the computer-aided qualitative data analysis software (CAQDAS) ATLAS.ti by integrating GIS and assessing their role in the management and coding of socio-spatial information within the framework of a sociological study on urban transformation in the city of Barcelona, Spain. They applied a multi-method design with a strong ethnographic character that utilizes a wide use of socio-spatial data. They also considered the role played by geocoding (the demographic characterization) geo-referencing, and the implications for using qualitative GIS in urban sociology and in sociological research in general. In addition, they employed the field notes from their observations: in-depth interviews with key actors, urban documents and plans, photographs, press releases, and documents of formal communication between the actors. This information was managed and analyzed using ATLAS.ti version 6.0, which is a qualitative analytical program.

Qualitative Media Analysis

The main premise of the Qualitative Media Analysis method is the study of documents, particularly their contents. Documents are studied to understand culture, as they are conceptualized as the process and the array of objects, symbols, and meanings that make up social reality shared by members of a society. For research purposes, a large part of culture is perceived to consist of documents. A *document* is therefore defined as any symbolic representation that can be recorded or retrieved for analysis (Altheide 1996).

The method is used in both basic and action research, but more inclined toward journalism and communication related studies. Examples of tools used in studies employing the Qualitative Media Analysis method includenews articles,books, television shows, films, magazines, newspapers (print and electronic), and social media (Altheide 1996).

Team Research

Team research is an activity that fits the definition of a specific type of cooperative learning strategy ideally suited for students working together on authentic, ill-structured investigations. Cohen (1994) describes three main features of this cooperative learning strategy as follows: (1) research teams are small enough so that everyone can participate; (2) a team is expected to accomplish an investigation without direct immediate supervision of the facilitator; and (3) the assignment is a group task requiring "resources (information, knowledge, empirical problem-

solving strategies, materials, and skills) that no single individual possesses [or] is likely to solve the problem or accomplish the task objectives without at least some input from others" (1994:3-8). This type of learning strategy is important because it increases academic achievement by providing and receiving elaborate explanations, help, feedback as well as receiving the right kind of help from peers (Webb 1992; Johnson and Johnson 1996; Cohen 1994:8; Webb 1991). It also promotes equity because various individuals in the group develop an appreciation for a diversity of viewpoints through equal two-way communications and willingness of each team member to listen and speak (Johnson and Johnson 1989; Cohen 1991). It also helps members to manage choices during an investigation through the productive use of the choices offered by designers than members working independently (Carrier and Sales 1987).

The Team Research method thus involves authentic, semi-structured investigations in which the instructions provided for the tasks are neither too constraining nor too open-ended. On the one hand, assigning students to specific team roles or providing detailed discussion-scripts can limit the amount of investigation-related discussion (Salomon and Globerson, 1989). On the other hand, providing no guidance to team members may lead to inequities in interaction within the group, which in turn can lead to differentiated learning outcomes. Therefore, there are different ways of how team research is applied. To begin with, task instructions that maximize investigation must be developed. According to Smith, Johnson and Johnson (1981) and Cohen, Lotan and Leechor (1989), there are two approaches used to do this. The first approach uses controversy to stimulate team research, in which two-person pairs prepare opposing sides of a debate. After the preparation, the opposing sides present their cases to each other and then the pairs switch their positions after the presentations are completed. Using the information provided during the debate, each pair argues the opposing position. Finally, the four-person team reaches a consensus on which members write a report. The second approach involves organizing the team members to work on semi-structured problems through taking turns as a facilitator enc ourages the group members to think and talk together. This approach can lead to an increase in investigation-related, peer interactions and higher learning outcomes. The other way team research is applied is through ensuring equity in student interaction by creating activities that lessen status differences (Cohen 1994:24-25).

An example on how team research has been applied can be seen in the study by Smith, Johnson and Johnson (1981) in which they used controversy to stimulate team research. In this study, they organized students in such a way that they worked in four-person teams. Within the team, two-person pairs prepared opposing sides

of a debate concerning the proposed reintroduction of wolves into Minnesota. After the preparation period, the opposing sides presented their cases to each other. After the presentations were completed, the pairs switched their positions. Using the information provided during the debate, each pair argued the opposing position. Finally, the four-person team reached a consensus and wrote a report. This helped them generate a deeper and detailed conceptual understanding.

Social Life Research

The Social Life Research method builds on the ground-breaking works of Michael Young, sociologist and social entrepreneur who established the Institute of Community Studies in 1954 to bring social research to post-war urban planning; and Peter Hall, one of the world's most respected and widely-published thinkers on urban planning and former Senior Research Fellow at the Young Foundation (see Earthy and Cronin 2008; Gilbert 2008).

The method enables a researcher to provide an understanding about how people's day-to-day experiences of local places is shaped by the built environment (housing, public spaces, parks, and local high streets) and how change, through regeneration, new development or small improvements to public spaces, affects the social fabric, opportunities and wellbeing of local areas. These insights are brought to light through the process of planning, designing and managing places by working with communities, built-environment professionals, public agencies, and governments (see Earthy and Cronin 2008; Gilbert 2008).

Writing-up Qualitative Research

The Writing-up Qualitative Research method is described as an unfolding approach which occurs in a natural setting that enables a researcher to develop a level of detail from high involvement in the actual experiences (Williams 2011:65; Creswell 1994 and 2003). The method responds to questions that require textual data. This type of research method aims at discovering the underlying motives and desires of individuals or groups using in-depth interviews for the purpose (Kothari 2004:18). It is also concerned with the subjective assessment of attitudes, opinions, and behaviors. Therefore, research in such a situation is a function of a researcher's insights and impressions.

The method is applied through the purposeful use of describing, explaining, and interpreting collected data (Williams 2011:65). It is conducted within a poststructuralist paradigm and combines five techniques: (1) case study, (2) ethnographic study, (3) phenomenological study, (4) Grounded Theory study,

and (5) content analysis. These five techniques are representative of research that is built upon inductive reasoning and associated methodologies.

Creswell (2003) describes how these methods meet different needs. For instance, case studies and Grounded Theory research explore processes, activities, and events, while ethnographic research analyzes broad cultural-sharing behaviors of individuals or groups. Case studies as well as phenomenology can be used to study individuals. Content analysis review *forms of human communication*, including books, journals, and films, as well as other sources in order to identify patterns, themes, or biases. The Writing-up Qualitative Research method builds its premises on inductive, rather than deductive, reasoning. It is the observational elements which pose questions that the researcher attempts to explain.

References

Aceron, Romel M., 2015, 'Coversational Analysis: The Judge and Lawyers' Courtroom Interactions', *Asia Pacific Journal of Multidisplinary*, 3, 5:120-127.

Adams, Mags and Bruce Neil, 2008, 'Soundwalking as Methodology for Understanding Soundscapes' *Proceedings of the Institute of Acoustics*, 30, 2:552-558.

Adichie,Chimamanda Ngozi, 2015, *We Should All Be Feminists*, New York, NY: Penguin Random House.

Adler, Patricia A. and Peter Adler, 1987, *Membership Roles in Field Research (Qualitative Research Methods Series 6)*, Thousand Oaks, CA: Sage Publications.

Albert, Mills J. Gabrielle Durepos and Elden Wiebe, eds., 2010, *Encyclopedia of Case Study Research,* Thousand Oaks, CA: Sage Publications.

Altheide, David L, 1996, *Qualitative Media Analysis*, Thousand Oaks, CA: Sage Publications.

Alvesson, Mats and Kaj Skoldburg, 2000, *Reflexive Methodology*, London, UK: Sage Publications.

Anderson, Gary L., 1989, 'Critical Ethnography in Education: Origins, Current Status, and New Directions', *Review of Educational Research*, 59, 3:249-270.

Arditti, Joyce A., Karen S. Joest, Jennifer Lamber-Shute and Lawrence Walker, 2010, 'The Role of Emotions in Fieldwork: A Self-study of Family Research in a Corrections Setting', *The Qualitative Report*,15, 6:1387-1414.

Asuquo, Francis Ekaete and Josephine B. Etowa, 2016, 'Participatory Action Research (PAR): A Strategy to Achieve Transformational Change in Nursing Research and Policy Development in Low and Middle Income Countries (LMICs)', *International Journal of Health Wellness Society*, 6, 5:11–21.

Atkinson, Anthony Paul, Amanda Coffey, Sarah Delamont, John Lofland and Lyn Lofland, eds., 2001, *Handbook of Ethnography*, Los Angeles, CA: Sage Publications.

Atkinson, Paul, Sara Delamont and William Housley, 2007, *Contours of Culture: Complex Ethnography and the Ethnography of Complexity*, Lanham, MD: AltaMira Press.

Awedoba, Albert K., 2010, *An Ethnographic Study of Northern Ghanaian Conflicts: Towards a Sustainable Peace: Key Aspects of Past, Present and Impending Conflicts in Northern Ghana and the Mechanisms for Their Adress*, Accra, Ghana: Sub-Saharan Publishers.

Ayoh, Loveline Chick, 2015, 'Rekoumbeng Female Ritual and Socio-cultural Therapy in the Mbu Community of North West Cameroon', Master's Thesis, University of Yaounde, Cameroon.

Barlett, Gladwin, 1989, *Ethnographic Decision Tree Modelling*, Thousand Oaks, CA: Sage Publications.

Baxter, Pamela and Susan Jack, 2012. 'Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers', *The Qualitative Report*, 13, 4:544-559.

Benjamin, Walter, 1968, 'The Task of the Translator',*Illuminations*, New York, NY: Harcourt Brace Jovanovich.

Benzies, Karen M. and Allen N. Mitch, 2001, 'Symbolic Interactionism as a Theoretical Perspective for Multiple Method Research', *Journal of Advanced Nursing*,33, 4:541-547.

Berkenkotter, Carol, 1993, 'A "Rhetoric for Naturalistic Inquiry" and the Question of Genre', *Research in the Teaching of English*, 27, 3:293-304.

Bernard, Russel H., 2002, *Research Methods in Anthropology: Qualitative and Quantitative Approaches 3rd ed.*, Walnut Creek, CA: AltaMira Press.

Bikson, Francis T. K., 1988, *Managing Digital Documents: Technology Challenges and Institutional Responses,* Stockholm, Sweden: International Council on Archives.

Blaikie, Norman W. H., 2000, *Designing Social Research: The Logic of Anticipation*, Cambridge, UK: Polity Press.

Blumer, Herbert, 1954, 'What is Wrong with Social Theory?', *American Sociological Review*, 18, 5:3–10.

Boje, David M., 2001, *Narrative Methods for Organizational and Communication Research*, Thousand Oaks, CA: Sage Publications.

Bolger, Niall, Alan Davis and Rafaeli Eschkol, 2003, 'Dairy Methods: Capturing Life as It Is Lived, *Annual Review of Psychology*,6, 2:579-616.

Bolton, Ralph, 1995, 'Tricks, Friends, and Lovers: Erotic Encounters in the Field', in D. Kulick and M. Wilson, eds., *Taboo-Sex Identity and Erotic Subjectivity in Anthropological Fieldwork*, London, UK: Routledge.

Bowen, Glenn A., 2006, 'Grounded Theory and Sensitizing Concepts', *International Journal of Qualitative Methods*, 5, 3:12-23.

Bradbury, Hillary, 2013, 'Action Research: The Journal's Purpose, Vision and Mission', *Action Research* 11:3–7.

Burt, Ben, 1998, 'What Is Ethnography?', *Journal of Museum Ethnography,* 10:10-14.

Campbell, Rona et al., 1967, 'Evaluating Meta-ethnography: A Synthesis of Qualitative Research on Lay Experiences of Diabetes and Diabetes Care', *Social Science and Medicine*, 2003, 56:671-684.

Carrier, Carol A. and Sales C. Gregory, 1987, 'Pair Versus Individual Work on the Acquisition Concepts in a Computer-based Instructional Lesson', *Journal of Computer-Based Instruction*, 14, 1:11-17.

Carter, Michael J. and Celene Fuller, 2016, 'Symbols, Meaning, and Action: The Past, Present, and Future of Symbolic Interactionism', *Current Sociology*,64, 6:931-961.

Carter, Michael J. and Celene Fuller, 2015, 'Symbolic Interactionism', *Sociopediaisa*, 1, 2:10-17.

Çetin, Yakup et al., 2016, 'Effects of Violent Media on Verbal Task Performance in Gifted and General Cohort Children', *Gifted Child Quarterly*, 60, 4:279-286.

Clandinin, Jean D. and Michael F. Connelly, 2000, *Narrative Inquiry: Experience and Story in Qualitative Research*, San Francisco, CA: Jossey-Bass Publishers.

Clerke, Teena, and Nick Hopwood, 2014, *Doing Ethnography in Teams: A Case Study of Asymmetries in Collaborative Research*, London, UK: Springer.

Cliggett, Lissa, 2012, *Strategies of Data Archiving for Cultural Anthropology, Using Gwembe Tonga Research Project (GTRP) Data,* Lusaka, Zambia: National Science Foundation BCS-1157418.

Cohen, Bernard P. and Elizabeth G. Cohen, 1991, 'From Group Work among Children to R & D Teams: Interdependence, Interaction and Productivity', in E. J. Lawler, et al., eds., *Advances in Group Processes*, Greenwich, CN: JAI.

Cohen, Elizabeth G., 1994, 'Restructuring the Classroom: Conditions for Productive Small Groups', *Review of Educational Research*, 64, 1:1-15.

Cohen, Elizabeth G., 1991, 'Teaching in Multiculturally Heterogeneous Classrooms: Findings from a Model Program', *McGill Journal of Education*, 26, 5:7-23.

Cohen, Elizabeth G., Michael R. Lotan and Leechor C. Hyesook, 1989, 'Can Classrooms Learn? *Sociology of Education*, 62, 2:75-94.

Cohen, Elizabeth G., Michael R. Lotan and Micelle L. Catabzarite, 1988, 'Can Expectations for Competence be Treated in the Classroom?', in M. Webster, Jr. and M. Foschi, eds., *Status Generalization: New Theory and Research*, Stanford, CA: Stanford University Press.

Cortazzi, Martin, 2001, 'Narrative Analysis in Ethnography', in P. Atkinson et al., *Handbook of Ethnography*, London, UK: Sage Publications.

Creswell, John William, 2003, *Research Design: Quantitative, Qualitative Approaches and Mixed Methods*, Thousand Oaks, CA: Sage Publications.

Creswell, John William, 1994, *Research design: Quantitative and Qualitative Approaches*, Thousand Oaks, CA: Sage Publications.

Cytowic, Richard, April 24, 2010, 'Our Hidden Superpowers', *New Scientist*, 2010:46.

Czarniawska, Barbara, 1997, 'A Narrative Approach to Organisational Studies', *Qualitative Research Method*, 43, 2:2-10.

Danridge, Thomas C., Ian Mitroff and Joyce F. William, 1980, 'Organizational Symbolism: A Topic to Expand Organizational Analysis', *Academy of Management Review*,5, 1:77-82.

Darnell, Regna, 2001, *Invisible Genealogies: A History of Americanist Anthropology*, Lincoln, NE: University of Nebraska Press.

Dekker, Rianne and Peter Scholten, 2017, 'Framing the Immigration Policy Agenda: A Qualitative Comparative Analysis of Media Effects on Dutch Immigration Policies',*The*

International Journal of Press/Politics,22, 2:202-222.

Denzin, Norman K., 2012, *Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples, and Issues,* Thousand Oaks, CA: Sage Publications.

Denzin, Norman K. and Lincoln S. Yvonne, eds, 2011, *The Sage Handbook of Qualitative Research*, 3rd ed. Thousand Oaks, CA: Sage Publications.

Department of Health, Education, and Welfare, 1979, 'Ethical Principles and Guidelines for the Protection of Human Subjects of Research', The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, United States of America.

DeWalt, Kathleen Musante, R. Billier DeWalt and Carol B. Wayland, 1998, 'Participant Observation', in H. R. Bernard, ed., *Handbook of Methods in Cultural Anthropology*, Walnut Creek, CA: AltaMira Press.

Downey, Greg, 2007, 'Seeing with a "Sideways Glance": Visuomotor "Knowing" and the Plasticity of Perception', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning*, Oxford, UK: Berghahn Books.

Earthy, Sarah. and Ann Cronin, 2008, 'Narrative Analysis', in N. Gilbert, ed., *Researching Social Life,* 3rd ed., London, UK: Sage Publications.

Edwan, Daniel H., 2009, *Symbolic Interpretation of the Lines of Effort through the Theory of Strategic Ambiguity*, Army Command And General Staff College, Fort Leavenworth, Kansas School of Advanced Military Studies.

Ehrenreich, Barbara and Arlie R. Hochschild, 2004, *Global Woman: Nannies, Maids, and Sex Workers in the New Economy*, London, UK: Macmillan.

Elwood, Sarah and MeghanCope, 2009,'Introduction: Qualitative GIS: Forging Mixed Methods through Representations, Analytical Innovations, and Conceptual Engagements', in S. Elwood and M. Cope, eds., *Qualitative GIS: A Mixed-methods Approach*, Los Angeles, CA: Sage Publications.

Emerson, Robert M., Rachel I. Fretz and Linda L. Shaw, 1995,*Writing Ethnographic Fieldnotes*, Chicago, IL: The University of Chicago Press.

Erickson, Ken C. and Donald D. Stull, 1998, *Doing Team Ethnography: Warnings and Advice*, Thousand Oaks, CA: Sage Publications.

Ezzy, Douglas, 2002, *Qualitative Analysis: Practice and Innovation*, London, UK: Routledge.

Farral, Stephen and Gordon Weller, 2012, 'Calendar and Time Diary Methods in Life Course Research', *International Journal of Social Research Methodology*, 15, 3:255-258.

Ferguson, Ann, 2008, 'Feminist Perspectives on Class and Work', retrieved on June 18, 2017 from https://plato.stanford.edu/entries/feminism-class/

Fischer, Frank, Gerald J. Miller and Sidney S. Mara, eds, 2007, *Handbook of Public Policy Analysis: Theory, Politics and Methods*, Boca Raton, FL: CRS Press.

Fisher, Jill A. and Kalbaugh A. Corey, 2012, 'United States Private-sector Physicians and Pharmaceutical Contract Research: A Qualitative Study', *Public Library of Science (PLoS) Medicine* 9, 7:1-7, e100127, retrieved on June 18, 2017 from https://doi.org/10.1371/journal.pmed.1001271.

Fisher, Imogen and Jenny Zivian, 2004, 'Explanatory Case Studies: Implications and Applications for Clinical Research', *Australian Occupational Therapy Journal*, 51, 4:185-191.

Flick, Uwe, Ernst V. Kardorff and Ines Steinke, 2004, 'What is Qualitative Research? An Introduction to the Field', in U. Flick, E. V. Kardorff and I. Steinke, eds., *A Companion to Qualitative Research*, London, UK: Sage Publications.

Foucault, Michael, 1972, *The Archaeology of Knowledge*, New York, NY, Pantheon Books, Tavistock Publications Limited.

Franzosi, Roberto, 2012, 'Quantitative Narrative Analysis', retrieved on April 14, 2017 from https://www.bgss.hu-berlin.de/de/bgss/events/newsandevents_/workshop-franzosi

Freeman, Richard, n.d., 'Social and Public Policy, Frequently Asked Questions', retrieved on April 11, 2017 from http://www.richardfreeman.info/answer.php?id=18

Frohmann, Bernd, 1992, 'The Power of Images: A Discourse Analysis of the Cognitive Viewpoint', *Journal of Documentation*, 48, 4:365-386.

Garfinkel, Harold,1967,*Studies in Ethnomethodology,* Los Angeles, CA: John Wiley.

Gilbert, Nigel, ed., 2008, *Researching Social Life*, 3rd ed., London, UK: Sage Publications.

Gilgun, Jane F.,2002, 'Some Notes on the Analysis of Qualitative Data', retrieved on April 12, 2017 fromhttp://ssw.che.umn.edu/img/assets/5661/Data%20analysis%2010-02.pdf

Glaser, Barney G., 1978, *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory,*Mill Valley, CA: Sociology Press.

Grasseni, Cristina, 2007, 'Communities of Practice and Forms of Life: Towards a Rehabilitation of Vision', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning,* Oxford, UK: Berghahn Books.

Gubrium, Jaber F. and James A. Holstein, 2009, *Analyzing Narrative Reality,* Thousand Oaks, CA: Sage Publications.

Hahn, Tomie, 2007, *Sensational Knowledge – Embodying Culture through Japanese Dance,* Middletown, CT: Wesleyan University Press.

Hannerz, Ulf, 2003, 'Being There... and there... and There! Reflections on Multi-site Ethnography', *Ethnography*,4, 2:201-216.

Harris, Mark, 2007, 'Introduction: Ways of Knowing', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning*, New York, NY: Berghahn Books.

Hedstrom, Margaret, 1991, 'Understanding Electronic Incunabula: A Framework for Research on Electronic Records', *American Archivist*,54, 3:334–54.

Hodge, Robert, Gunter R. Kress, 1988, *Social Semiotics*, Ithaca, NY: Cornell University Press.

Hoey, Elliot M. and Kobian H. Kendrick, 2015, 'Conversation Analysis', in A. M. B. De Groot and P. Hagoort, eds., *Research Methods in Psycholinguistics: A Practical Guide*, Chichester, UK: Wiley-Blackwell and Sons.

Holland, Janet, 2007, 'Emotions and Research', *International Journal of Social Research Methodology*, 10, 3:195-210.

Holstein, James A. and Jaber F. Gubrium, 2004, 'The Active Interview', *Qualitative Research: Theory, Method and Practice*,2:140-161.

Howes, David, 2005, 'Introduction: Empire of the Senses', in D. Howes, ed., *Empire of the Senses: A Sensual Culture Reader*, Oxford, UK: Berg Publishers.

Hubbard, Phil et al., eds., 2010, 'Walking, across Disciplines: From Ethnography to Arts Practice', *Visual Studies*, 25, 1:1-7.

Hunt, James C., 1989,*Psychoanalytic Aspects of Fieldwork*, London, UK: Sage Publications.

Hymes, Dell H., 1977, 'What is Ethnography?'retrieved on June 14, 2017 fromhttps://eric.ed.gov/?id=ED159234

Ingold, Tim, 2000, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, London, UK: Routledge.

Johnson, David W. and Rodger T. Johnson, 1996, Cooperation and the Use of Technology', in D. H. Jonassen, ed., *Handbook of Research for Educational Communications and Technology*, New York, NY: Simon and Schuster Macmillan.

Johnson, David W. and Francis Johnson, 1994,*Joining Together: Group Theory and Group* Skills, 5th ed., Englewood Cliffs, NJ: Prentice-Hall.

Johnson, David W. and Rodger T. Johnson, 1989, *Cooperation and Competition: Theory and Research*,Edina, MN: Interaction Book Company.

Jones, Michael O., 1996, *Studying Organizational Symbolism: What, How, Why?*, Thousand Oaks, CA: Sage Publications.

Kaminski, Marek M., 2010, *Games Prisoners Play: The Tragicomic Worlds of Polish Prison*, Princeton, NJ: Princeton University Press.

Keough, Leyla J., 2016, *Worker-Mothers on the Margins of Europe: Gender and Migration between Moldova and Istanbul*, Bloomington, IN: Indiana University Press.

Kim, Gerard Jounghyun, 2005, 'A SWOT Analysis of the Field of Virtual Reality Rehabilitation and Therapy Presence', *Teleoperators and Virtual Environments*,14, 2:119-146.

Kleinman, Sherryl, 2007, *Feminist Fieldwork Analysis* (Qualitative Research Methods Series 51),Thousand Oaks, CA: Sage Publications.

Kleinman, Sherryl and Martha A. Copp, 1993, *Emotions and Fieldworks: Qualitative Research Methods,* Newbury Park, CA: Sage.

Knight, Andrew and Les Ruddock, eds., 2009, *Advanced Research Methods in the Built Environment*, Chichester, PA: John Wiley and Sons.

Koshy, Valsa, 2009, *Action Research for Improving Educational Practice: A step-By-Step Guide*, London, UK: Sage Publications.

Kothari, Chakravanti Rajagopalachari, 2004, *Research Methodology: Methods and Techniques*, New Delhi, India: New Age International Limited Publishers.

Kubota, Ryuko, 1999, 'Japanese Culture Constructed by Discourses: Implications for Applied Linguistics Research and ELT', *TESOL Quarterly*, 33, 1:9-35.

Kuumba, Bahati M. and Ajanaku Ferni, 1998, 'Dreadlocks: The Hair Aesthetics of Cultural Resistance and Collective Identity Formation', *Mobilization: An International Quarterly*,3, 2:227-243.

Lancaster, Wifred F., 1986, *Vocabulary Control for Information Retrieval*, Arlington, VA: Information Resources Press.

Lee, Jo Vergunst and Tim Ingold, 2006, 'Fieldwork on Foot: Perceiving, Routing, Socializing', in S. Coleman and P. Collins, eds., *Locating the Field. Space, Place and Context in Anthropology*, Oxford, UK: Berg Book Company.

Leo Anglin W. et al., 1992, 'Metamorphrn Computer Support for Qualitative Research', paper presented at the Annual Conference of the American Educational Research Association, San Francisco, CA, April 20-24, 1992.

Lin, Yu-Hsiang et al., 2017, 'New Gratifications for Social Word-of-Mouth Spread via Mobile SNSs: Uses and Gratifications Approach with a Perspective of Media Technology', *Telematics and Informatics*, 34, 4:382-397.

Lund, Katrina Anna, 2008, 'Listen to the Sound of Time: Walking with Saints in an Andalusian Village', in T. Ingold and J. Lee Vergunst, eds., *Ways of Walking: Ethnography and Practice on Foot*, Aldershot, UK: Ashgate Publishing.

Lund, Katrina Anna, 2005, 'Seeing in Motion and the Touching Eye: Walking over Scotland's mountains', *Etnofoor*, 18, 1:27-42.

Mallon, Bride and Brian Webb, 2006, 'Walking with Games', *Simulation and Gaming*, 37, 2:209-225.

Mansur, A. Ghani, 2015, 'An Exploratory Qualitative Assessment of Self-reported Treatment Outcomes and Satisfaction among Patients Accessing an Innovative Voluntary Drug Treatment Centre in Malaysia', *International Journal of Drug Policy*, 26, 2:175-182.

Marchand, Trevor, 2007, 'Crafting Knowledge: The Role of Parsing and Production in the Communication of Skill-based Knowledge among Masons', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Knowledge*, New York. NY: Berghahn Books.

Marcus, George E. and Michael M. J. Fischer, 1986, *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences*, Chicago, IL: The University of Chicago Press.

Mazeland, Harrie, 2006. *Conversation Analysis*, Groningen The Netherlands: University of Groningen and Elsevier Ltd.

Mazrui Ali A., 2006, 'Strangers in Our Midst in Search of Seven Pillars of Wisdom', in Kate E. Tunstall, ed., *Displacement, Asylum, Migration: The Oxford Amnesty Lectures 2004*, Oxford, UK: Oxford University Press.

McCracken, Grant D., 1988, *TheLong Interview*, Newbury Park, CA: Sage Publications.

Mckee, Ann Marie, 2011, 'A Story of High School Inclusion: An Ethnographic Case Study', Unpublished PhD Dissertation, The University of Iowa, Iowa City, Iowa, retrieved on April 15, 2017 from http://ir.uiowa.edu/cgi/viewcontent. cgi?article=2631&context=etd

Mcmanners, Peter, 2016, 'The Action Research Case Study Approach: A Methodology for Complex Challenges such as Sustainability in Aviation, *Action Research*, 14, 2:201-216.

Meyerowitz, Eva L., 1995,. 'The Archaeology and Oral Traditions of Bono', *Transactions of the Historical Society of Ghana*, 16, 2:289-292.

Meyerowitz, Eva J., 1972, 'The Chronology of Bono-Manso', *Journal of African History*,13, 2:348-350.

Meyerowitz, Eva L., 1951, *The Sacred State of the Akan,* London, UK: Faber and Faber.

Michelson, Avra and Jeff Rothenberg, 1992, 'Scholarly Communication and Information Technology: Exploring the Impact of Changes in the Research Process on Archives', *American Archivist*, 55, 2:18- 44.

Miller, David M and Gregory J. Pine, 1990, 'Advancing Professional Inquiry for Educational Improvement through Action Research', *Journal of Staff Development*, 11, 3:56–61.

Mohanty, Chandra Talpade, 2003, *Feminism without Borders: Decolonizing Theory, Practicing Solidarity,* Durham, NC: Duke University Press.

Moore, Francesca P. L., 2010, 'Tales from the Archive: Methodological and Ethical Issues in Historical Research', *Area*, 42, 3:262-270.

Mselleb, Mwalea 2017. 'Exploring Barriers to the Utilization of Mental Health Services in Malawi', *Mental Health and Prevention*, 4:52-62.

Muwanga-Zake, Johnnie W. F., 2010, 'Narrative research across cultures: Epistemological concerns in Africa', *Current Narratives* 2: 68-83.

Nadkarni, Abhijit et al., 2013, 'The Explanatory Models and Coping Strategies for Alcohol Use Disorders: A Qualitative Exploratory Study from India;, *Asian Journal of Psychiatry*, 6, 6:521-527.

Naples, Nancy A., 2007, 'Feminist Methodology', in G. Ritzer, ed., *Blackwell Encyclopedia of Sociology*, retrieved on May 20, 2017 from

http://www.blackwellreference.com/public/tocnode?id=g9781405124331_chunk_g978140512433112_ss1-42#citation

Noblit, George W., 1988, *Meta-ethnography: Synthesizing Qualitative Studies*, Newbury Park, CA, Sage Publications.

Okunna, S. Chinyere, 1996, 'Portrayal of Women in Nigerian Home Video Films: Empowerment or Subjugation?',*Africa Media Review*,10:21-36.

O'Reilly, Karen, 2005, *Ethnographic Methods*, London, UK: Routledge.

Ornstein, Suzyn, 1986, 'Organizational Symbols: A Study of Their Meanings and Influences on Perceived Psychological Climate', *Organizational Behavior and Human Decision Processes*,38, 2:207-229.

Padgett, Deborah K., 2004,'Coming of Age: Theoretical Thinking, Social Responsibility, and a Global Perspective in Qualitative Research', in D. K.Padgett, ed., *The Qualitative Research Experience*, Belmont CA:Wadsworth/Thomson Learning.

Peirce, Bonny N., 1995, 'The Theory of Methodology in Qualitative Research',*TESOL Quarterly*,29,3:569-576.

Phillips, Nelson and Cynthia Hardy, 2002, *Understanding Discourse Analysis*, Thousand Oaks, CA: Sage Publications.

Pink, Sarah, 2009, *Doing Sensory Ethnography*, London, UK: Sage Publications.

Pink, Sarah, 2008, 'An Urban Tour', *Ethnography*, 9, 2:175-196.

Pink, Sarah, 2007, 'Walking with Video', *Visual Studies*, 22, 3:240-252.

Platt, Jennifer, 1976, *Realitiesof Social Research: An Empirical Study of British Sociologists*, London, UK: Sussex University Press.

Powdermaker, Hall, 1966, *Stranger and Friend: The Way of an Anthropologist* (No. 410). New York, NY: W. W. Norton and Company.

Pratt, Geraldine, 2004, *Working Feminism*, Philadelphia, PA: Temple University Press.

Priest, Susanna Horning, 2009,*Doing Media Research: An Introduction*, Thousand Oaks, CA: Sage Publications

Punch, Maurice, 1986, *The Politics and Ethics of Fieldwork*, Newbury Park, CA: Sage Publications.

Rabinowitz, Phil, 2016, 'Gathering and Interpretating Ethnogrphic Information', retrieved on April 13, 2017 from http://ctb.ku.edu/

Reason, Pater and Hilary Bradbury, eds., 2001, *Handbook of Action Research: Participative Inquiry and Practice*, London, UK: Sage Publications.

Reflections on Qualitative Social Research, 13, 2, retrieved on April 11, 2017 from www.qualitative-research.net/index.php/fqs.article/view/1847

Riessman, C. K., 2008, *Narrative Methods for the Human Sciences*, Los Angeles, CA: Sage Publications.

Robert, Atkinson, 1998, *The Life Story Interview, Qualitative Research Methods*, Thousand Oaks, CA: Sage Publications.

Roberts, Celia, 1993, 'Cultural Studies and Student Exchange: Living the Ethnographic Life', *Language, Culture and Curriculum*,6,1:11-17.

Roberts, David, 1994, 'Defining Electronic Records: Documents and Data', *Archives and Manuscripts*, 22, 2:14–26.

Rose, Dan, 1990, *Living the Ethnographic Life,* Thousand Oaks, PA: Sage Publications.

Salancik, Gerald R. and James R. Meindl, 1984, 'Corporate Attributions as Strategic Illusions of Management Control, *Administrative Science Quarterly*, 29, 7:238-254.

Salomon, Gavriel and Tamar Globerson, 1989, 'When Teams Do Not Function the Way They Ought To', *International Journal of Educational Research*, 13, 1:89-99.

Salzman, Carl Phillip, 2001, *UnderstandingCulture: An Introduction to Anthropological Theory*, Long Grove, IL: Waveland Press.

Schlesinger, Philip, Melanie Selfe and Ealasaid Munro, 2015, 'Inside a Cultural Agency: Team Ethnography and Knowledge Exchange, *Journal of Arts Management, Law, and Society*, 45, 2:66-83.

Schnettler, Bernt and Jurgen Raab, 2008, 'Interpretive Visual Analysis Developments, State of the Art and Pending Problem', *Forum Qualitative Social Research*, 9, 3:1-28.

Schwartz, Morris S. and Charlotte Green Schwartz, 1955, 'Problems in Participant Observation', retrieved on April 17, 2017 from http://www.jstor.org/stable/2772027

Selener, Daniel, 1997, *Participatory Action Research and Social Change*, Ithaca, NY: Cornell University Participatory Action Research Network.

Shahnazarian, Armen, 2016, 'Critically Conscious Learning: Using Participatory Action Research Methods to Engage Students, Penn GSE Prospect,' *Urban Education*, 13, 8:1–5.

Shanks, Graeme G. and Peta Darke, 1998, 'Understanding Data Quality and Data Warehousing: A Semiotic Approach', retrieved on June 12, 2017 from http://ssm-vm030.mit.edu/ICIQ/Documents/IQ%20Conference%201998/Papers/UnderstandDQinDataWarehouseSemioticAppr.pdf

Shenhav, Yehouda, 1999, *Manufacturing Rationality: The Engineering Foundations of the Managerial Revolution*, Oxford, UK: Oxford University Press.

Shrock, Richelle D., 2013, 'The Methodological Imperatives of Feminist Ethnography', *Journal of Feminist Scholarship,* 5:48-60.

Simon, Roger Irwin and Don Dippo, 1986, 'On Critical Ethnographic Work', *Anthropology and Education Quarterly*, 17, 4:195-202.

Smith, Douglas K., David W. Johnson and Rodger T. Johnson, 1981, 'Can Conflict Be Constructive? Controversy versus Concurrence Seeking in Learning Groups', *Journal of Educational Psychology*, 73, 3:651-663.

Somekh, Bridget, 2006, *Action Research: A Methodology for Change and Development*, London, UK McGraw-Hill Education and Open University Press.

Soyini, Madison D., 2005, 'Critical Ethnography: Method, Ethics, and Performance', retrieved on April 13, 2017 from http://www.sagepub.com/upm-data/4957_Madison_I_Proof_Chapter_1.pdf

Spradley, James P., 1970, *You Owe Yourself a Drunk: An Ethnography of Urban Nomads.* Boston, MA: Waveland Press.

Stacy, Judith, 1988, 'Can There Be a Feminist Ethnography?' *Women Studies International Forum*,2, 1:21-27.

Stafford, Frank P., 2009, 'Timeline Data Collection and Analysis: Time Diary and Event History Calendar Methods', in R. F. Belli, F. P. Stafford and D. F. Alwin, eds., *History Calendar Methods*, Los Angeles, CA: Sage Publications.

Stephen, Lynn, 2007, *Trans-border Lives: Indigenous Oaxacans in Mexico, California, and Oregon*, Durham, NC: Duke University Press.

Tavistock, Mills S., 1997, *Discourse*, London, UK: Routledge.

Taylor, Kelly D. et al., 2012, 'Explanatory Models of Hypertension among Nigerian Patients at a University Teaching Hospital', *Ethnicity and Health*, 17, 6:615-625.

Thomas, Jim, 1993, *Doing Critical Ethnography*, Newbury Park, CA: Sage Publications.

Trice, Harrison M. and Janice M. Beyer, 1984, 'Studying Organizational Cultures through Rites and Ceremonials', *Academy of Management Review*, 9, 4:653-669.

Ulmer, Gregory L., 1989, *Teletheory: Grammatology in the Age of Video*, London, UK: Routledge, Chapman and Hall Incorporated.

Vannini, Phillip, 2007, 'Social Semiotics and Fieldwork: Method and Analytics', *Qualitative Inquiry*, 13, 1:113-140.

Vego, Milan N., 2006, 'The Problem of Common Terminology', Washington, DC: National Defense University's Institute for National Strategic Studies.

Ventresca Marc J. and John W. Mohr, in press, 'Archival Research Methods, Companion to Organizations' (forthcoming from Blackwell Publishers), retrieved on April 17, 2017 from http://www.soc.ucsb.edu/faculty/mohr/classes/soc4/summer_08/pages/Resources/Readings/Ventresca%20&%20Mohr.pdf

Verd, Joan Miquel and Sergio Porcel, 2012, 'An Application of Qualitative Geographic Information Systems (GIS) in the Field of Urban Sociology using ATLAS.ti: Uses and Reflection', *FORUM: Qualitative Social Research*, 13, 2:Art 14, retrieved on April 13, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/1847/3373

Vula, Eda and Blerim Saqipi, 2015, 'Developing Action Research for Developing Teachers in Kosovo', *Turkish Online Journal of Qualitative Inquiry*, 6, 4:1–21.

Wagenaar, Hendrik, 2015, *Meaning in Action, Interpretation and Dialogue in Policy Analysis*, London, UK: Routledge.

Walters, Joel, 1979, 'What is Ethnograhy?', retrieved on May 15, 2017 from http://files.eric.ed.gov/fulltext/ED206983.pdf#page=31

Waters, Janet, 2016, 'Phenomenological Research Guidelines', retrieved on July 19, 2017 from www.capilanou.ca/psychology/student-resources/research-guidelines/Phenomenological-Research-Guidelines/

Webb, Noreen M., 1992, 'Testing a Theoretical Model of Student Interaction and Learning in Small Groups', in R. Hertz-Lazarowitz and N. Miller, eds., *Interaction in Cooperative Groups: The Theoretical Anatomy of Group Learning*, New York, NY: Cambridge University Press.

Webb, Noreen M., 1991, 'Task-related Verbal Interaction and Mathematics Learning in Small Groups', *Journal of Research in Mathematics Education*, 22, 4:366-389.

Wenger, Etienne, 1998, *Communities of Practice: Learning, Meaning, and Identity*, Cambridge, UK: Cambridge University Press.

Wilks, Isaac, 1976, *Asante in the Nineteenth Century: The Structure and Evolution of a Political Order*, New York, NY: Cambridge University Press.

Wilks, Ivor, 1993, *Forests of Gold: Essays on the Akan and the Kingdom of Asante*, Athens, OH: Ohio University Press.

Williams, Carrie, 2011, 'Research Methods', *Journal of Business & Economics Research*, 5, 3:2-9.

Williams, Kristin et al., 2010, 'Reflections on Gender-based Field Research', retrieved on June 15, 2017 from
http://fletcher.tufts.edu/Praxis/Archives/~/media/96DAD657251B449CA83BF6BCC88DAEAA.pdf

Wimmer, Rodger G. and Joseph R. Dominick, 2013, 'Organizational Symbols: A Study of Their Meanings and Influences on Perceived Psychological Climate', retrieved on April 12, 2017 from https://www.researchgate.net/publication/4813143_Organizational_Symbols_a_Study_of_Their_Meanings_and_Influences_on_Perceived_Psychological_Climate

Yacob-Haliso. Olajumoke, 2010, 'The Illusion of Home and the Elusion of Peace: Framing the "Return" of Liberian Refugee Women', paper submitted for the CODESRIA 2010 Gender Symposium.

Yanow, Dvora, 2000, *Conducting Interpretive Policy Analysis*, Thousand Oaks, CA: Sage Publications.

5

Brief Descriptions of Quantitative Research
Methods

**Ishmael Munene, Chris Shisanya, Joy Obando and
Doctoral Scholars**

In this chapter, an assortment of quantitative research methods is illustrated. They
range from Achievement Testing to Unidimensional Scaling. They are presented
separately in alphabetical order for the sake of lucidity.

Achievement Testing

Achievement tests are used to evaluate both written and practical knowledge. Thus,
Achievement Testing Methodology is used to assess strengths and weaknesses of an
individual's aptitude and capabilities (Wechsler 2005). The methodology is used
concurrently with intelligence tests to compare and identify shortcomings and
strengths of individuals in order to initiate a process of addressing their weaknesses
and reinforcing the identified strengths (Frederick and Markwardt 1989).
Intelligence tests assess the cognitive and problem-solving skills of an individual;
thus, they illustrate their intellectual potential (Psychological Cooperation, 1992).
An example of the application of Achievement Testing Methodology is a class
test for high school or college students. Giving a driving road test to get a driver's
license is also another example of applying the Achievement Testing Methodology.

Achievement and intelligent tests are usually the initial discriminatory tests
applied in evaluating development. They are used in development sometimes in

the form of psychometric tests (Nizoloman 2013). For example, a psychologist can use verbal comprehension in an IQ test associated with reading skills on an achievement test. Identified challenges in assessed areas may imply knowledge challenges and, thus, more testing may be suggested (Domino and Domino 2006). Examples of commercialized achievement tests include Wechsler Individual Achievement Test (WIAT-III) and the Peabody Individual Achievement Test. The WIAT- III is used for individuals between 4-85 years of age to assess reading, writing, speaking and mathematical aptitude and capabilities (Wechsler 2005). The Peabody Individual Achievement Test is used for individuals between the ages of 5-22 years of age in assessing learning disabilities and the appraisal of programs.

The Achievement Testing Methodology was employed in the study of Masino and Nino-Zarazua (2016) to assess and select policy interventions in education using a sample from developing countries. A study by Nizoloman (2013) also utilized the methodology to establish mathematical ability and achievement among secondary school students using a Nigerian sample.

Agent-Based Models (ABMs)

Agent-based modeling is a computational method that enables a researcher to develop, analyze, and experiment with models composed of agents that interact within an environment (Gilbert 2007). A model is intended to represent or simulate some real, existing phenomenon, and this is called the target of the model. Agents are either separate computer programs or, more commonly, distinct parts of a program that are used to represent social actors—individual people, organizations such as firms, or bodies such as nation-states. They are programmed to react to the computational environment in which they are located, where this environment is a model of the real environment in which the social actors operate. The environment is the virtual world in which the agents act. It may be an entirely neutral medium with little or no effect on the agents or, in other models, the environment may be as carefully crafted as the agents themselves.

Bonabeau (2002) describes agent-based modelling as a powerful simulation technique that grew incrementally and now includes several applications, including applications to real-world business problems. Gilbert (2007) argues that by using Agent-Based Models (henceforth, ABMs), one creates a simplified representation of "social reality" that serves to express as clearly as possible the way in which one believes that reality operates. For example, if one has a dependent variable and one or more independent variables, a regression equation serves as a model of the relationship between the variables. A network of nodes and edges can model a set of friendships.

ABMs are most often used as computerized abstractions/ideas of something from the real world or something that exists in conceptual form (Gilbert 2007). The agents in an ABM are almost always used to process data. ABMs thus act as a surrogate representation of some phenomenon or system for the purposes of experimentation or scenario-building. Bonabeau (2002) states that ABMs offer more benefits compared to other modelling techniques because of (a) their ability to capture emergent phenomena, (b) they provide a natural description of a system, and (c) their flexibility. As an example, from an investor's point of view, ABMs represent a new direction that may or may not result in more practical investment models. From an academic's point of view, however, ABMs are fascinating new tools that make it possible to investigate problems previously out of reach.

Gilbert (2007) distinguishes between individual-based and multi-agent-based models. According to him, individual-based models are usually designed to represent the behavior of a single agent such as an institution, a mind, or a predatory animal, while multi-agent models are generally built with many individual agents, each of which may play a different role or assume a set of distinct tasks in the model. Such models generally focus on the interactions among individuals or units. Multi-agent systems adopt a synoptic view, often from the bottom-up, to consider individual agency in the context of a larger or collaborative phenomenon. Often, the system that is considered is treated as a complex adaptive system and the interplay between agents and agent attributes is used to explore issues of emergence, feedback, self-organization, phase shift, and so on.

Gilbert (2007) also suggests that ABMs are very popular for their use in geographical research as a methodology for simulating risk and vulnerability. Emergency and catastrophic events, by their very nature, are all but impossible to explore and experiment in the real world. Models are therefore invaluable tools for evaluating plans and scenarios for vulnerability and resilience. Such models need to be realistic to be useful; however, ABMs can play an important role in modelling the human agency in panic, evacuation, and response.

Bootstrapping

The Bootstrapping Method was first proposed in 1979 by Bradley Efron. It is a statistical method used to obtain a nonparametric estimate of standard error, biases, and confidence interval (Efron 1979). The method consists of resampling some given observations to obtain a good estimate of statistical properties of the original population. According to Ujeh et al. (2016), bootstrapping is a resampling technique to estimate sample statistics with precision to perform significance

tests and to validate statistical models in situations where theoretical inference is difficult to get the result directly, especially in finding variance estimates.

Since its invention, bootstrapping has become a very powerful tool used to improve statistical estimation, especially in situations where the data are not normally distributed (Chaitip, Chaibonsi and Inluang 2014). Bootstrapping is also applicable for sample mean, sample quantile, t-statistics, and linear combination of order statistics (Chao and Lo 1985). It provides more accurate point estimates for prediction error and the variability for estimated parameters that can easily be assessed. It also provides a better way to compute empirically relevant critical values for hypothesis tests in econometrics.

Due to the problem of misspecification, a new group of bootstrapping techniques have been advanced to reduce this risk. Examples include the block, sieve, and local methods of bootstrapping. and these techniques are mostly nonparametric (Cerqueti, Falbo and Pelizzari 2013). Univariate distribution samples have also been generated using the Bootstrapping Method. This method treats the population distribution as an unbiased estimate. Nonetheless, given a multivariate distribution setting, the researcher must be careful with bootstrapping especially where dependence among variables is reproduced (Ruscio et al. 2007).

Dohan, Schmidt and Henderson (2005) used the Bootstrapping Method to study welfare workers' views on substance abuse and welfare reform. The authors found out that some workers endorse the notion of bootstrapping defined by the *American Heritage Dictionary* as acting "by the use of one's own initiative and work without reliance on outside help." (Date?) These workers adhered to the belief that individual orientations, attitudes, and behaviors made the crucial difference in whether welfare recipients would succeed in fulfilling their welfare contracts. In another study, to test and measure the efficiency and changes in productivity in the United Kingdom airline industry, Assaf (2011) used the Bootstrap Malmquist Index Method to overcome the statistical limitations of the data.

In yet another illustration, the Bootstrapping Method was employed to indicate the statistical correctness of the panel data Chaitip and his colleagues (2014) used to improve the estimation accuracy of their study. The study examined the statistical properties of technical efficiency in a panel data setting using data for sugarcane farming households in Thailand. Bootstrapping has also been used to explain the concept of learning. Beck (2017) employed the Bootstrapping Method to explain the concept of learning. He distinguishes two versions of bootstrapping called (1) modest bootstrapping and (2) radical bootstrapping.

In another study, Basiri et al. (2017) utilized the Bootstrapping Method to perform statistical inference on the FastICA (a popular algorithm for independent component analysis) estimates of mixing matrix. They used this method because bootstrapping provides an important tool to test hypotheses, providing an important assessment of the quality of estimators in terms of confidence intervals, standard error, and variance.

Calculus for Social Science Research

According to Stewart (2011), Calculus is divided into two branches: (1) Differential Calculus and (2) Integral Calculus. Differential Calculus uses the concept of function derivative to analyze behavior and the rate of change. Using Differential Calculus, we can compute, analyze, and predict the graph of functions. Integral Calculus is the reverse process of differentiation, concerned with the concept of the anti-derivative. Literally, integration means accumulation.

Calculus is highly utilized in the social sciences where it is used to develop mathematical models to arrive at an optimal solution. For example, in Economics, Calculus is used to compute marginal cost and marginal revenue, enabling economists to predict maximum profit in a specific setting.

As mentioned earlier, Calculus is divided into Differential and Integral Calculus. Differential Calculus is the rate of change of a quantity (Stewart 2011; Hughe-Hallet et al. 2009); thus, it is how fast a quantity is changing. Differentiation is usually perceived as the slope of a tangent line to a function (Boyer 1991) and calculated by finding the limit as h approaches zero of the quotient of the difference of the value of the function at a point $x = a + h$ and the value of the function at the point $x = a$ with the value of h. Mathematically, this is expressed as follows:

$$\lim_{h \to 0} \frac{f(a + h) - f(a)}{h}$$

Integral Calculus tries to estimate the area under the curve by using approximating rectangles. The number of rectangles used in the computation is n and, in the definite integral, the number of rectangles is allowed to approach infinity. As n approaches infinity, the width of the rectangles is forced to shrink towards zero and results in the approximating area becoming exact (Stewart 2011).

Mathematically, the definite integral is the limit as n approaches infinity of the sum from 1 to n of the product of the function with the change in x:

$$\int_a^b f(x)dx = \lim_{h\to\infty} \sum_{i=1}^{n} f(x_i^*)\Delta x$$

In social science research, several researchers have made use of Calculus. For example, Biagini and Ø ksendal (2005) made use of stochasticity to model insider trading. The study modelled the market which is influenced by many investors with insider information. Tejado et al. (2015) also modelled economic growth using fractional Calculus and the Spanish data.

Chaos and Catastrophe Theories

The Chaos and Catastrophe Theories Method originated from the fields of Mathematics and Physics. Chaos Theory is a rigorous mathematical model also known as the butterfly effect (Kiel and Welliott 1997). The model aims to explain how minor modifications in initial conditions within complex dynamic structures can extensively affect outcomes (Lorenz 1996.). It is used to explain the elements affecting traffic flow in traffic jams, weather prediction models, and epileptic fits among other factors. Chaos Theory has been used in Computer Science to refine robotics through predictive models to eliminate the trial and error process in interacting with the environment (Ulrich and Walker 2005). It is also used in Psychology to support notions that an individual replicates group dynamics on a different scale, and the chaotic behavior of the group is reflected in each member (Forno and Merlone 2013).

Catastrophe Theory refers to the model of an abrupt discontinuous transition of phenomenon such as the fall of a government, a riot by a mob, and the freezing of water or other liquids (Zeeman 1977; Igorevich 1992). It is used to show a sequence of continuous changes: for example, how the frustration of citizens in a country can initiate quick and broad scale changes (catastrophic adjustments) such as the removal of a leader or the fall of an empire (Thom 1989). The removal of President Park Geun-hye of South Korea by the citizens as a result of her abuse of power and corruption (Aljazeera 2017) is an example. Another example can be the collapse of a bridge due to harsh weather conditions. This can be related to the Nkankezi Bridge in Zimbabwe in the Masvingo-Bulawayo highway which collapsed because of Cyclone Dineo in February 2017 (*Chronicle* 2017). Catastrophe Theory is therefore a way for a continuous function to model an abrupt change that would normally be called a discontinuity (Zeeman 1977; Bangura 2012).

Chaos Theory was utilized in the study of Adewumi et al. (2016) to predict motorized traffic flows on urban networks in South Africa. The results of the study addressed the challenges of traffic jams through the identification of techniques which are effective in controlling traffic flow. The model was also utilized in a tourism study in which ecotourism was conceptualized as a change agent in African countries (Ariwa and Syvertsen 2010). The results of the study were used to promote tourism in the continent. Catastrophe Theory was employed in a study by Birau (2013) for market forecasting in Africa. The theory yielded a new level of understanding concerning the idea of the stock market. Kaki (2012) in his study also utilized Catastrophe Theory to highlight the catastrophic behavior of nerve cells.

Quantitative Content Analysis

The Quantitative Content Analysis Method generally refers to the 'systematic counting, assessing, and interpreting of the form and substance of communication' (Manheim and Rich 1981:155) The method utilizes a variety of tools to study media content. The broad nature of the field has led to various definitions over the years. According to Berelson, content analysis is 'a research technique for the objective, systematic, and quantitative description of the manifest content of communication' (1952:18). Holsti says that content analysis is 'any technique for making inferences by systematically and objectively identifying specified characteristics of messages' (1968:14) Kerlinger defines content analysis as 'a method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables' (1986:523). More modern definitions have specifically included references to social media, sentiment analysis, and big data approaches. Overall, the Quantitative Content Analysis Method in this way transforms observations of found categories into quantitative statistical data.

Content analysis grew out of work conducted by theorist Alfred Lindesmith, who devised a means of refuting a hypothesis known as "The Constant Comparative Method of Qualitative Analysis" in 1931. Quantitative analysis built upon these qualitative research tools and applied more rigorous statistical and scientific techniques. Krippendorff (2004) developed the following six questions based on Lind Smiths' work that must be considered in any content analysis:

1. Which data are analyzed?
2. How are they defined?
3. What is the population from which they are drawn?

4. What is the context relative to which data are analyzed?
5. What are the boundaries of the analysis?
6. What is the target of the inferences?

When analyzing data using the Quantitative Content Analysis method, the assumption is that words and phrases mentioned most often are those reflecting important concerns in every communication. Therefore, the method starts with word frequencies, space measurements (column centimeters/inches in the case of newspapers), time counts (for radio and television time) and keyword frequencies. Nonetheless, the method extends far beyond plain word counts. For example, with "Keyword in Context" routines, words can be analyzed in their specific context to be disambiguated.

Quantitative Content Analysis requires formal properties such as word frequencies, space measurements, time counts, hashtags, number of tagged people in an image, number of friends, or liked pages. The objects of analysis may vary from traditional textual content (messages, bibliometric, citation analysis/indexing, webpages, trending topics on twitter), to any media object with specified formal properties or metadata (video, photographs, phone conversations). At least three important distinctions from qualitative content analysis arise because of this. First, as opposed to qualitative analysis, quantitative (or computer-based and automated) analysis is better suited for closed inquiries, and typically results in emergent categories rather than manually assigned categories (which also make this type of analysis useful to derive probable predictions about the future). Second, because of focusing only on formal properties, quantitative content analysis typically applies to manifest contents (literal content) rather than its latent meaning (implied content). Third, McKeone (1995) distinguishes between prescriptive analysis (which has a closely defined set of specific parameters) and open analysis (which can be applied to many types of texts and content, and where dominant messages are identified in the analysis). Moreover, because the researcher often requires instruments to measure and count (e.g., a computer), the reliability (every research will get the same results) and validity (it measures what it is supposed to measure) of the apparatus and techniques (e.g. its software) should always be reflected upon as part of the research (Zeh 2005).

Expert Systems

An expert system is a computer program that simulates the thought process of a human expert to solve complex decision problems in a specific domain. The growth of expert systems is expected to continue. With the continuing growth,

many new and exciting applications will emerge. An expert system operates as an interactive system that responds to questions, asks for clarification, makes recommendations, and generally aids the decision-making process. Expert systems provide expert advice and guidance in a wide variety of activities, from computer diagnosis to delicate medical surgery (Jackson 1999; Bullinaria 2005). Various definitions of expert systems have been offered by several authors.

A general definition that is representative of the intended functions of an Expert Systems Method is that it is an interactive computer-based decision tool that uses both facts and heuristics to solve difficult decision problems based on knowledge acquired from an expert. An expert system may equally be viewed as a computer simulation of a human expert. Jackson (1999) provides us with the following definition: "An *expert system* is a computer program that represents and reasons with knowledge of some specialist subject with a view to solving problems or giving advice. To solve expert-level problems, expert systems will need efficient access to a substantial domain *knowledge base* and a *reasoning mechanism* to apply the knowledge to the problems they are given" (Jackson 1999: 5). Usually they will also need to be able to explain to the users who rely on them how they have reached their decisions. They will generally build upon the ideas of knowledge representation, production rules, search, and so on (Jackson 1999; Bullinaria 2005).

Past applications of expert systems range from MYCIN (an expert system designed to provide expert level solutions to complex problems), used in the medical field to diagnose infectious blood diseases, to XCON (developed by Digital Equipment Corporation), used to configure computer systems. These expert systems have proven to be quite successful. Most applications of expert systems will fall into one of the following categories: interpreting and identifying, predicting, diagnosing, designing, planning, monitoring, debugging and testing, instructing and training, or controlling (Jackson 1999; Bullinaria 2005).

Expert Systems are designed by knowledgeable engineers to simulate the type of reasoning, decision-making and cognitive processes that an expert in a given field or occupation would demonstrate. There are two primary parts to expert systems: (1) a knowledge base and (2) a reasoning engine. The knowledge base contains both factual and judgmental knowledge. The reasoning engine uses inference to solve problems, often using "if-then" decision chains (Jackson 1999; Bullinaria 2005).

One example of an Expert System is an artificial intelligence system that emulates an auto mechanic's knowledge in diagnosing automobile problems**.** This hypothetical expert system would likely be the result of engineering using an actual

mechanic's knowledge base. Some typical existing Expert System tasks include the interpretation of data such as sonar data or geophysical measurements, diagnosis of malfunctions such as equipment faults or human diseases, structural analysis or configuration of complex objects such as chemical compounds or computer systems, planning sequences of actions such as might be performed by robots, and predicting the future such as weather, share prices, exchange rates (Jackson 1999; Bullinaria 2005).

Graph Algebra

Graphs are combinatorial objects that sit at the core of mathematical intuition. They appear in numerous situations throughout mathematics and have often constituted a source of inspiration for researchers (Pino, et al. 2006). Humpert and Martin (2011) describe Graph Algebra as a commutative, co-commutative, graded, connected Hopf Algebra (construct related to the symmetries of group actions), whose basic elements correspond to finite graphs, and whose Hopf product (solution) and co-product admit simple combinatorial descriptions.

Graph Algebra is integrated with discrete time application, which implies the use of different equations, which in turn are often appropriate for the social sciences since a great deal of social scientific data is collected in discrete intervals. Examples of these are census data, economic data, election data, and polling data (which often correspond with an electoral calendar). Models can also be built by using Graph Algebra that have both continuous and discrete parts. These are called metered differential equations. Graph Algebra is a language that can be used in an explanatory manner to develop new nonlinear model specifications that may be associated with chaos and other complex behaviors. For example, perhaps the most famous of all continuous time models used to study chaos involves "strange attractors" discovered by Lorenz (1963).

When developing a Graph Algebra model, a theorist is confronted with the challenging problem of having to figure out, on the level of algebra alone, how change in one variable will be affected by both the levels and the change in other variables. Many social theorists may find it helpful when working with nonlinear processes to exploit a Graph Algebra schematic picture of these processes, thereby extending the algebraic flexibility of their efforts (Brown 2008).

Internet Data Collection

Due to the advancement of information and communication technologies (ICTs), new technological tools have emerged to support data collection for the

production of quality research (Benfield and Szlemko 2006). The Internet Data Collection Method has become a tool utilized by many researchers to access quality research materials. The high demand for Internet-based data collection technique is occasioned by the ease with which information is obtained and utilized or transferred by the use of electronic resources (Rosnow and Rosenthal 2005).These electronic resources include software and databases used for data collection and analysis.

The first case of electronic survey called the current mining and manufacturing survey was applied in South Korea in 1977. The survey was conducted within the framework of Internet-based data collection. In the process of data collection, software for an electronic survey was installed in the computer(s) of a respondent within an establishment (NSO Report 2006). Upon further education on how to use the program, respondents were able to fill out the electronic questionnaire using the software at their convenience after which the questionnaires were then transferred to the file of the National Statistics Office (henceforth, NSO). NSO examined the submitted files and summed them up with results in a paper survey to produce its total statistics.

The Internet-based electronic survey is advantageous in that it saves time and is less costly since Internet services reduce the possibility of over-employment and, hence, maximizing profit for the institution. Even though the Internet Data Collection Method brought positive innovations towards data collection and subsequent analysis, it recorded alongside disadvantages associated with database optimization. In cases where participants witnessed a faulty installation or encountered error in the use of databases like Statistical Package for Social Sciences (SPSS), NetLogo, NVivo etc., they had no option but to uninstall and reinstall the database to ensure proper functioning (Koo and Skinner 2005). This process is not only time consuming, but it also leads to inconsistence for inexperienced researchers. Also, outdated computers are unable to support new software programs, thereby propagating innovative research. Additionally, it seems impossible to get assistance in situations where respondents are inexperienced. In attempting to solve the problems associated with Internet-based data collection, manual installations of software used for data collection and analysis were replaced with automatic databases available online. This innovative approach reduced the difficulties encountered with faulty installations and the use of outdated software. Also, respondents could now access institutional servers using specific identification passwords to access data and fill out electronic questionnaires within institutional data bases (Koo and Skinner 2005).

Linear Programming

The development of the Linear Programming Method has been ranked among the most important scientific advances of the mid-20th Century. Its impact since 1950 has been extraordinary. Today, it is a standard tool that has saved many millions of dollars for most companies or businesses of even moderate size in the various industrialized countries of the world, and its use in other sectors of society has been spreading rapidly. A major proportion of all scientific computations on computers is devoted to the use of linear programming. Dozens of textbooks have been written about the method, and published articles describing important applications now number in the hundreds (Hillier and Lieberman 2001). What is the nature of this remarkable tool, and what kinds of problems does it address?

Briefly, the most common type of application for linear programming involves the general problem of allocating *limited resources* among *competing activities* in a best possible (i.e. *optimal*) way. More precisely, this problem involves selecting the level of certain activities that compete for scarce resources that are necessary to perform those activities. The choice of activity levels then dictates how much of each resource will be consumed by each activity. The variety of situations to which this description applies is diverse, indeed, ranging from the allocation of production facilities to the allocation of national resources to domestic needs, from portfolio selection to the selection of shipping patterns, from agricultural planning to the design of radiation therapy, and so on. However, the one common ingredient in each of these situations is the necessity for allocating resources to activities by choosing the levels of those activities (Hillier and Lieberman 2001).

The Linear Programming Method uses a mathematical model to describe the problem of concern. The adjective *linear* means that all the mathematical functions in this model are required to be *linear functions*. The word *programming* does not refer here to computer programming; rather, it is essentially a synonym for *planning*. Thus, linear programming involves the *planning of activities* to obtain an optimal result: i.e. a result that reaches the specified goal best (according to the mathematical model) among all feasible alternatives. Although allocating resources to activities is the most common type of application, linear programming has many other important applications as well. In fact, *any* problem whose mathematical model fits the very general format for the linear programming model is a linear programming problem. Furthermore, a remarkably efficient solution procedure, called the *simplex method*, is available for solving linear programming problems of even enormous size. These are some of the reasons for the tremendous impact of linear programming in recent decades (Hillier and Lieberman 2001).

An example of how the Linear Programming Method has been utilized is how the Wyndor Glass Company produces high-quality glass products, including windows and glass doors. It has three plants: aluminum frames and hardware are made in Plant 1, wood frames are made in Plant 2, and Plant 3 produces the glass and assembles the products. Because of declining earnings, top management decided to revamp the company's product line. Unprofitable products were discontinued, thereby releasing production capacity to launch two new products having large sales potential: Product 1, an 8-foot glass door with aluminum framing and Product 2, a 4x6 foot, double-hung wood-framed window. Product 1 requires some of the production capacity in Plants 1 and 3, but none in Plant 2. Product 2 needs only Plants 2 and 3. The marketing division concluded that the company could sell as much of either product as could be produced by these plants. Nonetheless, since both products would be competing for the same production capacity in Plant 3, it was not clear which *mix* of the two products would be *most profitable.* Therefore, an operations research (henceforth, OR) team was formed to study this question. The OR team began by having discussions with upper management to identify management's objectives for the study. These discussions led to the following objective: Determine what the *production rates* should be for the two products in order to *maximize their total profit,* subject to the restrictions imposed by the limited production capacities available in the three plants. (Each product will be produced in batches of 20, so the *production rate* is defined as the number of batches produced per week.) *Any* combination of production rates that satisfies these restrictions is permitted, including producing none of one product and as much as possible of the other (Hillier and Lieberman 2001).

The OR team also identified the data that needed to be gathered: (a) number of hours of production time available per week in each plant for these new products (most of the time in these plants is already committed to current products, so the available capacity for the new products is quite limited); (2) number of hours of production time used in each plant for each batch produced of each new product; (3) profit per batch produced of each new product. (*Profit per batch produced* was chosen as an appropriate measure after the team concluded that the incremental profit from each additional batch produced would be roughly *constant* regardless of the total number of batches produced (Hillier and Lieberman 2001). Since no substantial costs will be incurred to initiate the production and marketing of these new products, the total profit from each one is approximately this *profit per batch produced* times *the number of batches produced*(Hillier and Lieberman 2001).

Obtaining reasonable estimates of these quantities required enlisting the help of key personnel in various units of the company. Staff in the manufacturing

division provided the data in the first category. Developing estimates for the second category of data required some analysis by the manufacturing engineers involved in designing the production processes for the new products. By analyzing cost data from these same engineers and the marketing division, along with a pricing decision from the marketing division, the accounting department developed estimates for the third category. The OR team immediately recognized that this was a linear programming problem of the classic *product mix*type, and the team then undertook the formulation of the corresponding mathematical model (Hillier and Lieberman 2001).

Matrix Algebra

Algebra is a part of mathematics that deals with operations (e.g. +, - , x, ÷). Matrix Algebra is a collection of numbers ordered by rows and columns. It is regular to enclose the elements of a matrix in parentheses, braces, or brackets. Matrix is symbolized by bold face capital letters enclosed by brackets or parentheses. A matrix that has two rows and three columns is referred to as a 2x3 matrix. The genesis of the matrices dates back to end of the 17th Century when the idea reappeared, and development really got underway (Abadir and Magnus 2005). The origin of matrices and determinants rose through the study of systems of linear equations.

Matrix Algebra applies to several branches of science and different mathematics disciplines (Harville 1997). Matrices present a most suitable vehicle for organizing and storing large quantities of data. A matrix is a tool for organizing vast quantities of data. Matrices are used to represent complex systems and operations by compact entities. Matrix representations are possible in various ways, hence, there is transportation matrix, distance matrix, and cost matrix.

Matrix Algebra also assists us in calculating the electrical properties of circuits with voltage, amperage or resistance. The field of probability and statistics may also use matrix representation. A probability vector will list the probabilities of different outcomes of one trial. Computers run Markov simulations based on stochastic matrices in order to model events ranging from gambling through weather forecasting to quantum mechanics. A stochastic matrix is a square matrix whose rows are probability vectors (Abadir and Magnus 2005).

Matrix Algebra can be used in a wide variety of decision situations. Perhaps its widest use is in examining and predicting the behavior of consumers in terms of their brand loyalty and switch over from one brand to another (Searle 1982). Another application of this technique in business was used towards the study

of accounts receivable behavior: that is, the study of consumers as they change from "current account" through "30 days overdue" to "30 to 60 days overdue" and then to "bad debt." In each of these applications, the interest is in predicting what the future will bring (number of bad debts, for example, in the account receivable application) by analyzing what the present behavior is—the propensity of customers to move from one current account to various past due categories (Searle 1982).

Maximum Likelihood Estimation

Maximum Likelihood Estimation is described as a simple method of constructing an estimator for an unknown parameter. The method is important because it gives a single value for the unknown parameter (Orloff and Bloom 2014:). Hurlin sees the method as a tool for estimating the parameters of a model. This estimation method is one of the most widely used to select the set of values of a model's parameters that maximizes the likelihood function. Intuitively, this maximizes the "agreement" of the selected model with the observed data. The Maximum Likelihood Estimation Method gives a unified approach to estimation.Italways begins with a mathematical expression known as a "likelihood function" of the sample data. This expression contains the unknown parameters to be estimated. Those values of the parameter that maximize the sample likelihood are known because the maximum likelihood estimates which are determined by setting the partial derivative of the likelihood function to zero: that is, finding the location of the function's peak with respect to the estimated parameters (Hurlin 2013:).

The Maximum Likelihood Estimation Method is applied through means, variances, probabilistic distribution, and covariance of the observations. The method is a robust parameter judgment technique. These parameters depend on the assumptions. In fields like finance, a small number of very large observations are of crucial importance for the computation of some quantity of interest. For instance, the estimation of a large quantile (say 99% or more) depends heavily on few observations in the right tail. In this case, it is extremely important to choose a probabilistic model that accounts for these observations (Bee et al. 2009). The method can also be employed in logistic regression to estimate unknown parameters: for instance, to find the set of parameters for which the probability of the observed data is greatest (Czepiel 2010).

The maximum likelihood estimation of the parameters of a Pareto mixture is an example of this methodology. Bee et al. (2009:) demonstrate that the Pareto distribution is a commonly used model for heavy-tailed data. It is a two-parameter

distribution whose shape parameter determines the degree of heaviness of the tail, so that it can be adapted to data with different features. The Pareto distribution was introduced by the Italian economist Pareto as a model for income distribution, and it has subsequently been used mostly as a model for heavy-tailed data, in particular in hydrology, insurance, and finance.

Metric Scaling

A metric scale is a form of measurement used in the metric system. The metric system is the world standard for measurement and is made of three basic units: (1) meter, (2) gram, and (3) liter. The meter measures length, the gram measures mass, and the liter measures volume) (reference.com).

The Metric Scaling Method is employed to summarize interval scales, ratio scales, and absolute scales (Kenkel 1986). The metric scale is the system of measurement used in the metric system. Unlike the customary system of measurements in the United States, the metric scale has units based on multiples of 10.

Different metric scales exist for different types of measurements. The meter is the metric scale unit for length; the gram is the metric scale unit for the mass of weight, which is weight divided by force of gravity; and the liter is the metric scale unit for volume. One advantage of the metric scale is that it makes it easier for users to perform calculations because, as stated above, its units are based on multiples of 10 (sciencing.com).

Multivariate Analysis of Variance

Tabachnick and Fidell (1996) and Pearl (2000) define the Multivariate Analysis of Variance (henceforth, MANOVA) Method simply as an Analysis of Variance (henceforth, ANOVA) with several dependent variables. Put simply, ANOVA tests for the difference in means between two or more groups, while MANOVA tests for the difference in two or more vectors of means.

George and Dunteman (1984) presented a perfect example of the application of MANOVA on students' improvements in math and physics. An example of how MANOVA can be utilized, according to these scholars, is to conduct a study in which two different textbooks are used try to determine students' improvements in math and physics. In this case, improvements in math and physics were the two dependent variables, and the research hypothesis was that both variables together were affected by the difference in textbooks. MANOVA could then be used to test this hypothesis (George and Dunteman 1984).

Instead of a univariate F value/statistic (i.e. "the variance of the group means/ mean of the within group variances"), one would obtain a multivariate F value (Wilks') based on a comparison of the error variance/covariance matrix and the effect variance/covariance matrix. Although we only mention Wilks' here, there are other statistics that may be used, including Hotelling's trace and Pillai's criterion. The covariance here is included because the two measures are probably correlated, and must take this correlation into account when performing the significance test (George and Dunteman 1984).

According to Cooley and Lohnes (1971), testing multiple dependent variables is accomplished by creating new dependent variables that maximize group differences. These artificial dependent variables are linear combinations of the measured dependent variables. This is better explained by Morrison (1967) in his example with the following five research questions:

1. What are the main effects of the independent variables?
2. What are the interactions among the independent variables?
3. What is the importance of the dependent variables?
4. What is the strength of association between dependent variables?
5. What are the effects of covariates? How may they be utilized?

According to Morrison (1967) and Pearl (2000), the main objective in using MANOVA is to determine if the response variables (student improvement in the example mentioned above) are altered by the observer's manipulation of the independent variables. Therefore, their preceding research questions may be answered by using MANOVA.

If the overall multivariate test is significant, we conclude that the respective effect (e.g., textbook) is significant. However, our next question would of course be whether only math skills improved, only physics skills improved, or both. In fact, after obtaining a significant multivariate test for a particular effect or interaction, customarily one would examine the univariate F tests for each variable to interpret the respective effect. In other words, one would identify the specific dependent variables that contributed to the significant overall effect (Morrison 1967; Pearl 2000).

MANOVA is useful in experimental situations where at least some of the independent variables are manipulated. It has several advantages over ANOVA. First, by measuring several dependent variables in a single experiment, there is a better chance of discovering which factor is truly important (Morrison 1967; Pearl 2000). Second, it can protect against Type I errors that might occur if multiple ANOVAs

were conducted independently. Additionally, it can reveal differences not discovered by ANOVA tests. However, there are several cautions as well. It is a substantially more complicated design than ANOVA, and therefore there can be some ambiguity about which independent variable affects each dependent variable. Thus, the observer must make many potentially subjective assumptions. Moreover, one degree of freedom is lost for each dependent variable that is added. The gain of power obtained from decreased Sum of Square Error (SSE) may be offset by the loss in these degrees of freedom (Morrison 1967; Pearl 2000). Finally, the dependent variables should be largely uncorrelated. If the dependent variables are highly correlated (i.e. multicollinearity), there is little advantage in including more than one in the test given the resultant loss in degrees of freedom. Under these circumstances, use of a single ANOVA test would be preferable (Morrison 1967; Pearl 2000).

Neural Networks

Neural Networks (henceforth, NNs) also known as Artificial Neural Networks (henceforth, ANNs) are an information processing paradigm that is inspired by how biological nervous systems, such as the brain, process information (Stergious and Siganos n.d.). It is made up of many highly interconnected processing elements (neurones) that work together to solve specific problems by trying to imitate the structure and the function of the human nervous system. An NN is configured for a specific application, such as pattern recognition or data classification, through a learning process. In simple terms, it is a computer system modelled on the human brain and nervous system. This system however differs from the conventional computers in terms of the problem-solving approach. Conventional computers use an algorithmic approach where the computer follows a set of instructions in order to solve a problem. The NN resembles the human brain in two ways: (1) it requires knowledge through learning; and (2) knowledge is stored within the interconnection strengths known as synaptic (Stergious and Siganos n.d.).

The neuron is a device with many inputs and one output. A neuron has two modes of operation: (1) the training mode and (2) the using mode. In the training mode, the neuron can be trained to fire (or not) for particular input patterns. In the using mode, when a taught input pattern is detected at the input, its associated output becomes the current output. If the input pattern does not belong in the taught list of input patterns, the firing rule is used to determine whether to fire or not (Stergious and Siganos n.d.).

The firing rule is an important concept in neural networks and accounts for their high flexibility. A firing rule determines how one calculates whether a neuron

should fire for any input pattern. It relates to all the input patterns, not only the ones on which the node was trained. After the firing rule, the patterns are recognized and implemented by using a feed-forward neural network that has been trained accordingly. During training, the network is trained to associate outputs with input patterns. When the network is used, it identifies the input pattern and tries to output the associated output pattern (Stergious and Siganos n.d.).

NNs have been successfully applied in several industries such as for sales forecasting, industrial process control, customer research, data validation, risk management, and target marketing. In medicine, it has been used to recognize diseases such as tumors, bony structures, fractures and infections in the organs and tissues using various scans such as computerized tomography scan and ultrasonic scans (Stergious and Siganos n.d.).

Methodology

This is a method used in psychology and the social sciences to study people's subjectivity or viewpoints. It was developed by William Stephenson in 1993/1994. This method is widely used in clinical settings to assess a patient's progress over time or examine how people think about a topic: i.e. inter-rater comparisons (Stephenson 1993/1994).

Q-Methodology comes from the form of factor analysis that is used to analyze data. While the R-Methodology involves finding correlations between variables—e.g., height and age, Q-Methodology looks for correlations between subjects across a sample of variables. Q-Methodology reduces the many viewpoints of the subjects to a few factors which represent shared ways of thinking. Statements of a Q sort are drawn from a "concourse": i.e. the sum total of all things people say or think about a subject. The Q sort scaling is a rank technique whereby respondents are asked to sort presented objects into piles based on similarity according to a specified criterion such as preference, attitude, or perception. It typically uses fewer subjects (sometimes only one) as compared to other methods. Another advantage of the methodology is that it is not expensive (Stephenson 1993/1994).

In studies of intelligence, the Q factor generates consensus-based assessment scores. The process usually involves using a paper template and a sample of statements printed on individual cards (Stephenson 1993/1994). An application of the Q-Methodology would be in identifying and categorizing the opinions of primary care physicians and students on acceptance or resistance to adapting information technologies in the health care workplace (Stephenson 1993/1994).

Randomized Responses

The Randomized Responses Method is a survey technique proposed by Warner (1965)to "reduce potential bias to non-response and social desirability when asking questions about sensitive behaviors and beliefs" (Warner 1965: 63). In other words, this method is used to protect and ensure confidentiality of respondents, particularly when the information needed, or question asked is sensitive (Rueda, Arcos and Cobo 2015). Thus, this method becomes an important survey tool to gain the cooperation and confidence of respondents in orderto obtain valid and reliable information to avoid biased responses (Blair, Imai and Zhou 2015; Rueda, Arcos and Cobo 2015). It means that this method precludes the challenges of untruthful responses when sensitive and personal questions are asked of respondents. The method also prevents respondents from "over-reporting of socially desirable behavior and attitude and systematic under-reporting of socially undesirable ones" (Blair, Imai and Zhou 2015: 1304).

By extension, the method dictates the respondent's answered question. To achieve this, the method allows the respondent the opportunity to select the question s/he will answer using randomized maneuvers such as the toss of a coin (Blair, Imai and Zhou 2015; Rueda, Arcos and Cobo 2015).

Regression Analysis

Regression Analysis is a statistical method for estimating the relationships among variables. It is a method for measuring the link between two or more phenomena being examined in a study. It helps one to understand the typical value of the dependent variable, how it changes when any one of the independent variables is varied while other independent variables are fixed. Regression Analysis is used to predict, forecast, and understand which ofthe independent variables are related to the dependent variable(s) and to explore their relationships. Additionally, it is useful for analyzing large amounts of data (Gallo 2015).

There are many techniques for carrying out Regression Analysis like simple linear regression, non-linear regression, and multiple regression. The regression equation has (a) y or dependent variable, which represents the process you are trying to predict or understand and it appears on the left side of the equal sign; (b)   or alpha, which is the nonrandom structural component; (c) independent/ explanatory variables x, which are variables used to model or predict the dependent variable values, and they appear on the right side of the equal sign; (d) the regression coefficient β, which is computed by the regression tool—coefficients

are values, one for each explanatory variable that represents the strength and type of relationship the explanatory variable has with the dependent variable; and (e) ε or error term, which is the disturbance, remainder or residual term. The regression equation is represented as follows:

$$Y = \alpha\ \beta_0 + \beta_1\ X_1 + \beta_2\ X_2 + \beta_3\ X_3 \ldots \beta_n\ X_n + \varepsilon$$

To conduct a Regression Analysis, a researcher is to gather data on the variables, put the information on a chart where the y-axis takes the dependent variable and the x-axis takes the independent variable(s), and draw a line that runs through the middle of the data points to show the relationship between the dependent and independent variables. If working with a statistical program like SPSS, it will provide the error term that refers to the fact that regression is not perfectly precise (Gallo 2015).

Survey Method

A survey is any activity that gathers information in a systematic manner about a situation, an area of interest, or about people's attitudes, opinions, behaviours, interests, or practices. The Survey Method is predominantly descriptive. This explains why the terms descriptive and survey method are used interchangeably (Fowler 2013). The method involves the collection of data from a sample of elements (e.g., adult women) drawn from a well-defined population (e.g., all adult women in the Maasai community) using a questionnaire. According to Pinsonneault (1993), surveys are good for gathering information about the characteristics, actions, or opinions of a large group of people.

Written surveys are best suited for confidential information. This approach is often used in military research where action reports are used to evaluate an exercise (Chilisa, Bagele and Preece 2005). Verbal surveys through face-to-face interviews are useful where the actual population is not known or where there is respondent resistant to written surveys. A mixed method of both written and verbal surveys reflects a higher composite response rates than single medium survey (Salant, Priscilla and Don 1994).

An example of the effective utilization of the Survey Method is the case of Botswana. Surveys in which everybody is required to participate are the population census, livestock census, and agricultural census. The law states that a person who without reason refuses to participate in a survey shall be guilty of an offence and liable to a fine or imprisonment or both (Chilisa 2005).

Test Item Bias

Bias refers to the characteristics of an item that might lead to differential performance for individuals of the same ability. Ideally, in a good test, learners with similar knowledge of the test should perform similarly on individual examination items, regardless of gender, culture, ethnicity, or race (Perrone 2006).When used in education, a biased test is one whose test design, or the way results are interpreted and used, systematically marginalizes a group of learners over others (Hambleton & Rodgers 1995).

There are three types of methods used to test for item bias: (1) construct validity, (2) content validity, and (3) predictive validity. The construct-validity bias test method investigates the ability of a given test to accurately enumerate what it was developed to measure. An example would be a mathematics intelligencetest that has mathematical concepts that students have not learned. Consequently, their test results might reflection their weak mathematical competencies rather than academic or intellectual abilities (Perrone 2006; Hambleton & Rodgers 1995).

The content-validity bias test is employed when a single test in terms of content becomes comparatively more difficult for one group of students than for others. This could be a result of existing bias in the exposure of different subcategories to the learning materials available. Another example is when the scoring disadvantages a group of students over others. Some of the questions might have varying answers or even conflicting answers based on their varying cultural context; yet, the scoring sheet deems one of the group's answers incorrect. In some tests, some questions are worded in ways that are unfamiliar to certain students because of linguistic or cultural differences (Perrone 2006; Hambleton & Rodgers 1995).

The predictive-validity bias test, sometimes referred to as criterion-related validity, is used to look at an ability of a test to accurately predict the performance of a student in future. Unbiased tests are those tests that can predict the academic performance of students in future performance (Perrone 2006; Hambleton & Rodgers 1995).

In sum, test scores bias is a theoretical concept. It depends on a theoretical notion of a true score. Nonetheless, the existence of differences in group test scores does not necessarily mean that test scores are biased. Sometimes, the group differences may reflect the real difference in the test.

Test of Significance

The Test of Significance is a statistical method employed to draw inferences from samples about a population. Therefore, the significance level for a given hypothesis test is a value for which a P-value less than or equal to is considered statistically significant. A significance test is performed to determine if an observed value of a statistic differs enough from a hypothesized value of a parameter to draw the inference that the hypothesized value of the parameter is not the true value (Lane and Dunlap 1978).

When we use a test of significance to compare two groups, we usually start with the null hypothesis that there is no statistical difference between the populations from which the data come. If this hypothesis is not valid, the alternative hypothesis must be true that there is a difference. When the null hypothesis is rejected, the effect is said to be statistically significant. If the null hypothesis is rejected, then the alternative to the null hypothesis (called the alternative hypothesis) is accepted (Bland and Bland 1994). Steps involved in testing for statistical significance include stating the null hypothesis, selecting a probability of error level (alpha level), selecting and computing the test for statistical significance, and interpreting the results (Saint-Germain 2010).

The Test of Significance Method is used to estimate the probability that a relationship observed in the data occurred only by chance; this means that the probability that the variables are unrelated in the population is tenable. The method has also been employed to filter out unpromising hypotheses. Tests for statistical significance are used because they constitute a common yardstick that can be understood by a great many people, and they communicate essential information about a research project that can be compared to the findings of other projects (Saint-Germain 2010).

Time Series Analysis

Time Series Analysis involves the application of methods to naturally ordered series data to reveal their characteristics and statistics (Strickland 2015). It may include regularly or sequentially recorded data. Two methods are mainly used: (1) frequency-domain methods and (2) time-domain methods. Frequency domain methods are divided into spectral analysis and wavelet analysis. Wavelet analysis uses auto-correlation and cross-correlation analyses. Time domain methods use scaled correlation. Other techniques include parametric and non-parametric methods. Parametric methods set out the parameters of structures in the stochastic

process. Non-parametric methods do not assume a structure within the data by estimating covariance or spectrum. Furthermore, time analysis categories may include univariate and multivariate and linear and non-linear (Strickland 2015).

Also, using previously observed data, future values can be predicted (i.e. time series forecasting). It can be applied "to real-valued, continuous data, numeric data, or discrete symbolic data: i.e. sequences of characters, such as letters and words in the English language" (Strickland 2015). An example of time series data includes the recording of daily closings of a stock exchange. The Time Series Analysis Method was used to analyze stock prices by Green (2011) using the Box-Jenkins approach: i.e. taking value samples at regular intervals and enabling the identification of autocorrelation patterns within the data.

UnidimensionalScaling

The Unidimensional Scaling Method is the special one-dimensional case of multidimensional scaling which provides a visual representation of the pattern of proximities: for example, similarities or distances among a set of objects. It is often discussed separately because the unidimensional case is quite different from the general multidimensional case. It is applied in situations where we have a strong reason to believe that there is only one interesting underlying dimension, such as time, ability, or preference. The method is also very different from multidimensionalscaling techniques because the latter use very different algorithms to minimize their loss (De Leeuw 2005).

Thus, the unidimensional scaling problem, with a known scale order, requires us to minimize $(x – t)0V(x – t)$ over all x satisfying the order restrictions. This is a monotone regression problem [2], which can be solved quickly and uniquely by simple quadratic programming methods (De Leeuw 2005).

Now for some geometry, the vectors x satisfying the same set of order constraints form a polyhedral convex cone K in Rn. Think of K as an ice cream cone with its apex at the origin, except for the fact that the ice cream cone is not round, but instead bounded by a finite number of hyper planes. Since there are n! different possible orderings of x, there are n! cones, all with their apex at the origin. The interior of the cone consists of the vectors without ties and intersections of different cones are vectors with at least one tie. Obviously, the union of the n! cones is all of Rn. Thus, the unidimensional scaling problem can be solved by solving n! monotone regression problems, one for each of the n! cones. The problem has a solution which is at the same time very simple and prohibitively complicated. The simplicity comes from the n! sub-problems, which are easy to

solve, and the complications come from the fact that there are simply too many different sub-problems. Enumeration of all possible orders is impractical for $n > 10$, although using combinatorial programming techniques makes it possible to find solutions for n (De Leeuw 2005).

References

Abadir, Karim M. and Jan R. Magnus, 2005, *Matrix Algebra*, vol. 1, Cambridge, UK: Cambridge University Press.

Adewumi, Aderemi, Jimmy Kagamba and Alex Alochukwu, 2016, 'Application of Chaos Theory in the Prediction of Motorised Traffic Flows on Urban Networks', *Mathematical Problems in Engineering*, 2016:1-15, retrieved on April 15, 2017 from

https://www.hindawi.com/journals/mpe/2016/5656734/

Aljazeera, 2017, 'Park Geun-hye Fired as Court Upholds Impeachment', *Aljazeera News*, March 10:1, retrieved on April 15, 2017 from http://www.aljazeera.com/news/2017/03/park-geun-hye-impeachment-170310020959193.html

Ariwa, Ezendu and Carsten Martin Syvertsen, 2012, 'Green Digital Enterprise and Chaos Theory in Tourism Development: The Case of Eco-tourism in South Africa', *International and Interdisciplinary Studies in Green Computing*, 232.

Assaf, Albert., 2011, 'A Fresh Look at the Productivity and Efficiency Changes of UK Airlines', *Applied Economics* 43, 17:2165-2175.

Bangura, Abdul Karim, 2012, *African Mathematics: From Bones to Computers*, Lanham, MD: University Press of America.

Basiri, Shahab, Esa Ollila and Visa Koivunen, 2017, 'Enhanced Bootstrap Method for Statistical Inference in the ICA Model', *Signal Processing,* 138:53-62.

Beck, Jacob, 2017, 'Can Bootstrapping Explain Concept Learning?', *Cognition,* 158:110-121.

Bee, Marco, Roberto Benedetti and Giuseppe Espa, 2009, *A Note on Maximum Likelihood Estimation of a Pareto Mixture,* 0903.

Benfield, Jacob and William J. Szlemko, 2006, 'Internet-based Data Collection: Promises and Realities', *Journal of Research Practice,* 2, 2:1.

Berelson, Bernard, 1952, *Content Analysis in Communications Research*, Glencoe, IL: Free Press.

Biagini, Francesca and Bernt Øksendal, 2005, 'A General Stochastic Calculus Approach to Insider Trading', *Applied Mathematics & Optimization* 52, 2:167-181.

Birău, Ramona, 2013, 'The Implications of Catastrophe Theory for Stock Market Forecasting', *ARPN Journal of Science and Technology,* 2, 5:360-363.

Blair, Graeme, Kosuke Imai and Yang-Yang Zhou, 2015, 'Design and Analysis of the Randomized Response Technique', *Journal of the American Statistical Association,* 110, 511:1304-1319.

Bland, Martin and Doug, Altman, 1994, 'Statistics Notes: One and Two-Sided Tests of Significance', *British Medical Journal,* 309, 6949:248.

Bonabeau, Eric, 2002, 'Agent-based Modeling: Methods and Techniques for Simulating Human Systems', *Proceedings of the National Academy of Sciences,* 99, 3:7280-7287.

Boyer, Carl B., 1991, *A History of Mathematics*, New York, NY: Wiley.

Brown, Courtney, 2008, *Graph Algebra: Mathematical Modeling with a Systems Approach*, Thousand Oaks, CA: Sage Publications.

Bullinaria, John A, 2005, 'IAI: Expert Systems', retrieved on April 15, 2017 from http://www.cs.bham.ac.uk/~jxb/IAI/w9.pdf

Cerqueti, Roy, Paolo Falbo and Cristian Pelizzari, 2013, 'Relevant States and Memory in Markov Chain Bootstrapping and Simulation', EconPapers, retrieved on April 15, 2017 from http://econpapers.repec.org/paper/pramprapa/46250.htm

Chaitip, Prasert, Chukiat Chaiboonsri and Fawikorn Inluang, 2014, 'The Production of Thailand's Sugarcane: Using Panel Data Envelopment Analysis (Panel DEA) Based Decision on Bootstrapping Method', *Procedia Economics and Finance,* 14:120-127.

Chao, Min-Te and Shaw-Hwa Lo, 1985, 'A Bootstrap Method for Finite Population', *Sankhyā: The Indian Journal of Statistics, Series A*:399-405.

Chilisa, Bagele and Julia Preece, 2005, *Research Methods for Adult Educators in Africa*, Cape Town, South Africa: Pearson South Africa.

Chronicle, 2017. 'Gone With the Floods! Bridge on Major Highway Swept Away', *The Chronicle*, 28:4.

Cooley, William W. and Paul R. Lohnes, 1971, *Multivariate Data Analysis*, New York, NY: John Wiley.

Creswell, John William, 1999, 'Mixed-method Research: Introduction and Application', *Handbook of Educational Policy*, 455-472.

Czepiel, Scott A., 2002, 'Maximum Likelihood Estimation of Logistic Regression Models: Theory and Implementation', retrieved on April 13, 2017from http://www.czep.net/contact.html

Dal Forno, Arianna and Ugo Merlone, 2013, 'Replicating Human Interaction in Braess Paradox', *Proceedings of the 2013 Winter Simulation Conference: Simulation: Making Decisions in a Complex World*, 1754-1765, IEEE Press.

de Leeuw, Jan, 2005, 'Multidimensional Unfolding', *Encyclopedia of Statistics in Behavioral Science*, retrieved on April 15, 2017 from http://onlinelibrary.wiley.com/doi/10.1002/0470013192.bsa416/abstract;jsessionid=31BE649320438E05BBA1EB2909C3787F.f01t03

del Mar Rueda, Maria, Antonio Arcos, and Beatriz Cobo, 2015, 'Use of Randomized Response Techniques When Data are Obtained from Two Frames', *Applied Mathematics* 9, 2L:389-399.

Dohan, Daniel, Laura Schmidt and Stuart Henderson, 2005, 'From Enabling to Bootstrapping: Welfare Workers Views of Substance Abuse and Welfare Reform', *Contemporary Drug Problems* 32, 3:429-455.

Domino, George and Marla L. Domino, 2006, *Psychological Testing: An Introduction,* Cambridge, UK: Cambridge University Press.

Dunteman, George Henry, 1984, *Introduction to Multivariate Analysis*, London, UK: Sage Publications.

Efron, Bradley, 1979, 'Bootstrap Methods: Another Look at the Jackknife', *Annals of Statistics*, 7, 1:1-26.

Fowler Jr., Floyd J., 2013, *Survey Research Methods*, Thousand Oaks, CA: Sage Publications.

Gallo, Amy, 2015, 'A Refresher on Regression Analysis', *Harvard Business Review*, retrieved on April 13, 2017 from https://hbr.org/2015/11/a-refresher-on-regression-analysis

Gilbert, Nigel, 2007, 'Computational Social Science: Agent-based Social Simulation', *Semantic Scholar*, retrieved on April 15, 2017 from

https://www.researchgate.net/publication/30930358_Computational_social_science_Agent-based_social_simulation

Green, Shakira, 2011, 'Time Series Analysis of Stock Prices Using the Box-Jenkins Approach', doctoral dissertation, Georgian Southern University, retrieved on April 15, 2017 from http://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1668&context=etd

Groenen, Patrick, 2005, 'Multidimensional Scaling', in B. S. Everitt and D. C. Howell, eds., *Encyclopedia of Statistics in Behavioral Science,* New York, NY: John Wiley and Sons Ltd.

Hambleton, Ronald K. and Jane Rodgers, 1995, 'Item Bias Review', *Practical Assessment, Research and Evaluation*, 4. 6:1-3, retrieved on April 15, 2017 from http://pareonline.net/getvn.asp?v=4&n=6

Harville, David A., 1997, *Matrix Algebra from a Statistician's Perspective,* vol. 1. New York, NY: Springer.

Hillier, Frederick S. and Gerald J. Lieberman, 2001, *Introduction to Operations Research*, New York, NY: McGraw-Hill.

Holsti, Ole R., 1969, *Content Analysis for the Social Sciences and Humanities,* New York, NY: Addison-Wesley Publishing Company.

Hughes-Hallett, Deborah, Patti Frazer Lock and Andre Gleason, 2010, *Applied Calculus, Concept Tests*, New York, NY: John Wiley and Sons.

Humpert, Brandon and Jeremy L. Martin, 2011, 'The Incidence Hopf Algebra of Graphs', in *23rd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2011)*, 2011:517-526, Discrete Mathematics and Theoretical Computer Science.

Hurlin, Christophe, 2013, 'Chapter 2: Maximum Likelihood Estimation', *Advanced Econometrics,* Lausanne: University of Orleans, retrieved on April 15, 2017 from http://www.univ-orleans.fr/deg/masters/ESA/CH/Chapter2_MLE.pdf

Igorevich,Arnold Vladimir, 1992, *Catastrophe Theory*, 3rd ed. Berlin, Germany: Springer-Verlag.

Jackson, Peter, 1999, *Introduction to Expert Systems*, Boston, MA: Addison-Wesley.

Kaki, Mohammed Nokhas Murad, 2012, 'Mathematical Catastrophe with Applications', *General Mathematics Notes*, 11, 2:35-46, retrieved on April 15, 2017 from http://www.geman.in/yahoo_site_admin/assets/docs/4_GMN-2252-V11N2.290182607.pdf

Kenkel, Norm C. and Laszlo Orlóci, 1986, 'Applying Metric and Nonmetric Multidimensional Scaling to Ecological Studies: Some New Results', *Ecology,* 67, 4:919-928.

Kerlinger, Fred. N., 1986, *Foundations of Behavioral Research*, Orlando: Florida, Holt, Rinehart and Winston.

Kiel, L. Douglas and Euel, Elliott, eds., 1996, *Chaos Theory in the Social Sciences: Foundations and Applications*, Ann Arbor, Michigan: University of Michigan Press.

Koo, Malcolm and Harvey Skinner, 2005, 'Challenges of Internet Recruitment: A Case Study with Disappointing Results', *Journal of Medical Internet Research* 7, 1:e6.

Krippendorff, Klaus, 2004, *Content Analysis: An Introduction to its Methodology*, Los Angeles, CA: Sage Publications.

Lane, David M. and William P. Dunlap, 19878, 'Estimating Effect Size: Bias resulting from the Significance Criterion in Editorial Decisions', *British Journal of Mathematical and Statistical Psychology* 31, 2:107-112.

Lorenz, Edward N., 1963, 'Deterministic Nonperiodic Flow', *Journal of the Atmospheric Sciences* 20, 2:130-141.

Lorenz, Edward N. and K. Haman, 1996, 'The Essence of Chaos', *Pure and Applied Geophysics* 147, 3:598-599.

Manheim, B. Jarold, 1981, *Empirical Political Analysis: Research Methods in Political Science*, Englewood Cliffs, NJ: Prentice-Hall.

Markwardt, Frederick C., 1989, *Peabody Individual Achievement Test-revised, PIAT-R.* Circle Pines: American Guidance Service.

Masino, Serena and Miguel Niño-Zarazúa, 2016, 'What Works to Improve the Quality of Student Learning in Developing Countries?', *International Journal of Educational Development,* 48:53-65.

McKeone, Dermot H., 1995, '*Measuring your Media Profile*', Aldershot, UK: Gower Publishing, Ltd.

Morrison, Donald F., 1967, *Multivariate Statistical Methods*, New York, NY: McGraw-Hill.

Nehmzow, Ulrich and Keith Walker, 2005, 'Quantitative Description of Robot–environment Interaction using Chaos Theory', *Robotics and Autonomous Systems,* 53, 3:177-193.

Nizoloman, Odual Nabhel, 2013, 'Relationship between Mathematical Ability and Achievement in Mathematics among Female Secondary School Students in Bayelsa State Nigeria', *Procedia-Social and Behavioral Sciences,* 106:2230-2240.

NSO Report, 2006, 'Report of the Head of NSOs of East Asian Countries', retrieved on April 13, 2017 from http://www.stat.go.jp/english/info/meetings/eastasia/pdf/2kpaper.pdf.

Orloff, Jeremy and Jonathan Bloom, 2014, 'Maximum Likelihood Estimates', retrieved on April 13, 2017 from https://ocw.mit.edu/courses/mathematics/18-05-introduction-to-probability-and-statistics-spring-2014/readings/MIT18_05S14_Reading10b.pdf

Pearl, Judea, 2000, *Causality: Models, Reasoning and Inference*, New York, NY: Cambridge University Press.

Perrone, Michael, 2006, 'Differential Item Functioning and Item Bias: Critical Considerations in Test Fairness', *Applied Linguistics,* 6, 2:1-3.

Pino, G. Aranda, Enrique Pardo, and M. Siles Molina, 2006, 'Exchange Leavitt Path Algebras and Stable Rank', *Journal of Algebra,* 305, 2:912-936.

Pinsonneault, Alain and Kenneth Kraemer, 1993, 'Survey Research Methodology in Management Information Systems: An Assessment', *Journal of Management Information Systems* 10, 2:75-105.

Rosnow, Ralph L. and Robert Rosenthal, 2005, *Beginning Behavioral Research: A Conceptual Primer*, Englewood Cliffs, NJ: Prentice-Hall, Inc.

Ruscio, John, Ayelet Meron Ruscio and Mati Meron, 2007, 'Applying the Bootstrap to Taxometric Analysis: Generating Empirical Sampling Distributions to help Interpret Results', *Multivariate Behavioral Research* 42, 2:49-386.

Saint-Germain, Michelle A., 2010, *Ppa 696 Research Methods*, retrieved on April 13, 2017 from http://www.csulb.edu/~ msaintg/ppa696/696regs.htm

Salant, Priscilla, I. Dillman and A. Don, 1994, *How to Conduct your own Survey*, New York, NY: Wiley.

Searle, Shayle R., 1982, *Matrix Algebra Useful for Statistics,* Hoboken, NJ: Wiley-InterScience.

Stephenson, William, 1993, 'Introduction to Q-methodology', *Operant Subjectivity,* 17, 1:1-13.

Stergiou, Christos and Dimitrios Siganos, 2014, 'Neural Networks', retrieved on April 13, 2017 fromhttp://www.doc.ic.ac.uk/~ nd/surprise_96/journal/vol4/cs11/report.html

Stewart, James, 2011, *Calculus*, Boston, MA: Cengage Learning.

Strickland, Jeffrey, 2015 *Predictive Analytics Using R*, Lulu.com.

Tabachnick, Barbara G. and Linda S. Fidell, 1996, *Using Multivariate Statistics*, New York, NY: Harper Collins College Publishers.

Tejado, Inés, Duarte Valério and Nuno Valério, 2015, 'Fractional Calculus in Economic Growth Modelling: The Spanish Case', in *CONTROLO'2014–Proceedings of the 11th Portuguese Conference on Automatic Control*, pp. 449-458, Springer, Cham.

The Psychological Corporation, 1992, *Wechsler Individual Achievement Test*, San Antonio, TX: The Psychological Corporation Publications.

Thom, René, 1989, *Structural Stability and Morphogenesis: An Outline of a General Theory of Models*, Reading, MA: Addison-Wesley.

Ujeh, Chareena, 2016, 'Bootstrapping with R to Determine Variances of Mixture Model Estimates in Predicting Confidence Intervals for Population Sizes', *Procedia Computer Science,* 86:16-219.

Wechsler, David, 2005, *Wechsler Individual Achievement Test,* 2nd ed., London, UK: The Psychological Corporation.

Zeeman, Erik Christopher, 1977, *Catastrophe Theory: Selected Papers, 1972–1977*, Boston, MA: Addison-Wesley Publishing Company.

Zeh, Reimar., 2005, 'A Practical Introduction into Quantitative Content Analysis', retrieved on April 15, 2017 from http://iksz.fsv.cuni.cz/IKSZ-16-version1-CA.pdf

World Wide Web Sites

http://www.digitalmethods.net/MoM/QuantContentAnalysis
http://www.sciencing.com/metric-scale-6514055.html
http://www.reference.com/science/metric-scale-b684fa0371fd3092

6

Brief Descriptions of Emergent Research Methods

Abdul Karim Bangura and Doctoral Scholars

Emergent research methods are explained in this chapter. These methods extend from Applied Multivariate Research to Synergic Inquiry.

Applied Multivariate Research

The Applied Multivariate Research Method is used in studies in which there are more variables than are contained in a univariate or bivariate designs and where some subsets of the variables must be analyzed together: that is, they must be combined to form composite variables or variates. The method is often used in studies where many experimental treatments are likely to affect the study in more than one way (Grimm and Yarnold 2000).

Forming a linear composite where each variable is weighted in a manner determined by the analysis symbolized by the letter X with subscripts used to differentiate one variable from another is one of the most common ways to combine variables. A weight, referred to as coefficient, is assigned to each variable by multiplying the variable by this value. The weighted composites for three variables, for example, will take the following form:

Weighted composite: $w_1X_1 + w_2X_2 + w_3X_3$

These weighted variables are labelled variables, composite variables, and synthetic variables (Grimm and Yarnold 2000). In this case, variables are not measured by the research in the process of data collection but are developed or computed as part of or as the result of the multivariate data analysis.

This design gives a more detailed description of the phenomenon under investigation and the cost of obtaining data is also relatively small (Harris 2001; Stevens 2009). A study that aims to study how willingly rape victims respond to questions during investigation (will), how many questions they agree or refuse to answer (number), and how confident they are when answering the questions (confidence) will adopt the Applied Multivariate Research Method as this gives a better understanding of the traumatic experiences of the individuals. All three measures will likely correlate with one another to a certain degree and will explain different but related aspects of the participants, thereby giving a full picture of their psyche than any of the issues in isolation.

Appreciative Inquiry

The traditional approach to change is problem-solving in nature. This approach starts off from a negative perspective as something is already broken or damaged, a remedial approach which is often more tasking and costlier. Indeed, this is what many organizations do: i.e. problem identification and solving. However well intended problem-solving approaches to change are, they are often notoriously difficult and sometimes unsuccessful. Resistance to change is a well-established fact of organizational life. Invariably, it involves more work. The shortcomings of this approach to change led to the Appreciative Inquiry Method: a completely different approach to change (Watkins and Bernard 2001).

Appreciative Inquiry is a theory and practice method that approaches change from a positivist framework based on the belief that human systems are made and imagined by those who live and work within them (Watkins and Bernard 2001). It is a change management approach that focuses on identifying a system that is right, analyzing why it is working well, and then doing more of it. It is about the co-evolutionary search for the best in people, their organization, and the relevant worlds around them. Broadly, it involves systematic discovery of what gives life to a living system when it is most alive, most effective, and most constructively capable in economic, ecological and human terms. In other words, the main idea of Appreciative Inquiry is that an organization will grow in whichever direction the people in that organization choose to focus their attention. Hence, there is a connection between a system that works right and its stakeholders. Appreciative

Inquiry involves the act and practice of asking questions that strengthen a system's capacity to apprehend, anticipate, and heighten positive potentials. It assumes that every living system has many untapped, rich and inspiring amounts of positives and use this energy to harness the growth of the organization (Watkins and Bernard, 2001).

The AI process involves the following four stages referred to as the 4-D Cycle: (1) Discovery–the best of what is or what has been; (2) Dream–what might be; (3) Design–what should be; and (4) Destiny–what will be. The United Nations Global Compact, Wal-Mart's global sustainability initiatives, and the United States Navy's establishment of a Center for Positive Change are all products of appreciative inquiries.

Art Practice Research

A dominant feature of the Art Practice Research Method is that it symbolizes philosophies that are given form in the process of making artworks. Regardless of the informing sources, media preferences, or image-base, the artist exercises individual control over the development and presentation of artefacts as forms of knowledge (Sullivan 2005). Additionally, the images and ideas developed have the capacity to not only change the artist's conceptions of reality, but also influence the viewer's interpretation of artworks (Douglas, Scopa and Gray 2000). The Art Practice Research Method, therefore, can be seen as a form of intellectual and imaginative inquiry and as a way that is robust enough to yield reliable insights that are well grounded and culturally relevant to be conducted (Saikaly 2004).

The term 'practice-centered research' has also been used within a framework describing the research process, often with an accompanying argument to describe its inherent integration within creative practice (Saikaly 2004). Saikaly describes practice-centered research through design 'as a form of research' (2004:7) while Wallace and Press locate it within the context of methodology (2003:3). According to the latter authors, the key objective of the research is to define methods that are rooted in craft knowledge and practice that can be applied to the design of digital communication devices as a means of developing product concepts that are more desirable, relevant, and significant to users.

Painter (1996) and Piccini (2002) recognize the wider institutional contexts for practice-based research 'as arenas in which knowledge might be opened', whereby practice becomes a form of research and a way of making research publicly available. Margolin (2000) seeks to encourage practice-led research in product innovation to draw upon other fields of inquiry to understand its social-cultural

dimensions. The parameters used to determine the use of the Art Practice Research Method by Spradley (1979) are as follows: (a) Context–research process based on or rooted in practice, or where practice plays a lead role in the investigative process, and interventions/experiment are 'framed' to investigate how practice can be enhanced or improved; and (b) Purpose–research outcomes make a direct contribution to, or are of direct relevance for, the advancement of practice, and practice informs theory-building within research to gain new insights, knowledge, or understanding.

Cognitive Interviewing

The RAND ('Research ANd Development') Corporation's 1975 study of criminal investigations reveals that the testimony of an eyewitness is an important determinant of whether a case is solved or not. However, it has been found that many eyewitness reports are unreliable as they could be incomplete, partially constructed and vulnerable to suggestions during the interviewing process. Studies have shown that interviewing techniques such as asking leading questions and closed-ended questions can influence the responses given by the interviewee. Here, therefore, lies the importance of the Cognitive Interviewing Method. It is a method of interviewing eyewitnesses and victims about what they remember from a crime scene. It is rooted in two cognitive theories: (1) the encoding specificity principle and (2) the multi-component view of memory based on the following five general memory retrieval rules (McLeod 2010):

1. Mental Reinstatement of Environmental and Personal Contexts: the participant is asked to mentally revisit the to-be-remembered (henceforth, TBR) event.

2. In-depth Reporting: the interviewer encourages the reporting of every detail, regardless of how peripheral it may seem to the main incident.

3. Describing the TBR Event in Several Orders: the participant creates a narrative of the TBR event.

4. Reporting the TBR Event from Different Perspectives: the participant is asked to report the event from several different perspectives.

5. Supplementary Techniques: these techniques are used to elicit specific items from the narrative that the participant provides about what they witnessed.

The Cognitive Interview Method aids to minimize misinterpretation and the uncertainty that is otherwise seen in the questioning process of traditional police interviews. It reliably enhances the process of memory retrieval and has been found

to elicit memories without generating inaccurate accounts or confabulations. Cognitive interviews are increasingly used in police investigations and training programs. McLeod (2010) reports a murder case in which a Miami woman walking through the lobby of an office building had noticed two men standing together. Several minutes after her departure, the men murdered someone working in the building. The woman was taken through the regular police questioning procedure and her narrative was disappointingly scanty. As McLeod points out, it took the intervention of a psychologist, Ronald Fisher, who applied his memory enhancing strategies to get a breakthrough. The strategies include "developing rapport with the witness; asking open-ended questions primarily; asking neutral questions and avoiding leading or suggestive questions; and funneling the interview, beginning with broader questions and narrowing down to more specific questions" (McLeod 2010:1)

Concept Mapping

The Concept Mapping Method is a type of structured conceptualization which can be used by groups to develop a conceptual framework that can guide evaluation or planning. In the typical case, six steps are involved: (1) the preparation, including selection of participants and development of focus for the conceptualization; (2) the generation of statements; (3) the structuring of statements; (4) the representation of statements in the form of a concept map using multidimensional scaling and cluster analysis; (5) the interpretation of maps; and (6) the utilization of maps (Chang, Sung and Chen 2002).

The method is quite robust. It is applicable in situations that allow a group to stay on task; results relatively quickly in an interpretable conceptual framework; expresses this framework entirely in the language of the participants; yields a graphic or pictorial product which simultaneously shows all major ideas and their interrelationships; and often improves group or organizational cohesiveness and morale (Chang, Sung and Chen 2002).

Chang, Sung and Chen (2002) examined the learning effects of a concept-mapping strategy. They designed three concept-mapping approaches–(1) map correction, (2) scaffold fading, and (3) map generation–to determine their effects on students' text comprehension and summarization abilities. The experimental results from 126 fifth graders showed that the map-correction method enhanced text comprehension and summarization abilities and that the scaffold-fading method facilitated summarization ability.

Constructing Grounded Theory

The Constructing Grounded Theory Method was propounded by two sociologists, Barney Glaser and Anselm Strauss (1965, 1967), because of the dominance of existing theories in sociological research. They hinged their argument on the fact that researchers needed a method that permitted them to move from data to theory in order to enable the emergence of new theories (Glaser 1967; Glaser and Strauss 1967; Strauss and Corbin 1990). According to Glaser and Strauss (1967), Grounded Theory is a general methodology for developing theory that is grounded in data systematically gathered and analyzed. They advocated developing theories from research grounded in data rather than deducing testable hypotheses from existing theories. In other words, theory emerges during the process of conducting the actual research through the continuous interaction between analysis and data collection.

Nonetheless, after the publication of *The Discovery of Grounded Theory* by Glaser and Strauss in 1967, Grounded Theory has undergone several revisions. Hence, Charmaz (1990, 2000, 2006) introduced a social constructionist version of Grounded Theory which argues that categories and theories do not emerge from data but are constructed by a researcher through an interaction with the data. Here, the researcher's decisions, the questions that s/he asks of the data, the ways(s) s/he uses the method, as well as his/her background shape the research process and, ultimately, the findings. Consequently, the adoption of a constructivist Grounded Theory approach calls for the researcher to move the Grounded Theory Method further into the realm of interpretive social science consistent with the emphasis of Blumerian (1969) on meaning, without assuming the existence of a one-dimensional external reality (Charmaz 2000).

Charmaz (2000) mapped out the strategy of writing in constructivist Grounded Theory in her work where she advocated a writing style that is more literary than scientific in intent. She argued that constructivist grounded theorists are impelled to be analytical in their writing but that their style of writing needs to be evocative of the experiences of the participants (Charmaz 2000). The researcher's voice should not 'transcend experience but re-envisage it…bringing fragments of fieldwork time, context and mood together in a colloquy of the author's several selves–reflecting, witnessing, wondering, accepting–all at once' (Charmaz and Mitchell 1996:285). It is a delicate balancing act, enabling participants' accounts to retain a degree of visibility in the text so that the reader can make the connections between analytical findings and the data from which they were derived (Fossey et al. 2002; Jones 2002).

Mill et al. (2006) listed several articles where constructivist Grounded Theory has been applied during their review of the literature. These came from the

disciplines of education (Jones 2002; Jones and Hill 2003), psychology (Corbet-Owen and Kruger 2001; Dodson and Dickert 2004; Madill, Jordan and Shirley 2000; Stratton 1997), occupational and environmental medicine (Gustafsson et al. 2003), and nursing (Annells 1997; McCann and Clark 2003a; Norton 1999). Each of these authors drew on the work of Charmaz (1995b, 2000) in formulating their arguments for assuming a constructivist approach in their own studies.

Experience Sampling

The Experience Sampling Method is a structured diary technique used to appraise subjective experiences of daily life (Verhagen et al. 2016). According to Larson and Csikszentmihalyi (1993), the method is a procedure for studying what people do, feel, and think during their daily lives. The method involves asking individuals to provide systematic self-reports at random, on a daily basis. Sets of the reports from a sample of individuals yield an archival file of daily experiences (Larson and Csikszentmihalyi 1993). The common questions that can be answered using the file reports include the following: How do people spend their time? What do they usually feel when engaged in various activities? One of the earliest proponents of the method was Kurt Lewin (1935, 1936). He advocated for the investigation of 'topology' of daily activity. He further believed that by examining the psychological life space, it would be possible to understand the forces that structure daily thought and behavior.

The method is applied in the study of psychological patients as well as during an investigation if patients with somatic illness (Verhagen et al. 2016). It is ecologically valid as it yields a comprehensive view of an individual's daily life. The method allows a researcher to assess various constructs like quality of life and psychological mechanism, for instance, stress sensitivity or coping strategies. Such constructs are normally difficult to assess using some cross-sectional questionnaires. Some medical researchers apply the method in treatment monitoring, clinical trials, or single case clinical trials.

Technological advances like the use of smartphones have made the use of the Experience Sampling Method easier. This method has been widely utilized by medical researchers for academic and professional purposes.

Feminist Research Practice

The Feminist Research Practice Method comprises a set of analytical tools that demonstrate how to specifically promote social change for women and other oppressed groups (Sharlene 2013). Feminist research positions gender as the

categorical center of inquiry and the research process. It also uses a variety of research methodologies such as quantitative, qualitative, and mixed or multiple methodologies. Nonetheless, both quantitative and qualitative methodologies have produced a collection of mixed results. This mixed method is utilized to resolve the limitations of a single method by the innovative use of triangulation. There are various feminist research methods that exist today which are used for data gathering and analysis. According to Sharlene (2013), a research is considered 'feminist' when it is grounded in the set of theoretical traditions that privilege the issues, voices, and lived experiences of women. From data collection, analysis and interpretation, and the process by which feminist researchers conduct their research projects, feminist research praxis centralizes the relationship between the researchers and researched to balance differing levels of power and authority. One of the main goals of feminist research projects is to support social justice and social transformation. The research practice seeks to study and to redress the many inequalities and social injustices that continue to undermine and even destroy the lives of women and their families.

When using the Feminist Research Practice Method, a researcher looks at the patterns and trends within the population of women and then draws conclusions based on the varied range of women's unique circumstances. The method seeks to reveal and overcome andocentric (denoting or being a construction in which the whole has the same syntactic function as the head, for example *big black dogs*) biases in research, seeks to encourage social change, and seeks to represent human diversity and acknowledge the positionality of the researcher. Feminist researchers such as Deborah King, Patricia Hill Colins, Chandra Mohanty, bell hooks, and Gloria Anzaldua address the interconnections among categories of difference such as gender, ethnicity, nationality, and class. Feminist researchers can undertake research using two fundamental approaches: firstly, by using the traditional research process referred to as 'quantitative' methodology or by using the 'qualitative' ethnographic method which employs techniques that ground analysis in real life and allows researchers to examine how social experience is established and given meaning. Qualitative research focuses on obtaining a truthful description of how a problem or solution is experienced by those who lived it. The quantitative methods include in-depth research into the motivation, attitudes, and behaviors of respondents, or into a given situation. This is applied when gathering statistical information which allows the researcher to recognize the enormity of a widely occurring problem such as the abuse of women (Hankivsky 1999). This method helps the women by comforting them with the fact that they are not isolated in their experience; thus, a qualitative approach to feminist research may be a powerful tool for setting women's experiences in a larger context.

Since feminists encounter specific methodological problems, they have been involved in developing newer approaches for doing feminist research. Of these many feminists, Maria Mies is the one that introduced a new methodological approach 'consistent with the political aims of the women's movement.' By understanding the many relevant feminist research methods for women's liberation, feminist researchers have also established different ways of dealing with the inequalities concerned with research. The different ways feminists deal with variation is to study their own personal experiences, preferences, and environments, along with other researchers giving them a helping hand and support when necessary (Hankivsky 1999).

An example of how this method has been applied includes Barata et al.'s (2005) study from which feminist methodology research paper was produced titled 'Ivory Tower? Feminist Woman's Experiences of Graduate School'. This article is well written as an example of feminist research theory. The researchers are themselves active participants in a documented discussion process through which they evoked a feminist ideology. The ideology is supported by putting women at the center of the study, aspiring to have the research ultimately benefit women and providing an accurate reflection of each woman's experiences.

Fuzzy Set Theory

The Fuzzy Set Theory Method is described by Zadeh as '…a convenient point of departure for the construction of a conceptual framework which parallels in many respects the framework used in the case of ordinary sets, but is more general than the latter and, potentially, may prove to have a much wider scope of applicability, particularly in the fields of pattern classification and information processing' (Zadeh 1965:338). Fuzzy Set Theory was initially intended to be an extension of dual logic and/or classical set theory. It is an approach of graded concepts in which everything is a matter of degree or, to put it figuratively, everything has elasticity (Maiers and Sherif 1985; Zimmermann 2011).

Fuzzy Set Theory has been applied in artificial intelligence, computer science, medicine, control engineering, decision theory, expert systems, logic, management science, operations research, pattern recognition, and robotics (Zimmermann 2011). It is also being widely used in African Mathematics and other African-centered disciplines (see, for example, Bangura 2011a and 2011b).

Geographic Information Systems

As defined by Verd and Porcel (2012), Geographic Information Systems (henceforth, GIS) is a set of methods, software, and technologies that have been

adapted for storing, analyzing and mapping of geographic information. As stated earlier, over the years, GIS has been used mainly for quantitative analysis with disregard for qualitative data. However, due to advancements in its application, GIS has recently been applied in qualitative research. From the 1980s till present, there has been a remarkable shift in the application of the method. It is no longer centered on specific research areas in Geography; rather, it has transcended geographic discourse into the study of socio-spatial issues (Sheppard 2005).

GIS is being used for a wide range of research questions which may be exploratory (learn about a new issue), descriptive (describe a phenomenon), explanatory (explain a phenomenon), or predictive (predict future patterns). In fact, it is a tool for all kinds of research questions and research approaches. In quantitative research, numerical analytical techniques are applied to address geographic research questions of all types. For qualitative research, non-numerical information such as conversations, visual images, and much more are analyzed (Sheppard 2005).

GIS has been applied in land-use planning approaches to determine local populations' perceptions about land utilization. An example of how this method has been applied is the investigation of two villages in Mekong Delta, Vietnam (Trung et al. 2006). In the study, GIS was used to integrate spatial data and attribute data acquired from farmer discussions and cross-section walks, and to analyze the changes in not only many biophysical and land cover changes, but also farmers' perceptions of changes in land utilization. The major result of the investigation was the production of sets of land use option maps with their resources requirements which will be helpful for decision-makers to adopt the most suitable land use plan.

Hypermedia Research

The concept of hypermedia means an interactive subset of more general multimedia. Thus, the Hypermedia Research Method (henceforth, HRM) allows the user to leave the main body of ideas and browse through associated media in a nonlinear manner using hypertext (Bewley 1999). Hypertext refers to links in the program that are obtained by clicking on words, buttons, or icons that transfers one's computer screen into another information center or site (Franklin and Kinnell 1990:5).

Kosma (1991) says that hypermedia facilitates cognitive flexibility because it allows a topic to be explored in multiple ways, using a variety of concepts and themes. This results in the development of integrated and flexible knowledge structures that facilitate the use of this knowledge to solve a wide range of problems.

HRM is one of the first methodologies that have been developed to define the structure and interaction in hypermedia applications (Garzotto, Paolini and Schwabe 1993). According to Garzotto, Paolini and Schwabe (1993), HRM is based on the Entity-Related (E-R) Methodology but extends the concept of entity and introduces new primitives as *units* (corresponding to 'nodes') and *links*. HRM entities are embedded within an inner structure and have associated a browsing semantics to them: i.e. a specification of how navigation may be performed and how information is visualised. Koch (1999) defines entity to be a hierarchy of components which are made of units. Also, three types of links are defined: (1) structural links are links that connect components; (2) perspective links link units and these links can be automatically derived from the structure of the entities; and (3) application links are defined as connecting components and entities of the same or different type (Koch 1999).

In addition, there are two different groups of entities in HRM: (1) the application entities and (2) the '*outlines*' that allow the access to the application entities offering entry points to start navigation and possibility to locate and select entities. These outlines or access structures are ordered trees of components. The application entities constitute the hyper base (Koch 1999).

According to Garzoto, Mainetti and Paollini (1995), there are 5 dimensions in the analysis of applying HRM. These are: (1) Content: this addresses the pieces of information; (2) Structure: this is the content's organisation; (3) Presentation: this defines how the application content functions are shown to the users; (4) Dynamics: this is the functionality operated on presentational elements through the interaction for HRM; and (5) Interaction: in other methods, interaction is considered as part of the dynamics and presentation as it is a combinations of both factors (Garzotto, Mainetti and Paollini 1995).

Other outlines defined by the HRM application, according to Koch, are the following: (a) Index links: these connect the collection node to each member of the collection; (b) Guided tours: a guided tour link connects the collection's nodes in a linear sequence with each member connected to the next and previous one; and (c) Collection links: these are index or guided tour links that allow for traversing the nodes of a collection. Koch explained that in order to support a presentational design, the HRM application defines two concepts: (1) Slot: an atomic piece of information which can be simple or complex, such as a video synchronised with sound; Slots are comprised of frames; and (2) Frame: a presentation unit–i.e. what is shown to the user (Koch 1999).

In sum, the HRM distinguishes between authoring-in-the-large and authoring-in-the-small. The first one identifies the entities, components, and units, while

the second one fills these units with content. The method specifies the structure of the hyper base, as authoring-in-the-small is not within its scope (Koch 1999).

Inside Interviewing

Traditional interview techniques, assert Holstein and Gubrium (2003) and Bangura (2011a), typically stress the need for establishing rapport with respondents and asking questions that do not influence the responses. The Inside Interviewing Method allows a researcher to capture the fluctuating and diverse moral worlds put into place during interview research when gender, race, culture, age, and other subject positions are brought narratively to the foreground. It also allows one to explore the communicative contexts of respondents' thoughts, feelings, and actions, and how meaning is not merely elicited by appropriate questioning nor transported through clear respondent replies, but *actively* and *socially* assembled in the interview encounter, along with changing understandings of what it means to be a particular subject (Holstein and Gubrium, 2003; Bangura 2011a).

The Inside Interviewing Method makes it possible for the researcher to explore the following issues (Holstein and Gubrium 2003; Bangura 2011a):

a. the varied roles that interview participants play, alerting one to the theoretical dimensions of subjectivity, and how this awareness can affect the interview process;

b. the interpretive challenges researchers face in analyzing data collected from interview respondents and their representational positions concerning the subject matter in question; and

c. methods for describing lives that incorporate the representational sensibilities of both interviewees and interview researchers.

The Inside Interviewing Method therefore helps a researcher to highlight the fluctuating and diverse moral worlds put into place during interview research when gender, race, culture, age of respondents and other subject positions are brought 'narratively' to the foreground (Holstein and Gubrium 2003). The method facilitates the exploration of facts, thoughts, feelings and perspectives of respondents, and how these impact the research process or procedure. It also provides a researcher with insights to selecting the appropriate analytic strategy for explicating data that emerges from related activities in the interview process. Until recently, no scholar's work has seriously explored who the subjects are behind interview participants (Holstein and Gubrium 2003).

Other scholars have also shown that the method helps a researcher to explore the communicative contexts of respondents' thoughts, feelings, and actions, and how meaning is not merely elicited by appropriate questioning nor transported through clear respondent replies, but actively and socially assembled in the interview encounter, along with changing understandings of what it means to be a particular subject (e.g., Plakhotnik at al. 2005; Rocco 2004; Briggs 2003).

In sum, the Inside Interviewing Method helps a researcher to explore the representational complexities that emerge when research participation is scrutinized, as well as the technical concerns and analytic options that derive from new lenses for viewing the interview process. These new lenses provide users with theoretically informed direction for figuring how interview participants relate to each other, how to elicit interview data, and how to select alternative ways of representing interview material (Holstein and Gubrium 2003; Bangura 2011a).

Interactive Qualitative Analysis

Qualitative Methodology is an 'inquiry process aimed at understanding social or human problems based in a natural setting. With qualitative research, there are multiple perspectives of reality, which are subjective and open to researcher bias as the researcher actively participates in the research process and analyzes the data and in so doing builds an understanding of a complex set of processes while reporting on the views of participants' (Creswell 1994). Similarly, Dennen (2005) states that the Interactive Qualitative Analysis (henceforth, IQA) Method is an innovative method providing a structured approach to conducting qualitative research. Participants or constituents are actively engaged in data collection and analysis. This innovative method seeks to minimize the power relations and biases traditionally associated with qualitative research.

With the IQA Method, participants are actively engaged in collecting and analyzing data. Using thematic content analysis of the data, they articulate their experiences of the phenomenon and identify emergent themes, or affinities, and the relationships among the affinities (Northcutt and McCoy 2004). The outcome of the IQA process is a Systems Influence Diagram (SID) which is 'a visual representation of the phenomenon, constructed through the lens of the constituents' (Northcutt and McCoy 2004). What sets IQA apart from other forms of qualitative inquiry is that it provides an audit trail of transparent and traceable procedures where the constituents, and not the researcher as expert, do the analysis and interpretation of their data (Tabane and Human-Vogel 2010).

Measurement Error and Research Design

The Measurement Error and Research Design Method is an elusive phenomenon. First, it will be instructive to look at the word 'error' to get a better understanding of the topic. 'Error' relates to a mistake, and people are blamed for mistakes. In scientific usage, however, it relates to an unexplained disparity in a measurement, and the term is not derogatory.

The Measurement Error and Research Design Method is a process that when employed to investigate an entity has the following three aspects: (1) a characteristic, (2) a scale, and (3) a means of assigning a number on the scale to that characteristic (Stevens 1946). Hand (1996) distinguishes three main error measurement paradigms: (1) representational, (2) operational (Dingle 1950), and (3) classical. In the representational paradigm, objects have attributes, and numbers are assigned to the attributes to describe the relationships among them. The operational paradigm defines scientific concepts in terms of the operations used to describe them and avoids assuming any underlying reality. The classical paradigm assumes pre-existing relationships and seeks to discover them (Hand 1996). Campbell (1920) describes a 'fundamental' measurement as satisfying an order relationship and a process of concatenation. Bednjamin D. Wright and Mark H. Stone mention George Rasch's (1960) 1-parameter logistic model to imply a theory which enables fundamental measurements in the behavioral sciences (Wright and Stone 1979). The Measurement Error and Research Design Method therefore refers to an actual or notional equivalent replication of the assessment process which potentially gives a different value. In other words, it would include sampling error in trying to estimate a population quantity from a sample. It is nearer to the framework of generalizability theory (see, for example, Brennan 1983) than to the classical definition.

The method is well illustrated in a study by Mastekaasa and Kaasa (1989) on the quality of life of terminally ill lung cancer patients. The main purpose of the study was to examine whether two types of treatments (radiation therapy and chemotherapy) had differential effects on the patients' subjective well-being and other aspects of their overall quality of life. The patients responded to a questionnaire that included measures of subjective well-being and several other variables before the start of treatment and at seven different time points in the year following the start of the treatment. A total of 101 patients responded to the pre-treatment questionnaire (response rate = 99 percent), but mainly due to the very high mortality of this group of patients the number of respondents was down to 31 at the last wave of observations (response rate = 73 percent). Pooling across the seven post-treatment waves provides a total sample of 460 observations.

Family Research

Research is conducted on families in order to describe and explain the inherent complexity of families emphasizing both process and context. Addressing such complexity requires research that is 'multidisciplinary, broad in scope, and linked to the contexts in which people live' (O'Brien 2005). The qualitative and ethnographic research methods are essential for understanding family life. Family histories, cultural contexts, everyday routines and practices, narratives, experiences, intentions, stories, triumphs, secrets, troubles, and pain all matter deeply, and are what families mean to us. This information surely deserves to be understood and used in our research. Without incorporating qualitative methods in family research, those aspects of family life can never be fully captured. Thus, any concern over the use of qualitative methods certainly should not be whether such evidence can be valuable; it already is. The question rather is how best to collect such information in ways that are productive, meaningful, believable, and add value to research. When using the Methods of Family Research, the value of integrating qualitative evidence with quantitative data is emphasized (O'Brien 2005).

Most theoretical frameworks in family research are open to qualitative evidence because our widely accepted conceptual and heuristic framework, which combines biological substrate, ecological setting, beliefs and behaviours, and the experiences and meaning systems of individuals in families, is followed throughout its development. Family systems approaches, including Bronfenbrenner's model that blends 'person, process, context and time' (Bronfenbrenner 1995, 2005), provide conceptual frameworks that invite qualitative methods. Qualitative and ethnographic methods provide information on settings and contexts, and on the experiences, meaning systems and normative scripts that drive family life and direct our behaviors (D'Andrade and Strauss 1992).

Although qualitative methods might well be preferred over quantitative methods for understanding meanings, experiences, interpretations, intentions, cultural models and scripts, and narratives and stories family members have about their world, quantitative methods are equally valuable for investigating these aspects. As Yoshikawa and his colleagues state,

> ... quantitative research [provides methods] of inquiry that analyze numeric representations of the world. Survey and questionnaire data as well as biological or physiological data are often analyzed in quantitative units. Inquiry that relies on qualitative methods collects and analyzes non-numeric representations of the world–words, texts, narratives, pictures, and/or observations. The epistemological

> assumption . . . is that in scientific endeavors, the world can be represented through both numbers and words and that numbers and words should be given equal status in [family research] (Yoshikawa et al. 2008:344).

Based on this postulation, it is therefore important to guard against identification with or commitment to certain methods turned into a personal identity or ideology as opposed to considering methods as tools for representing the family topics we are trying to understand (Weisner 1996). Such 'methodocentrism' can lead to confusing the topics about family life that we want to study (e.g., attachment, sibling relationships, family budgeting, work-family balance, etc.) with particular methods for studying them (e.g., the Strange Situation, questionnaires, daily routine diaries, stress scales, etc.). Methods of Family Research are therefore excellent tools for the fields of Family Studies, Human Ecology, Home Economics, Sociology, Gerontology and related disciplines.

The Family Outcome Survey (henceforth, FOS) developed by Bailey, Hebbeler and Bruder (2006) is a good example of how quantitative methods are applied to family research from the Early Childhood Outcomes (ECO) Center to measure five recommended family outcome areas: (1) families understand their children's strengths, abilities, and special needs; (2) families know their rights and advocate effectively for their children; (3) families help their children develop and learn; (4) families have support systems; and (5) families access desired services, programs, and activities in their communities.

The five family outcomes were identified through a consensus building process that began with a review of existing frameworks for conceptualizing family outcomes. The FOS consists of 15 outcome items, three for each of the five outcome areas. The instrument is a self-report survey intended to be completed by one or more family members. Each item is based on a seven-point scale with descriptors for 1, 3, 5, and 7. Families are asked to read each question and circle the number that 'best describes your family right now.' The three items that provide data for Part C, early intervention, ask families to rate their perceptions of the helpfulness of early intervention with regard to knowing and understanding their rights, effectively communicating their child's needs, and helping their child develop and learn. The three items that provide the data for Part B, preschool, address three dimensions of parent involvement. Slight modifications in the survey have been made to create versions that can be used with all families, including those whose children do not have disabilities (Bailey, Hebbeler and Bruder 2006).

Once the instrument for collecting data were returned, there was a need to examine the percentage returned and whether those surveys adequately represented

all the families in the research population. Prior to analyzing the FOS data, there was a need to examine the data to see which segments of the population returned the survey. If all key segments are well represented, then it can be confidently said that the data generalize to the entire population. Percentages, frequencies, figures, were used to describe and present the data while appropriate statistical tools were also employed to analyze data. The findings from the analyzed data were then discussed to derive meanings (Bailey, Hebbeler and Bruder 2006).

Multilevel Modeling

This method utilizes observational data collected especially in the human and biological sciences which have a clustered structure. Multilevel data structures can also arise in longitudinal studies especially where an individual's responses over time are correlated with one another. The method is employed to identify the existence of such data clusters or hierarchies by allowing for lingering components at each level in the hierarchy. The Multilevel Modeling Method is also regarded as a generalization of regression methods, and this can be used for a variety purposes, including data reduction and causal inference from experiments and observational studies (Gelman 2006).

The method was applied by Rice and Leyland in their study on 'Multilevel Models: Application to Health Data' (1996). Their goal was to highlight the potential benefits that might be gained by using this method in investigating phenomena in the field of health.

Multiple Imputations for Nonresponse in Surveys

Irrespective of the type of survey a researcher utilizes, cases of missing response often arise. Some respondents do respond to some survey items while they ignore others. Nonresponse constitutes a limitation because standard methods of analysis cannot be used to analyze an instrument with missing responses. The traditional way of managing that situation is by excluding such questionnaire with missing responses from the analysis. The implication of this approach is that it reduces the size of the data. Furthermore, it biases the data since such respondents might have a reason for not responding to certain items of the survey. It also equates nonresponse to certain items of the survey to refusal to respond at all. Current thinking, however, regards nonresponse as a form of response in its own place and maintains that it deserves to be accounted for in analysis. One major way through which this situation is addressed is by using the Multiple Imputations for Nonresponse in Surveys Method. Multiple imputations comprise 'the technique

that replaces each missing or deficient value with two or more acceptable values representing a distribution of possibilities' (Rubin 2004:2).

In using the Multiple Imputations for Nonresponse in Surveys Method, the analyst studies the relationships among the omitted items, the relationships among the items to which the respondents responded, and the relationships between the set of omitted and the set of completed items. Doing this establishes a pattern of understanding and can produce a systematic explanation for the nonresponse decisions of the respondents. During analysis, the researcher is sensitive to the background information of the respondents in assigning values to the missing items in the surveys. Computer applications are available to assist researchers in addressing the problem of nonresponse in surveys. Despite this, in a study of 364 survey articles, Lindner, Murphy and Briers (2001) found that only 214 articles report nonresponses. Out of the 214 articles, less than a half (46.7%) addressed the nonresponse issue. This showed that few researchers took advantage of the available methods to address the issue of survey nonresponses systematically.

Multiple Time Series

The Multiple Time Series Method extends many of the ideas of univariate time-series analysis to systems of equations. Analyzing a single time-series in isolation is reasonable, albeit it may be limiting. According to Bangura (2011a), many analyses of time series data involve multiple, related variables. The *Multiple Time Series Method helps a researcher to* address many specification choices and special challenges. It deals with the main challenges for modeling simultaneous equations, autoregressive integrated moving average (ARIMA), error correction models, and vector autoregression–i.e. a generalization of the other approaches mentioned. Specification, estimation, and inference using these models are also addressed by this method.

Wagner et al. in their study titled 'Intelligent Techniques for Forecasting Multiple Time Series in Real-world Systems' (2011) used the method to study 'a real world system developed for a large food distribution company which required forecasting demand for thousands of products across multiple warehouses.' After finding out that it is I mperative for the system to 'model and predict on the order of 10^5', the researchers go on to show how the system's forecasting algorithm can be utilized to effectively deal with several challenging tasks such as 'the prediction of multiple time series, the need for a continuously self updating model, and the desire to automatically identify and analyze various time series characteristics such as seasonal spikes and unprecedented events' (Wagner et al. 2011:284).

Polytomous Item Response Theory Models

Polytomous Item Response Theory Models have become the most widely adopted method for educational scaling development and assessments. The extensive use of the method is a result of the many advantages it offers in solving practical and testing problems which require linking and equating, establishing the psychometric properties of assessments and items, optimizing the efficiency of test delivery through adapted assessment systems, as well as coupling assessment scoring and development procedures with the cognitive qualities which are involved in generating responses to items (Penfield 2014).

Also, Polytomous Item Response Theory Models have been proven useful in reviewing some general Item Response Theory doctrines and terminology in the context of dichotomous items. Thus, considering an assessment consisting of a series of items, whereby each item is scored into a precise number of categories suitable for estimating a respondent's level of the trait considered by the assessment, what results is the target trait (Penfield 2014).

A good example of the utility of the method is the research conducted by Penfield titled 'An NCME [National Council on Measurement in Education] Instruction Module on Polytomous Item Response Theory Models' (2014). The method was used to increase the polytomous items in assessment practices, thereby revealing that specialized Polytomous Item Response Theory Models are becoming more popular and common in research.

Postmodernist Interviewing

The Postmodernist Interviewing Method relies on the tenet of postmodern philosophy which views knowledge as a construction. This form of interviewing deemphasizes the control of the interviewer over the interview process. The interviewee is empowered to construct his/her experiences. The goal of the interview questions is not to extract information from the interviewee but to guide the interviewee to produce a unique knowledge of his/her experiences (Diane Stopyra's Research Blog 2010). Therefore, the method emphasizes minimal input of the interviewer in the interview process. The interviewer serves as the learner in the process and a co-constructor of the interviewee's experiences (Fontana 2002). In engaging the interview data, the interviewer must account for the factors such as social, cultural, historical and economic which may influence the interviewee's reconstruction of the experiences (Fontana and Frey 1994).

The Postmodern idea of interview does not only transform the interview approach but also the number of interviewers. While the modernist interviewer

approach continues to be relevant, the postmodernist approach emphasizes that at certain times several interviewers may be appropriate (Rosenblatt 2012). Kogan (1998) employs discourse analysis to analyze a postmodern interview. He finds the interview approach useful to family therapists who tend to focus on how to talk to or interact with clients as a way of proffering solutions to family problems. It, however, challenges the dominant nature of therapy theory and techniques which subjugate client narratives to that of the therapists by offering the clients' opportunity to construct their experiences without much influence from the therapist.

Reframing Evaluation through Appreciative Inquiry

The Reframing Evaluation through Appreciative Inquiry Method is used to systematically assess individuals, groups, and organizations in ways that inquires, defines, and further develops the best of 'what is' in organizations in order to establish a better future. It is a means of addressing issues, challenges, and concerns of an organization in ways that build on the successful, effective and organizing experiences of its members. As the name suggests, the method is about recognizing the best in people, acknowledging those things that give life, and affirming past and present strengths, successes, assets and potentials. It seeks to achieve the transformation of culture from one that is negative to the one that can enhance positive achievements in an organization (Elliot 1999). The method borrows from the strength of many other practices in the field of organizational development such as open space technology (approach to self-organizing), whole sale change (facilitate large scale meeting), organizational learning (valuing inquiry reflections and dialogue as well as future research) (Elliot 1999).

The method has been applied to strategic planning, cultural transformation, increasing customer satisfaction, organizational design and leadership development, and organizational partnerships. It is also used in peace building and educational reforms (Whitney and Bloom 2003). It has been applied to help organizations through discovering and valuing, envisioning, dialoguing and constructing the future (Ashford and Patkar 2004). It supports generative learning within organizations–the ones that encourage continuous experiences and innovations. In short, therefore, the method is applied to organizational development and change and to practice of evaluation (Ashford and Patkar 2004).

The Reframing Evaluation through Appreciative Inquiry Method is used when one needs to understand the underlying motivations for the performances of individuals and organizations. Affirmative questions that reflect, share past

successful experience, and use strength-based language provide more energy, hope, and excitement about establishing a desired future. In this method of inquiry, research questions can be based on 4-Is: i.e. (1) Inquire (experience and values), (2) Imagine (clarification of values through dialogue and possibilities), (3) Innovate (set new strategies and directions), and (4) Implement (implement innovation, set organizational compass, monitor progress and evaluate results) (Barrett and Fry 2005; Cooperider and Whitney 2007).

Reliability and Risk Models

According to Todinov (2005) and Bangura (2011a), Reliability and Risk Models entail practical, probabilistic methods, statistical and numerical procedures, applications and case studies for settling reliability requirements. They provide a researcher the tools to quantify risk and construct probability in conjunction with real-world decision-making problems, including a host of institutional, organizational, political and cultural considerations.

One of the main requirements of any research process is the reliability of the data and findings (Zohrabi 2013). Reliability deals with the consistency, dependability, and replicability of 'the results obtained from a piece of research' (Nunan 1999:14). Reliability can be classified into two categories. The first category is external reliability, which is concerned with the replication of a study. As Burns asks, 'Can an independent researcher reproduce the study and obtain results similar to the original study?' (1999:21-20). The second category is internal reliability, which deals with the consistency of collecting, analyzing and interpreting the data. Internal reliability might be obtained when an independent researcher on reanalyzing the information comes to similar findings as the original researcher. It concerns whether, as Burns asks, '…the same results be obtained by other researchers using the same analysis?' (1999:21). These reliability categories deal with the uses of low inference descriptors, multiple researchers/participant researchers, peer examination and mechanically recorded data (Burns 1999:21).

Sørensen (2004) defines risk as the expected consequences associated with a given activity. Considering an activity with only one event with potential consequences of risk R is thus the probability that this event will occur P multiplied with the consequences given the event occurs R = P x C. Risk assessment is used in a number of situations with the general intention to indicate that important aspects of uncertainties, probabilities and/or frequencies and consequences have been considered in some way or another (Sørensen 2004).

Also, according to Sørensen (2004), calculated risks are compared with the accepted risks initially stated in the risk acceptance criteria. Should the risks not be acceptable in accordance with the specified risk acceptance criteria, there are principally the following four different ways to proceed, as suggested by Sørensen (2004):

1. Risk Mitigation is implemented by modification of the system such that the source of risk is removed. For example, the risk of fatalities from a ship collision with a bridge may be mitigated by traffic lights stopping traffic proceeding onto the bridge whenever a ship navigates under the bridge.

2. Risk Reduction may be implemented by reduction of the consequences and/or the probability of occurrence–in practice, risk reduction is normally performed by a physical modification of the considered system.

3. Risk Transfer may be performed by, for example, insurance or other financial arrangements where a third party takes over the risk.

4. Risk Acceptance: if the risks do not comply with the risk acceptance criteria and other approaches for risk treatment are not effective, then risk acceptance may be an option.

Acceptance of risk is basically a problem of decision-making, and it is inevitably influenced by many factors such as type of activity; level of loss; economic, political, and social factors; confidence in risk estimation, etc. A risk estimate, in the simplest form, is considered acceptable when it is below the level which divides the unacceptable from acceptable risks. For example, an estimate of individual risk per annum of 10-7 can be considered as 'negligible risk'; similarly, an estimate of injuries occurring several times per year can be considered as 'unacceptable'. The 'as low as reasonably practicable' (ALARP) principle is sometimes used as the only acceptance principle and sometimes in addition to other risk acceptance criteria (Sørensen 2004).

Indeed, Reliability and Risk Models are essential for practicing engineers, researchers, and consultants dealing with reliability and risk assessment. Professors and graduate students involved in reliability engineering will also find it an excellent reference, and it is also a useful tool for actuaries, economics, and applied probability and statistics. Subsequently, Reliability and Risk Models are now commonly used by researchers studying assessment and management, transportation, finance, medicine, and the social sciences (Todinov 2005).

Research Models for Community Change

Everyone is a member of a community, and every community is continually changing. To successfully manage that change, community members need

information. Therefore, an in-depth understanding of the research models that communities can use to solve problems, develop their resources, protect their identities, and build power, is important. With an engaging writing style and numerous real-world examples, Stoecker (2013) shows how to use a project-based research model in the community to diagnose a community's condition, prescribe an intervention for the condition, implement the prescription, and evaluate its impact. At every stage of this model, there are research tasks, from needs and assets assessments to process and outcome assessments. Readers also learn about the importance of involving community members at every stage of a research project and in every aspect of the research.

Research Models for Community Change constitute a project-based approach, an in-depth review of all the research methods that communities use to solve problems, develop their resources, and protect their identities. According to Stoecker, it is imperative to involve community members at every stage of a research project and in every aspect of the research, making the research part of the community-building process. The research is done for community development. It has a goose approach to research (i.e. doing research with people instead of on them), a participatory action approach, a project-based approach model, and a diagnosing model (Stoecker 2013).

The models are well suited for social scientists and community development practitioners such as social workers and public health workers. Community service workers, professional researchers, and consultants also find this method an invaluable guide to effecting change in their communities. Stoecker (2013) demonstrates that the models are valuable and can be used by people anywhere as a tool for organizing and developing their communities. The project-based research models build community and democracy by redistributing both power and responsibility. Thus, according to Stoecker (2013), good quality research can make meaningful differences in people's lives.

Situational Analysis

The Situational Analysis Method, developed by Adele Clarke, is a novel approach to qualitative data analysis with deep roots in the Grounded Theory method, symbolic interactionism, feminism, the post-structural work of Michel Foucault, and Anselm Strauss's Social World's Theory (Clarke 2012). Situational Analysis gives researchers practical mapping tools for designing qualitative research projects and conducting analysis of qualitative empirical material. The method is particularly useful for multi-sited ethnographic projects, research projects

including both human and non-human actors, and multiple forms of empirical material (Clarke 2012).

The method involves making three kinds of maps: (1) situational maps, which lay out the major human, nonhuman, symbolic, discursive, and other elements in a situation, provoking analyses of relations among them (2) social world/arena maps, which lay out the collective actors and their arena(s) of commitment and (3) positional maps, which lay out major positions taken and not taken in the discursive data. Situational Analysis goes beyond the conventional qualitative methods assertion that 'context matters' in considering a case. In contrast, Situational Analysis asserts that there is no such thing as 'context'. Instead, the conditions of the situation are said to be in the situation. Hence, the conditional elements of the situation need to be specified in the analysis of the situation itself because they are constitutive of it, not merely surrounding it or framing it, or contributing to it. They *are* it. The situation itself is the key unit of analysis. Cases cannot be abstracted from situations. Cases are situations (Clarke 2012).

This method can be used across many disciplines in a wide array of research projects drawing on interview, ethnographic, historical, visual, and/or other discursive materials, including documents. It allows researchers to draw together studies of discourses and agencies, actions and structures, images, texts and contexts, histories and the present moment to analyze complex cases in depth. It is especially useful in multi-site research (Clarke 2012).

A complete Situation Analysis Method allows a researcher to gather information on four areas: (1) the problem, its severity, and its causes; (2) the people affected by the problem (potential audiences); (3) the broad context in which the problem exists; and (4) factors inhibiting or facilitating behavior change. In essence, the method is useful for a comprehensive review of the situation at hand, providing an understanding of many contextual factors, such as the: types and extent of violence against women and girls, needs within a population, strengths and weaknesses of available services, laws, policies and plans that exist to address an issue, resources available to address an issue, knowledge, attitudes and practices of key actors within different sectors and within the community (Clarke 2012).

Spectral Analysis of Time-Series Data

As Warner (1998) and Bangura (2011a) recount, when we encounter time series, most of us often try to fit trends (linear, quadratic, cubic, etc.). We fail to note that trends imply that the long-range forecast is a very extreme response: i.e. trend models inevitably predict very extreme responses in the future. Today, however,

which is usually not all that extreme, is yesterday's future. Trends very often are insufficient in modeling over-time processes. Cycles often offer a much more reasonable approach to comprehend variation over time than do trends.

Warner (1998) and Bangura (2011a) add that the Spectral Analysis of Time-Series Data Method is useful for describing cyclic patterns in time-series data. It is ideal for researchers who have many different kinds of time-series data such as social indicator data (e.g., number of divorces per annum), systematically coded observational data (e.g., level of effective involvement of each person in a mother-infant dyad), physiological data (e.g., measures of blood pressure), or measures of perceptual sensitivity or threshold. The method therefore provides some relatively simple ways to characterize any cycle tendencies that are present: the proportion of variance in the time series that is accounted for by the cycle, the length of the cycle, and the amplitude of the cycle.

Time-series data have a natural temporal ordering. This makes time-series analysis distinct from cross-sectional studies, in which there is no natural ordering of the observations: for example, explaining people's wages by reference to their respective education levels, where the individuals' data could be entered in any order. Time-series analysis is also distinct from spatial data analysis whereby the observations typically relate to geographical locations (e.g., accounting for house prices by location as well as the intrinsic characteristics of the houses). A stochastic model for a time series will generally reflect the fact that observations close together in time will be more closely related than observations further apart. Time-series models will often make use of the natural one-way ordering of time so that values for a given period will be expressed as deriving in some way from past values, rather than from future values (Imdadullah 2014).

From a spectral analysis perspective, time series is applied when the length of a time series is between at least five and ten times the length of the cycle that interests a researcher. To apply this method, there is consideration of sampling frequency because if there is no adequate sampling of the signal, a high frequency signal might appear like a low frequency signal. Hence, one needs to take steps to avoid 'aliasing'. Also, if a researcher wants to detect a lagged response between two variables, then the lag value will influence the sampling frequency (Imdadullah 2014).

Examples of studies that have employed the Spectral Analysis of Time Series Method are those that have investigated how sun spot activity varies over 11-year cycles (e.g., Bloomfield 1976; Shumway 1988). Other common examples include studies on celestial phenomena, weather patterns, neural activity, commodity prices, and economic activity.

Synergy Inquiry

The Synergy Inquiry Method is a collaborative action approach used to investigate change and also effectively bring about change. It is one of the most scientifically-proven effective ways of teaching students. Synergy is the idea that two or more options interact so that their combined effect is greater than the sum of their individual effects (Soanes and Stevenson 2004).

The method is an effective way for students to develop deep conceptual understandings, complex thinking skills, and enduring habits of mind using an inquiry-based approach. It was developed to address the challenges that people face in different endeavors of life. This form of inquiry belongs to the participatory action school. Its aim is to simultaneously make each person a researcher and the researched at the same time; the object and the subject; research for, by, and with people (Tang and Joiner 2006:6). The ideology behind the Synergy Inquiry Method is that fundamental pathologies exist at different levels of a social system and that every system suffers one or more forms of misconceptions. As a transformation inquiry, it changes consciousness by inculcating in individuals the practices that make a person to examine his/her own propositions, assumption, values, and beliefs. It challenges traditional research methods by balancing theory and practice that gives new insights of a person's self and of others. It is therefore a method of 'living theory and living action' directed at making participants both acquire and apply newly acquired skills and abilities. The underpinning notion of this mode of inquiry is that the universe evolves and by so doing reveals mysteries that are beyond human action and imagination. The Synergy Inquiry method therefore both guides human actions and equips them (learners) with the *how* to accommodate those mysteries (Tang and Joiner 2006).

The method has been applied by using modern technologies like the Internet, cellphones, and so on. It is employed to facilitate inquiry and cooperative learning. For example, Tang and Joiner (2006) conducted research using the method by exposing a teacher and her students to different types of online learning tools like blogs and discussion groups to share, test, and revise their ideas. The online was also used as a medium for sending information through Google drive, sharing ideas, post videos, as well as comment and peer edit one another's works via Turnitin. com. The teacher also used the online medium to send assignments and put up coursework that students needed for learning new things or retrieve materials or documents on lessons they possibly missed. The teacher also followed up with her students to get their opinions and feedback using the Internet medium called PollEverywhere.com where students can send answers as texts via cellphones.

References

Annells, Merilyn, 1997, 'Grounded Theory Method, Part I: Within the Five Moments of Qualitative Research, *Nursing Inquiry*, 4, 2:120-129.

Bangura, Abdul Karim, 2011a, *African-Centered Research Methodologies: From Ancient Times to the Present*, San Diego, CA: Cognella Press.

Bangura, Abdul Karim, 2011b, *African Mathematics: From Bones to Computers*, Lanham, MD: University Press of America/Rowman and Littlefield.

Barata, Paula, Sandeep Hunjan and Jillian Leggatt, 2005, 'Ivory Tower? Feminist Women's Experiences of Graduate School', *Women's Studies International Forum*, 28:232-246, retrieved on April 13, 2017 from http://www.ensany.ir/storage/Files/20100609131114-25.pdf

Barrett, Frank J. and Ronald E. Fry, 2005, *Appreciative Inquiry: A Positive Approach to Building Cooperative Capacity*, Chagrin Falls, OH: Taos Institute.

Bewley, Raymond J., 1999. 'The Use of Multimedia and Hypermedia Presentation for Instruction of Juvenile Offender', *Journal of Correctional Education*, 50, 4:130-139 retrieved on April 13, 2017 from http://www.jstor.org/stable/23292247

Bloomfield, P., 1976, *Fourier Analysis of Time Series: An Introduction*. New York, NY: Wiley.

Blumer, Herbert, 1931, 'Science without Concepts', *American Journal of Sociology*, 36, 4:515-533.

Blumer, Herbert, 1969, *Symbolic Interactionnism: Perspectice and Method*, Englewood Cliffs, NJ: Prentice-Hall.

Brennan, Robert L., 1983, *Elements of Generalizability Theory*, Iowa City, IA: The American College Testing Program.

Briggs, Charles L. 2003, 'Interviewing: Power, Knowledge and Social Inequality. In J. A. Holstein and J. F. Gubrium, eds., *Inside Interviewing: New Lenses, New Concerns*. Thousand Oaks, CA: Sage Publications.

Bronfenbrenner, Urie, 1995, 'Developmental Ecology through Space and Time: A Future Perspective', in P. Moen, G. H. Elder, K. Luscher, & U. Bronfenbrenner, eds., *Examining Lives in Context: Perspectives on the Ecology of Human* Development, Washington, DC: American Psychological Association Press.

Bronfenbrenner, Urie, ed., 2005, *Making Human Beings Human: Biocultural Perspectives on Human Development*. Thousand Oaks, CA: Sage Publications.

Campbell, Norman R., 1920, *Physics: The Elements*, Cambridge, UK: Cambridge University Press.

Chang, Kuo-En, Tao-Ting Sung and Ine-Dai Chen, 2002, 'The Effect of Concept Mapping to Enhance Text Comprehension and Summarization', *The Journal of Experimental Education*, 71, 1:5-23.

Charmaz, Kathy, 2001, 'Qualitative Interviewing and Grounded Theory Analysi', in J. Gubrium and J. Holstein, eds., *Handbook of Interview Research*, Thousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 2000, *Grounded Theory: Objectivist and Construstivist methods.* Thousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 1995, 'Grounded Theory: Rethinking Methods in Psychology', in J. A. Smith et al., eds., TRhousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 1990, ''Discovering' of Chronic Illness: Using Grounded Theory', *Sociology of Health and Illness.*, 30:1161-1172.

Charmaz, Kathy and Richard G. Mitchell Jr.,'The Myth of Silent Authorship: Self, Substance, and Stlye in the Ethnographic Writing, *Symbolic Interaction*, 19, 4:285-302.

Clarke, Adele E., 2007, 'Grounded Theory: Conflicts, Debates and Situational Analysis', in W. Outhwaite and S. P. Turner, eds., *Handbook of Social Science Methodology*, Thousand Oaks, CA: Sage Publications.

Clarke, Adele E., 2006. 'Feminisms, Grounded Theory and Situational Analysis', in S. Hesse-Biber, ed., *Handbook of Feminist Research: Theory and Praxis*, Thousand Oaks, CA: Sage Publications.

Clarke, Adele E., 2005. *Situational Analysis: Grounded Theory after the Postmodern Turn*. Thousand Oaks, CA: Sage Publications.

Cooperider, David L. and Diana Whitney, 2007, 'Appreciative Inquiry: A Positve Revolution in Change', in P. Holmer, T. Devane and S. Cady, eds., *The change Handbook*, Oakland, CA: Berrett-Koehler Publishers.

Corbet-Owen, Carina and Lou-Marie Kruger, 2001, 'The Health System and Emotional Care: Validating the Many Meanings of Spontaneous Pregnancy Loss', *Families, Systems and Health*, 19, 4:411-427.

Creswell, John W., 1994, *Research Design: Qualitative and Quantitative Approaches*, Thousand Oaks, CA: Sage Publications.

D'Andrade, Roy G. and Claudia Strauss, 1992, *Human Motives and Cultural Models*. Cambridge, UK: Cambridge University Press.

Diane Stopyra's Research Blog, February 21, 2010, 'Interviewing…It's All about Balance', retrieved on April 13, 2017 from https://dianestopyra.wordpress.com/tag/postmodern-interviewing/

Dingle, Herbert, 1950, 'A Theory of Measurement', *British Journal for the Philosophy of Science*, 1:1-25.

Dodson, Lisa Jillian Dickert, 2004, 'Girls' Family Labor in Low-income Households: A Decade of Qualitative Research, *Journal of Marriage and Family*, 66, 2:318-332.

Douglas, Ann, Karen Scopa and Carole Gray, 2000, 'Research through Practice: Positioning the Practitioner as Researcher', *Working Papers in Art and Design*, retrieved on April 13, 2017 from https://www.herts.ac.uk/__data/assets/pdf_file/0018/12285/WPIAAD_vol1_douglas_scopa_gray.pdf

Edwards, Rosalind and Melanie Mauthner, 2002, 'Ethics and Feminist Research: Theory and Practice', in T. Miller et al., eds., *Ethnics and Feminist Research*, London, UK: Sage Publications.

Fontana, Andrea and James H. Frey, 1994, 'Interviewing: The Art of Science', in N. K. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage Publications.

Fontana, Andrea, 2002, 'Postmodern Trends in Interviewing', in J. Gubrium and J. Holstein, eds., *Handbook of Interview Research: Context and Method*, Thousand Oaks, CA: Sage Publications.

Fossey, Ellie, Carol Harvey, Fiona McDermott, and Larry Davidson, 2002, 'Understanding and Evaluating Qualitative Research, *Journal of Psychiatry*, 36, 6:717-732.

Franklin, Carl and Susan K. Kinnell, 1990, *Hypertext and Hypermedia in Schools*, Santa Barbara, CA: ABC-CLIO, Inc.

Gardner, John W., 1990, *On Leadership*, New York, NY: The Free Press.

Garzotto Franca, Luca Mainetti and Paolo Paolini, 1995, 'Hypermedia Design Analysis', *Communications of the ACM,* 8, 38:74-86.

Garzotto Franca, Paolo Paolini and Daniel Schwabe, 1993, 'HDM: A Model-based Approach to Hypertext Application Design', *ACM Transactions of Information Systems,* 11, 1:1-26.

Gelman, Andrew, 2006, 'Multilevel (Hierarchical) Modeling: What It Can and Cannot Do', *American Statistical Association and the American Society for Quality Technometrics,* 48, 3:433-435.

Gill, Jatinder, n.d., 'Feminist Research Methods', *Feminist Perspective on Media and Technology*, York University, Toronto, Ontario, Canada, retrieved on April 13, 2017 from http://www.yorku.ca/mlc/sosc3990A/projects/femresearch/femresearch.html

Glaser, Barney G. 1967, *Theoritical Sensitivity Advances in the Methodology of Grounded Theory*, Mill Valley, CA: Sociology Press.

Glaser, Barney G. and Anselm L. Strauss, 1967, *The Discovery of Grounded Theory: Startegies for Qualitative Research*, Chicago, IL: Aldine Publishing Company.

Gustafsson, Ewa, Lotta Dellve, Maria Edlund and Mats Hagberg, 2003, 'The Use of Information Technology among Young Adults: Experience, Attitudes and Health Beliefs', *Applied Ergonomics* 34, 6:565-570.

Hand, David J., 1996, 'Statistics and the Theory of Measurement', *Journal of the Royal Statistical Society*, A 159, 3:445-492.

Hankivsky, Olena, 1999, 'Quantitative and Qualitative Methodologies', Center for Research on Violence against Women and Children, pp. 1-2, retrieved on April 13, 2017 from http://www.learningtoendabuse.ca/sites/default/files/pub_gabdois1999.pdf

Harris, William A. 2001, 'Temporal Coordinates: The Genes that Fix Cell Fate with Birth Order', *Developmental Cell* 1, 3:313--314.

Hesse-Biber, Sharlene Nagy, ed., 2013, *Feminist Researcher Practice: A Primer* 2nd ed., Thousand Oaks, CA: Sage Publication.

Holstein, James and Jaber F. Gubrium, 2003, *Inside Interviewing: New Lenses, New Concerns*, Thousand Oaks, CA: Sage Publications.

Hutchison, Dougal, 2008, 'On the Conceptualisation of Measurement Error', *Oxford Review of Education*, 34, 4:443-461.

Imdadullah, Muhammad, 2014, 'Time Series Analysis and Forecasting,' retrieved on April 13, 2017 from http://itfeature.com/tag/time-series-analysis

Jones, Susan R., 2002, '(Re)writing the Word: Methodological Strategies and Issues in Qualitative Research', *Journal of College Student Development*, 43, 4:461-473.

Jones, Susan R. and Kathleen E. Hill, 2003, 'Understanding Patterns of Commitment: Student Motivation for Community Service, *Journal of Higher Education*, 74, 5:516-539.

Koch, Nora, 1999, 'Comparative Study of Methods for Hypermedia Development'. *Technical Report 9905.* Ludwig-Maximilians-University Munchen, retrieved on April 13, 2017 from http://www.pst.informatik.uni-muenchen.de/~kochn/techrep/hypdev.pdf

Kogan, Steven M., 1998, 'The Politics of Making Meaning: Discourse Analysis of a 'Postmodern' Interview', *Journal of Family Therapy*, 20, 3:229-251.

Kozma, Robert B., 1991, 'Learning with Media', *Review of Educational Research*, 61, 2:179-211.

Larson, Reed and Mihaly Csikszentmihalyi, 1993, 'The Experience Sampling Method', in H. T. Reis, ed., *New Directions for Methodology of Social and Behavioral Sciences*, San Francisco, CA: Jossey-Bass.

Lather, Patti, 1991, *Getting Smart Feminist Research and Pedagogy with/in the Post-Modern*, New York, NY: Routledge Publishing.

Lindner, James R., Tim H. Murphy and Gary E. Briers, 2001, 'Handling Nonresponse in Social Science Research', *Journal of Agricultural Education*, 42, 4:43-53.

Madill, Anna, Abbie Jordan and Caroline Shirley, 2000, 'Objectivity and Reliability in Qualitative Analysis: Realist, Contextualist and Radical Constructionist Epistemologies, *British Psychological Society*, 91, 1:1-20.

Maiers, J. and Y. S. Sherif, 1985, 'Applications of Fuzzy Set Theory', *IEEE Transactions on Systems, Man, and Cybernetics*, 1:175-189.

Margolin, Victor, 2000, 'Building a Design Research Community', in S. Pizzocaro, A. Arruda and D. De Moraes, eds., *Design Plus Research: Proceedings of the Politecnico di Milano Conference*, Politecnico di Milano, Milan, May 18-20, 2000.

Mastekaasa, Arne and Stein Kaasa, 1989, 'Measurement Error and Research Design: A Note on the Utility of Panel Data in Quality of Life Research', *Social Indicators Research*, 21, 3:315-335.

McCann, Teremce V. and Eileen Clark, 2003, 'Grounded Theory in Nursing Research: Part 2–Critique', *Nurse Researcher,* 11, 2:19-28.

Mcleod, Saul. 2010, 'Simply Psychology', retrieved on April 13, 2017 from https://www.simplypsychology.org/saul-mcleod.html

Meyers, Lawrence S., Glenn C. Gamst and Anthony J. Guarino, 2006, *Applied Multivariate Research: Design and Interpretation*. Thousand Oaks, CA: Sage Publications.

Norton, Liz, 1999, 'The Philosophical Bases of Grounded Theory and Their Implications for Research Practice', *Nurse Researcher*, 7, 1:31-43.

O'Brien, Marion, 2005, 'Studying Individual and Family Development: Linking Theory and Research', *Journal of Marriage and Family*, 67, 4:880-890.

Penfield, Randall David, 2014, 'An NCME Instruction Module on Ploytomous Item Response Theory Models', *Educational Measurement: Issues and Practice,* 33, 1:36-48.

Piccini, Angela, 2002, 'An Historiographic Perspective on Practice as Research', *PARIP*, retrieved on April 13, 2017 from http://www.bris.ac.uk/parip/t_ap.htm

Plakhotnik, Maria S.et al., 2005. 'An Examination of Qualitative Empirical Studies at the AHRD from 1999–2003: Data collection', in *ERIC,* retrieved on April 13, 2017 from http://files.eric.ed.gov/fulltext/ED492742.pdf

Preskill, Hallie and Tessie Tzavaras Cabsambas, 2006, *Reframing Evaluation through Appreciative Inquiry*, Thousand Oaks, CA: Sage Publications.

Raspa, Melissa, Kathleen Hebbeler and Don Bailey, 2009, *A Guide to Analyzing Data from the Family Outcomes Survey*, Menlo Park, CA: Early Childhood Outcomes Center.

Rice, Nigel and Alastair Leyland, 1996, 'Multiple Models: Application to Health Data', *Journal of Health Services Research and Policy,* 1, 3:154-164.

Rocco, Tonette S. 2004, 'Forum: Impacting the Future: Writing Up the Method on Qualitative Studies', *Human Resource Development Quarterly,* 14, 3:343–349.

Rosenblatt, Paul C., 2012, 'One Interviewer versus Several: Modernist and Postmodernist Perspectives in Qualitative Family Interviewing', *Journal of Family Theory & Review*, 4, 2:96-104.

Rubin, Donald B., 2004, *Multiple Imputations in Nonresponse in Surveys*, Hoboken, NJ: John Wiley and Sons.

Saikaly, Fatina, 2004, 'Approaches to Design Research: Towards the Designerly Way', Paper presented at the Design Research Society International Conference, Monash University, November 17-21, 2004, retrieved on April 13, 2017 from http://ead.verhaag.net/fullpapers/ead06_id187_2.pdf

Shumway, Robert H., 1988, *Applied Statistical Time Series Analysis*, Englewood Cliffs, NJ: Prentice Hall.

Spradley, James P., 1979, *The Ethnographic Interview*, New York, NY: Holt, Rinehart and Winston.

Stevens, Stanley Smith, 1946, 'On the Theory of Scales of Measurement', *Science*, New Series, 103, 2684:677-680, retrieved on April 13, 2017 from https://marces.org/EDMS623/Stevens%20SS%20(1946)%20On%20the%20Theory%20of%20Scales%20of%20Measurement.pdf

Stratton, Peter, 1997, 'Attributional Coding of Interview Data: Meeting the Needs of Long-haul Passengers', in I. N. Hayes, ed., *Doing Qualitative Analysis in Psychology*, Hove, UK: Psychology Press.

Strauss, Anslem and Juliet Corbin, 1990, *Basics of Qualitative Research Techniques and Procedures for Developing Grounded Theory* 2nd ed., Thousand Oaks, CA: Sage Publications.

Sullivan, Graeme, 2005, *Art Practice as Research: Inquiry in the Visual Arts*, Thousand Oaks, CA: Sage Publications.

Todinov, Michael T., 2005, *Reliability and Risk Models*, Indianapolis, IN: John Wiley.

Trochim, William M. 1989. 'An Introduction to Concept Mapping for Planning and Evaluation', *Evaluation and Program Planning*, 12, 1:1-16.

Trung, Nguyen Hieu et al. 2006, 'Application of GIS in Land-use Planning: A Case Study in the Coastal Mekong Delta of Vietnam', *International Symposium on Geoinformatics for Spatial Infrastructure Development in Earth and Apllied Sciences* retrieved on April 13, 2017 from http://wgrass.media.osaka-cu.ac.jp/gisideas06/viewpaper.php?id=147

Verd, Joan Miquel and Sergio Porcel, 2012, 'An Application of Qualitative Geographic Information Systems (GIS) in the Field of Urban Sociology using ATLAS.ti: Uses and Reflection', *FORUM: Qualitative Social Research*, 13, 2:Art 14, retrieved on April 13, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/1847/3373

Verhagen, Simone J. W., Laila Hasmi, Marjan Drukker, J. van Os and Philippe A. E. G. Delespaul, 2016, 'Use of the Experience Sampling Method in the Context of Clinical Trials', *Evidence-Based Mental Health*, 19, 3:86-90.

Wagner, Neal et al., 2011, 'Intelligent Techniques for Forecasting Multiple Time Series in Real-world Systems', *International Journal of Intelligent Computing and Cybernetics*, 4, 3:284-310.

Warner, Rebecca M., 1998, *Spectral Analysis of Time-Series Data*, New York, NY: The Guilford Press.

Weisner, Thomas S., 1996, 'Why Ethnography Should Be the Most Important Method in the Study of Human Development', in R. Jessor, A. Colby, and R. Shweder, eds., *Ethnography and Human Development. Context and Meaning in Social Inquiry*, Chicago, IL: The University of Chicago Press.

Weisner, Thomas S., 2014, 'Why Qualitative and Ethnographic Methods Are Essential for Understanding Family Life', in S. M. McHale, P. Amato and A. Booth, eds., *Emerging Methods in Family Research*. Cham, Switzerland: Springer International Publishing.

Wright, Benjamin D. and Mark H. Stone, 1979, *Best Test Design*, Chicago, IL, Mesa-Press.

Yongming, Tang and Charles Joiner, 2006. *Synergic Inquiry: A Collaborative Action Methodology*. London, UK: Sage Publication.

Yoshikawa, Hirokazu, Thomas S. Weisner, Ariel Kalil and Niobe Way, 2008, 'Mixing Qualitative and Quantitative Research in Developmental Science: Use and Methodological Choices', *Developmental Psychology,* 44, 2:344–354.

Zadeh, Lotfi A., 1965, 'Fuzzy Sets', *Information and Control*, 8:338–353.

Zimmermann, Hand Jürgen, 2011, *Fuzzy Set Theory and Its Applications*, Berlin, Germany: Springer Science & Business Media.

World Wide Web Sites

https://phd.moodle.aau.dk/course/info.php?id=15

http://methods.sagepub.com/base/download/ReferenceEntry/encyc-of-case-study-research/n321.xml

7

Brief Descriptions of Comparative Research Methods

Abdul Karim Bangura and Doctoral Scholars[1]

This chapter chronicles eight comparative research methods. They span from Case-oriented to Cross-national approaches.

Case-oriented Comparative Approaches

For many decades, there was a general view in the social sciences that research should be based on variables, yet a good number of studies especially in political science and some branches in sociology are case-oriented: that is, these studies are aimed at identifying few examples of a certain phenomenon. Case-oriented Comparative Approaches seek to understand complex units and they are concerned with making sense of a small number of cases. Usually, there are between one and 50 cases selected that are substantively or theoretically significant in nature (Eckstein 2000). The aim of Case-oriented Comparative Approaches is to reconstruct from the complexity of empirical processes patterns which can be theorized as 'general' concerning their relevance in a specific social field.

Case-based research can be viewed in the social context where its pattern can also illustrate how members of society specifically react to social problems in their authentic life contexts (Breckner 2007). The selected cases are viewed as complex but meaningful configurations of events and structures. According to Ragin (1997), cases are treated as singular, whole entities that are selected decisively

not as homogenous observations of equally plausible selections drawn from a random pool. A good number of case-oriented studies see social phenomena such as organisations, cities, neighbourhoods, regions, cultures, etc. as parallel to each other, thereby allowing for comparison and contrasting.

Lijphart (1971) proposes six types of case studies for comparative research. They are as follows: (1) atheoretical case study refers to the traditional single-country or single-case analysis; (2) interpretive case study resembles the atheoretical case study in one respect – it, too, is selected for analysis because of an interest in the case rather than an interest in the formulation of general theory. It differs, however, in that it makes explicit use of established theoretical propositions; (3) hypothesis-generating case study begins with a more or less vague notion of possible hypotheses and then attempts to formulate definite hypotheses to be tested subsequently among a larger number of cases; (4) theory confirming case study; and (5) theory affirming case study refer to analyses of single cases within the framework of established generalizations – the difference between the two is that while a theory confirming case study strengthens the proposition in question, a theory affirming case study weakens the generalizations marginally; and (6) deviant case study is an examination of single cases that are known to deviate from established generalizations.

Case-orientated Comparative Approaches have been applied to migration research and can be traced back to the Chicago School. According to Breckner (2007), the research of Isaac W. Thomas and Florian Znaniecki on the 'Polish Peasant' in the late 1920s was based primarily on biographical material as Thomas and Znaniecki endeavoured to understand, from a comparative perspective, how migration was connected to processes of personal and societal change, how these processes were dealt with, and how the changes on the personal and societal levels were interrelated.

One of the situations for which researchers can adopt a Case-oriented Comparative Approach is in health maintenance organizations (henceforth, HMOs). Here, a researcher might adopt a Case-oriented Comparative Approach to study a small number of HMOs in an in-depth manner. For example, suppose several HMOs are thought to be unusually successful in lowering costs through preventive medicine, thereby helping their members lead healthier lifestyles. One might ask the question 'how do they do it?' To answer this question, the researcher would have to conduct an in-depth study of the HMOs in question, focusing on the ways in which they accomplish this outcome (Ragin 1999).

Variable-oriented Comparative Approach

The Variable-oriented Comparative Approach is mostly centralized in theory testing (Ragin and Zaret 1983). Thus, simplification is preferred over complexity. There is a rejection or acceptance of the 'null hypothesis.' The method's main focus is on variables and their correlations. The main limitation of this approach is the inclination towards abstract and sometimes void generalizations (Denzin and Lincoln 1994). The Variable-oriented Comparative Approach is also weakened by complex conjectural contributing opinions. These beliefs involve the assessment of the consequences of a substantial amount of interface conditions or the division of a sample into various distinct sub-samples (Ragin 1989; Pickard 2007).

The approach has four important steps in its application, according to Ragin (1989). First, the variables and associations of theory to be tested must be clearly detailed. Second, the social structural variables (competing descriptions of the phenomenon of concern) must be conceptualized. This is important because analyses of selected theories must be conservative in form and be compared against alternatives. The third step involves selecting measuring scales of chosen variables that are valid and reliable. Fourth and finally, statistical analysis should be employed to examine the associations among the measures based on data from a systematically identified set of observations used to test the theory against alternative explanations (Ragin 1989). Also, statistical correlations derived from cross-sectional and longitudinal variables can serve as the basis to delineate generalizations from structural procedures identified in theories (Creswell 2009). Furthermore, correlational analysis offers specific penalization of principles of structural causation (Hantrais 2009).

Consequently, as Ragin (1989) observes, the inevitable application of multivariate statistical techniques to cross-national data has benefited comparative analysis in many ways. Such benefits include the ability for comparative social scientists to investigate more than a handful of cases at a time, a new interest in reliable quantitative cross-national data, a new tendency for investigators to consider alternative explanations more carefully when testing a theory, the socialization of comparative social science, as knowledge of countries is no longer the domain of only the area specialists. These techniques have also forced comparative social science to be more cautious in formulating empirical generalizations, they have counteracted the tendency among some comparativists to favor particularistic explanations when faced with many deviating cases, and they have allowed investigators to employ approaches of statistical control: i.e. subtract the effects of control variables on the dependent variable when estimating the effect of a specific causal/independent variable.

The Variable-oriented Comparative Approach has been extensively applied in the social sciences. For example, it was used by Von Eye (2006) to analyze the relationship between parents' attitudes and gender in relation to youth alcohol consumption. Cacace et al. (2013) also made use of the Variable-oriented Comparative Approach to assess the quality of health systems and policies across countries.

Comparative Strategies of Emile Durkheim and Max Weber

Emile Durkheim (1858-1918) and Max Weber (1864-1920) are regarded as the major proponents of comparative strategies in the history of sociology (Mazman 2005). The Comparative Strategies of Durkheim and Weber attempt to explain social reality causally by relating particular facts to general principles. Their theoretical and methodological approaches come from two different traditions of sociology. In order to compare the theorists, we will give brief descriptions of their theoretical approaches in terms of the constitution of social order or social reality. We will also show how their methodological approaches have been applied to understand social reality and give practical examples based on their theoretical and methodological departures.

Max Weber, on the one hand, developed his intellectual orientation in the German rationalist tradition, influenced by the German philosopher Emmanuel Kant. He emphasized the meaning and interpretation of individual action in his studies. He also emphasised the point that modern scientific studies should set apart the subjectivity of the human world and the objectivity of the external world (Mazman 2005). Weber tried to synthesize both perspectives by connecting interpretative understanding and causal explanations regarding the social action that sociologists studied. Durkheim, on the other hand, emerged as a philosopher and sociologist under the influence of a positivistic and idealistic intellectual milieu in France (Coser 1977). He represented the French intellectual orientation in sociological theory and proposed ideas like 'collective consciousness' and 'social collectivity'. According to Ibrahim Mazman, Durkheim (1895) argued that Sociology is a 'science of social facts, that is to say, the science of those phenomena which show the life of societies itself.' (Mazman 2005:77). Mazman adds that Durkheim, 'elevated the 'social fact' to the discipline of Sociology's subject matter' to attain objectivity and depart from the psychological states of individuals' (cited in Mazman 2005:77). Mazman further atstea that according to Durkheim, the 'sociological method as we practice it rests wholly on the basic principle that social facts must be studied as things, that is, as reality external to [the] individual' (quoted by Mazman 2005:77).

Weber's attempt to constitute his sociological orientation was based on concepts such as 'meaning', 'social action', 'interpretation', and 'methodological individualism'. Durkheim, however, tended to emphasize the importance of social collectivity and its determination over individual consciousness by noting concepts like 'sui-generis of social facts', 'function', 'causality', and 'generality' in his studies. The two sociologists differ in that Durkheim argued that social phenomena are not unique but universal because of the objectivity of social facts while Weber argued that there is no objective scientific analysis of culture. There is, instead, the uniqueness of historical facts. While Weber's 'methodological individualism' sees the essence of society as being constituted by individuals, the essence of society is considered as a social whole in Durkheim's 'methodological collectivism' (Wrong 1970). Both philosophers agreed that the discipline of Sociology offers sociologists the opportunities to understand society methodologically through scientific practice (Mazman 2005). The main convergences and divergences of both theorists, first, deal with how both sociologists understood social order or social reality: namely, their ideas about the basis of social order at the theoretical level. Second, it shows how they tended to approach this social reality in order to understand it at the methodological level (Mazman 2005).

For Durkheim, because individualistic needs are infinite, 'society imposes limits on human desires' (Coser 1977:132). In this manner, Durkheim's idea of social action refers to 'sui generis of social facts': namely, the determination of 'external conditions', which implies not a probability but a certainty (Münch 1988:20). Durkheim proposes in his methodological collectivism that 'to understand the way in which a society thinks of itself and of its environment, one must consider the nature of the society as a whole, and not that of the individuals' (Durkheim 1964:xlix). Social continuity arises from the domination of social regulations over individualistic biological and psychological needs and desires. In the Weberian sense, however, social action has to do with probability and not certainty. For example, when Weber explained the types of action orientation, he defined 'usage' saying 'if an orientation toward social action occurs regularly, it will be called 'usage' insofar as the probability of its existence within a group is based on nothing but actual practice' (Weber 1968:29). In essence, Weber approached the problem of social regulation through the question of how this regularity became possible out of the chaos of individualistic ambiguity. In this manner, he searched for the underlying rules and principles in this order.

Using the concept of 'social order' in terms of Weber and Durkheim, we need to remember that Weber saw the basis of regulation in society in the meaningful sphere of social action. This regulation may or may not imply that it is probable in

society (Weber 1968:29). In this context, there is no structurally determined social order; therefore, 'social regulation' is preferred in terms of Weberian sociology. For Weber, people attach subjective meaning not only to their own behaviors but also to behaviors of other people in their reciprocal relationships, because 'the action of each takes account of that of others' (Weber 1968:26). According to Weber, social continuity or social order is constructed at the individualistic consciousness level through the ways in which social actors assign meaning to their actions. Weber asserted that the real empirical sociological investigation begins with the following question: What motive determines and leads the individual members and participants in this socialistic community to behave in such a way that the community came into being in the first place and that it continues to exist? (Weber 1968). Weber proposed that the reason behind regular actions is the meaning which individuals attribute to their actions. Individuals' attributions of meaning to action and social relationships give social life its regularity, and these regularities in social and individualistic levels merge in social action. Conversely, as society itself requires and determines an order, albeit the term of 'social order' is more suitable to describe regulation in society in Durkheimian sociology.

For Weber, ideas can assume a role in social change and history. Weber searched for 'reciprocal relationships' of different factors in his sociology (Münch 1988:8) and emphasized 'a full spectrum of causal factors' (Kalberg 1994). For instance, Weber proposed that the explanation of the emergence of Western civilization cannot be reduced to only either materialistic or idealistic reasons. In this context, Weber's 'aim' was not 'to substitute for a one-sided materialistic and equally one-sided spiritualistic causal interpretation of culture and of history since each is equally possible' (Weber 1958:183). In terms of 'the spectrum of causal factors' in his sociological theory, Weber considered individual ethical, economic and political spheres as being intermingled when Western civilization emerged. Similarly, in his study on Protestantism (Weber 1958) the Protestant ethic, primarily the Calvinist ethic, enabled people to make rational ends-means calculations by developing 'a certain type of personality largely shaped by the preachments of Calvinist divines' and a type of 'self-discipline' to Western peoples (Coser 1977:226). At the same time, a newly emerged impersonal bureaucracy, its laws limiting personal, arbitrary, and unpredictable political decisions and the absolute authority of rulers, was in the arena during the emergence of Western civilization. All these factors played significant roles in preparing the objective, predictable and protected social conditions for individual decisions and rational calculations (Weber 1968).

Durkheim, in his *Division of Labor in Society* (1949), attempted to demonstrate that individualistic ideas and thoughts could never affect the path of history or

the existing social order. He argued that 'individuals are much more a product of common life than they are determinants of it' (Durkheim 1949:338). He also posited that population growth and the advance of communication and transportation opportunities paved the way to a complex specialization in modern society (Durkheim 1949). In the Durkheimian approach, then, social change comes out of 'a non-social substrate operating outside the sphere of the exercises of human mind and will' (Westby 1991:251).

Causal Inference in Comparative Research

Causality refers to the 'way of knowing' that one thing causes another. Early philosophers concentrated on conceptual issues and questions. Later philosophers concentrated on more concrete issues and questions. Of course, both the definition of 'cause' and the 'way of knowing' whether X and Y are causally linked have changed significantly over time. Modern scientists, on the other hand, define causality in limited contexts: e.g., in a controlled experiment (Philosophy of Science Online n.d.).

Many discussions of causality begin with Aristotle's *Metaphysics*. There Aristotle defined four distinct types of cause: (1) the material, (2) formal, (3) efficient, and (4) final causes. To illustrate these definitions, imagine a vase, made (originally) from clay by a potter, as the 'effect' of some 'cause'. Aristotle would say that clay is the material cause of the vase. The vase's form (versus some other form that the clay might assume such as a bowl) is its formal cause. The energy invested by the potter is its efficient cause. And finally, the potter's intent is its final cause of the vase (Philosophy of Science Online n.d.).

Galileo was one of many Enlightenment scientists who wrote explicitly about causality. Galileo viewed cause as the set of necessary and sufficient conditions for an effect. If X and Y are causes of Z, then Z will occur whenever both X and Y occur; on the other hand, if only X or only Y occurs, then Z will not occur. This can be stated more succinctly as 'If and only if both X and Y occur, then Z occurs' (Philosophy of Science Online n.d.).

David Hume's major philosophical work, *A Treatise of Human Nature* (1738), laid the foundation for the modern view of causality. Hume rejected the existing rationalist concept of cause, arguing that causality was not a real relationship between two things but, rather, a perception. Accordingly, Hume's definition of causality emphasizes three elements that can verified (albeit post facto) through observation. According to Hume, 'X causes Y' if (1) Precedence: X precedes Y in time; (2) Contiguity: X and Y are contiguous in space and time; and (3) Constant

Conjunction: X and Y always co-occur or not occur (Philosophy of Science Online n.d.).

Unlike earlier philosophers who concentrated on conceptual issues, John Stuart Mill concentrated on the problems of operationalizing causality. Mill argued that causality could not be demonstrated without experimentation (Philosophy of Science Online n.d.).

One approach to the practical problem posed by Hume's constant conjunction criterion is to make the criterion probabilistic. If we let P(Y | X) denote the probability that Y will occur *given that X has occurred*, then constant conjunction requires that (Philosophy of Science Online n.d.):

P(Y | X)=1 and P(Y | ~X)=0

Many proposed causalities work well in one context (or appear to, at least) but not in another. To solve this problem, some modern philosophers have tried to limit their causalities to specific contexts, circumstances, or conditions. Accordingly, Rubin Causality (named for Donald B. Rubin) is defined in the limited context of an experimental *milieu*. Under Rubin Causality, any relationship demonstrated in an experiment (where the units of analysis are randomly assigned to experimental and control groups) is a valid causal relationship; any relationship that cannot be demonstrated in an experiment is not causal (Philosophy of Science Online n.d.)

Transportation safety studies are casual in nature (Karwa, Slavkovi and Donnell 2011). The questions that motivate most studies in the health, social and behavioral sciences are not associational but causal in nature (Pearl 2009). For example, what is the efficacy of a given drug in a given population? Can data prove that an employer is guilty of discrimination when hiring? What fraction of past crimes could have been avoided by a given policy? What was the cause of death of a given individual in a specific incident? These are causal questions because they require some knowledge of the data-generating process. They can neither be computed from the data alone nor from the distributions that govern the data.

Boolean Approach

The Boolean Approach to comparative research is a rigorous method for testing process theories based on qualitative evidence: for example, case studies. It is stated that the Boolean Approach compensates for some of the weaknesses of the conventional approach to process studies by systematically comparing observations without forsaking much complexity. The approach involves systematic attempts to falsify and identify hypotheses based on truth tables constructed from

qualitative data (Rihoux 2006:4). The approach is also utilized to explain political phenomena by identifying the combinations of causal conditions present in cases where the phenomena are verified rather than searching for the frequency with which a particular causal relationship can be detected, as in quantitative research (Hicks and Janoski 1994:314). The Boolean Approach begins by identifying the conditions that are present in every available case of a phenomenon being investigated – i.e. a necessary conditions). It then compares the cases in order to establish whether there is a factor that produces the phenomenon on its own – i.e. a sufficient condition (Marsh and Stocker 2010:5).

Of course, a variety of Boolean methods exist for qualitative comparative research applications. Nonetheless, four of these methods have gained currency in the field. The first method involves making a distinction between combined and synthetic comparative strategies. This method, according to Ragin (2000), calls for integrating several features of case-oriented and variable-oriented approaches. Instead of completely synthesizing case-oriented and variable-oriented methods, it selectively unites certain features of the two. Thus, like the case-oriented strategy, the method facilitates the assessment of complex patterns of multiple and conjunctural causation; and like the variable-oriented strategy, the method facilitates the examination of large numbers of cases. The combination has the potential to emphasize relationships among variables and structural explanations while at the same time emphasizing the chronological particularities of cases and human agency.

The second method involves the employment of data and truth tables in comparative research. As Ragin (1994) demonstrates, data tables are utilized to provide a summary of all possible combinations of the variables involved in addition to the causal conditions that differentiate sets of cases. The user of this approach utilizes truth tables to organize data in a manner that allows the simplification of causal configuration vis-à-vis the specific procedures that are demonstrated.

The third method involves the application of Boolean methods to macro-social inquiry. Ragin (1989) shows how this method can be applied to elaborate the configurational approach: i.e. an approach that seeks to bridge the gulf between case-oriented and variable-oriented strategies. He also demonstrates how the method provides a direct avenue for uncovering simplifying assumptions, making it possible to bring them forward for inquiry.

The fourth method involves the dialogue of ideas and evidence in Boolean analysis. Building on the preceding three methods, Ragin (1989) suggests that this fourth method allows researchers to both digest many cases and to assess

causal complexity at the same time. It helps researchers to structure a qualitatively different dialogue between ideas and evidence – a dialogue that is simultaneously case-oriented and variable-oriented.

The Boolean Approach to comparative analysis, as mentioned above, can be applied using a raw data table that displays a specific combination of conditions (with 0 or 1 values) and an outcome (with 0 or 1 values) followed by a truth table that displays the data as a list of configurations (Rihoux 2006:4). A configuration is a given combination of some conditions and an outcome in which a specific configuration may correspond to several observed cases. The goal of a Boolean analysis then is to detect deterministic dependencies between the items of a questionnaire or similar data-structures in observed response patterns. These deterministic dependencies have the form of logical formulae connecting the items. Assume, for example, that a questionnaire contains items i, j, and k. Examples of such deterministic dependencies are then $i \rightarrow j$, $i \wedge j \rightarrow k$, and $i \vee j \rightarrow k$ (Rihoux 2006:4).

Today, Boolean analytical methods are used in many social science studies to gain insight into the structures of dichotomous data. Bart and Krus, for example used the Boolean Approach to establish a hierarchic order on items that described socially unaccepted behaviors. Janssens used a method of Boolean Approach to investigate the integration process of minorities into the value system of the dominant culture. Also, Romme introduced Boolean comparative analysis to the management sciences and applied it in a study of self-organizing processes in management teams (cited by Levy 2001).

Comparative Systems Research Designs

As Gerring (2004) observes, a Comparative Systems Research Design is advocated as the ideal design for theoretically deductive studies as well as inductive studies such as those using the Constant Comparative Method and the Grounded Theory approach. Additionally, Comparative Systems Research Designs are used in comparative studies that employ either quantitative or qualitative methodologies, or a mixture of both, and which produce diachronic as well as synchronic data (Lieberma 2005).

Consequently, discussions of Comparative Systems Research Designs usually begin with British philosopher and political economist John Stuart Mill's methods of agreement and difference and then move on to most similar and most different systems. While the method of agreement refers to the study of similar cases in order to determine their causes, the method of difference refers to the study of

contrasting cases in order to determine their causes. A most similar system design allows a researcher to compare as many similar cases as possible on the belief that the more similar the cases compared the more possible that a researcher can isolate the factors that explain the differences between them. A most different system design allows a researcher to compare as many contrasting cases as possible in order to determine the robustness of a relationship between independent and dependent variables. The latter design is based on the belief that by demonstrating that the observed relationships hold in a range of contrasting settings, the better the research supports the argument (Faure 1994).

Faure (1994) delineates four types of Comparative Systems Research Designs. The first is the most similar system research design with a method of difference that deals with differences in similar cases. The second is the most similar system research design with a method of agreement that deals with similarities in similar cases. The third is the most different system research design with a method of difference that deals with differences in different cases. The fourth is the most different system research design with a method of agreement that deals with similarities in different cases.

Comparative Systems Research Designs are thus characterized by great flexibility, openness and variety. Furthermore, the method may be the logical choice when answering some questions aimed at developing valid theoretical concepts for describing empirical phenomenon and other questions aimed at identifying explanations. The method can be descriptive, explanative, and explorative in nature (Burau 2007). It can also be both variable- and case-orientated (Ragin 1987). The method may also be conducted at the macro, the meso, or the micro level (Burau 2007), as for example the national bureaucracy, the administrative organization(s), or administrative behaviour.

The method works differently in different research methodologies. In quantitative research, the method is characterized by the manipulation of an independent variable to measure and explain its influence on a dependent variable (Bureau and Salomonsen 2012). It is helpful in establishing correlations in comparative studies. Examples of such studies include the ones that seek to compare large amounts of demographic or employment data from different nations that define or measure relevant research elements differently. In qualitative research, the method is characterized by observing and recording outcomes without manipulation. Data are collected primarily by observation, and the goal is to determine similarities and differences that are related to the particular situation or environment of the groups being compared (Bureau and Salomonsen 2012).

Studies using Comparative Systems Research Designs require collaboration, strong teams, advanced technologies, and access to international databases, making them more expensive. It is therefore advised to use the method only when the necessary resources are available. It is equally urged not to use the method where there is little funding, limited access to necessary technology, and few team members. Because of the large scale of these studies, they should be conducted only if adequate population samples are available. Furthermore, data for these studies require extensive measurement analysis. If the necessary organizational and technological resources are not available, the method should not be used (Bureau and Salomonsen 2012).

The method has been used to investigate public administration and policies. Bureau and Salomonsen (2012), for example, note that the method was used in the comparison of the policies and politics of community nursing in Britain and Germany, a comparison of the social organization of maternity care systems in North America and Europe, a comparison of the institutionalisation of political advice in the Danish civil service, and a comparison of the implementation of a national diabetes service framework in British primary care trusts. Burau (2007) also used the method to compare the policies and politics of community nursing in Britain and Germany.

Comparative Research Design Simulation for Program Evaluation

Computer simulations have become useful tools of mathematical modeling for many natural systems in physics, chemistry, biology, human systems in economics, psychology, and the social sciences, and in the process of engineering new technology to gain insights into the operations of those systems. They are useful for (a) improving students' understanding of basic research principles and analytical techniques, (b) investigating the effects of problems that arise in the implementation of research, and (c) exploring the accuracy and utility of novel analytical techniques applied to problematic data structures. In simulation, an analyst first develops data according to a known model and then examines how well the model can be detected through data analysis. Simulations even have advantages over abstract theorizing about abstract research issues, as they enable an analyst to come into direct contact with the assumptions that are made and develop a concrete 'feel' for their implications on different analysis techniques (Trochim and Davis (1986).

Trochim and Davis (1986) describe the uses of micro-computer simulations for the context of comparative human service program evaluation. The three most common research designs used in the evaluation are (1) a pre-test and post-test

randomized experiment, (2) a pre-test and post-test non-equivalent group design, and (3) a regression discontinuity design. These designs were then simulated using a single program called MINITAB – a statistical computing package (Ryan et al. 1978). Six constraints that defined the parameters for the simulations were applied. For each model, the program printed out the group means and standard deviations. Next, the researchers constructed bivariate plots for each model. The designs were then analyzed using the analysis of covariance (ANCOVA) regression model. The results could be used for comparing the effectiveness of different programs designed for teaching. The simulations also provide a way of evaluating implementation problems. They further make it possible to examine the potential of new data analysis techniques.

Cross-national Approaches

According to Linda Hantrais (1995), a study is cross-national and comparative when individuals or teams set out to investigate particular issues or phenomena in two or more countries with the express intention of comparing their manifestations in different socio-cultural settings. These settings could include institutions, customs, traditions, value systems, lifestyles, languages, or thought patterns to be investigated by using the same research instruments either to carry out secondary analyses of national data or to conduct new empirical work. The aim of such a study, according to her, can be to seek explanations for similarities and differences, to generalize from the explanations, or to gain a greater awareness and a deeper comprehension of social reality in different national contexts.

Hantrais (1995) expressed that in many respects, the methods adopted in cross-national comparative research are similar to those employed within-nation comparisons or other areas of sociological research. She notes that the descriptive or survey method, which usually results in a state-of-the-art review, is generally the first stage in any large-scale international comparative project. At this stage, a juxtaposition approach is often adopted to gather data according to agreed criteria; the data are generated from either existing sources or new empirical work and are presented side by side frequently without being systematically compared.

Hantrais adds that some large-scale research projects are intended to be explanatory from the outset and, therefore, focus on the degree of variability observed among the different national samples. Such projects may draw upon several methods such as (a) the inductive method, starting from loosely defined hypotheses and moving towards their verification; (b) the deductive method, applying a general theory to a specific case in order to interpret certain aspects;

and (c) the demonstrative method, designed to confirm and refine a theory (Hantrais1995).

The major requirement for these approaches, according to Hantrais, is that instead of each researchers or group of researchers investigating his/hers/its own national context and then pooling information, a single researcher or single-nation team of researchers (dubbed as the 'Safari Approach') must formulate the problem and research hypotheses and conduct studies in more than one country. He/she/it must employ replication of the experimental design, generally to collect and analyze new data. Hantrais admits that this approach is more suited to the study of a smaller number of countries and for more qualitative studies whereby researchers are examining a well-defined issue in two or more national contexts and must possess intimate knowledge of all the countries under investigation. The researchers may combine surveys, secondary analyses of national data, and personal observations and interpretations of the findings vis-à-vis their wider social contexts. She adds that irrespective of the approach utilized, a shift is occurring moving the emphasis away from descriptive, universalistic and 'culture-free' approaches to social phenomena (Hantrais 1995).

In their seminal work titled *How to Compare Nations: Strategies in Comparative Politics* (1984), Mattei Dogan and Dominique Pelassy presented a detailed discourse on a method they called Binary Analysis, which refers to a comparison limited to two countries, that deserves special attention. As they warned, however, although this method is the most natural, it is not necessarily the easiest. They distinguished two kinds of binary comparisons. The first kind is the implicit, which refers to the perception of any 'other', thought of as different, continually seen in relation to the observer's own culture. Dialectically, the view from afar strengthens a researcher's reflections of himself/herself, his/her own culture, and his/her own society. The second kind is the explicit, which makes use of the historical method and enables a researcher to easily find out what determines the uniqueness of each nation. Dogan and Pelassy (1984) noted that the strength of Binary Analysis hinges on the fact that it leaves out neither the specific (inductive) nor the general (deductive). They added that the method's two shortcomings are that (1) it normally implies contributions by a series of experts and (2) the comparison may be based on a subject that is clearly more appropriate to one country than to the other.

References

Breckner, Roswitha, 2007, 'Case-oriented Comparative Approaches: The Biographical Perspective as Opportunity and Challenge in Migration Research', *Concepts and Methods in Migration Research: Conference Reader*, 113-152, retrieved on April 13, 2017 from https://www.academia.edu/2528100/Case-oriented_comparative_approaches_the_biographical_perspective_as_opportunity_and_challenge_in_migration_research

Burau, Viola, 2007, 'Comparative Health Research', in M. Saks and J. Allsop, eds., *Researching Health: Qualitative, Quantitative and Mixed Methods*, London, UK: Sage Publications.

Bureau, Viola and Heidi Houlberg Salomonsen, 2012, 'Comparing Comparative Research Designs', *Working Papers from the Department of Political Science*, Aalborg University, Denmark, retrieved on May 41, 2017 from http://vbn.aau.dk/files/73680818/2012_1_Heidi_Salomonsen.pdf

Cacace, Mirella, Stefanie Ettelt, Nicholas Mays, and Ellen Nolte, 2013, 'Assessing Quality in Cross-Country Comparisons of Health Systems and Policies: Towards a Set of Generic Quality Criteria', *Health Policy,* 112: 156-162.

Coser, Lewis A., 1977, *Masters of Sociological Thought: Ideas in Historical and Social Context*, New York, NY: Harcourt Brace Jovanovich, Inc.

Creswell, John W., 2009, *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*, 4th ed., Thousand Oaks, CA: Sage Publications.

Della Porta, D., 2008, 'Comparative Analysis: Case-oriented Versus Variable-oriented Research', in D. Della Porta and M. Keating, eds., *Approaches and Methodologies in the Social Sciences: A Pluralist Perspective*, New York, NY: Cambridge University Press.

Denzin, Norman K. and Yvonna S. Lincoln, 1994, 'Introduction: Entering the Field of Qualitative Research', in N. K. Denzin and Y. S. Lincoln, eds. *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage Publications.

Dogan, Mattei and Dominique Pelassy, 1984, *How to Compare Nations: Strategies in Comparative Politics*, Chatham, NJ: Chatham House Publishers, Inc.

Durkheim, Emile, 1964, *The Rules of Sociological Method*, translated from the French by S. S. Solovay and J. H. Mueller and edited by G. E. G. Catlin, New York, NY: the Free Press.

Durkheim, Emile, 1949, *Division of Labor in Society*, translated from the French by George Simpson, Glencoe, IL: The Free Press.

Durkheim, Emile, 1895, 'The Rules of Sociological Method', S. Lukes, 1982, *Library of Congress Cataloguing in Publication Data*, New York, NY: The Free Press.

Eckstein, Harry, 2000, 'Case Study and Theory in Political Science', in R. Gomm, M. Hammersley and P. Foster, eds., *Case Study Method*, London, UK Sage Publications.

Faure, Andrew Murray, 1994, 'Some Methodological Problems in Comparative Politics', *Journal of Theoretical Politics*, 6, 3:307-322.

Gerring, John, 2004, 'What Is a Case Study and What Is It Good for?', *American Political Science Review,* 98, 2: 341-354, retrieved on May 31, 2017 from https://fekmekci.files.wordpress.com/2014/11/gerring-case-study.pdf

Hantrais, Linda, 2009, *International Comparative Research: Theory, Methods and Practice*, Basingstoke, UK: Palgrave Macmillan.

Hantrais, Linda, 1995, 'Comparative Research Methods', *Social Research Update* 13, retrieved on April 13, 2017 from http://sru.soc.surrey.ac.uk/SRU13.html

Hicks, Alexander M. and Thomas Janoski, 1994, *The Comparative Political Economy of the Welfare State*, Cambridge UK: Cambridge University Press.

Karlberg, Stephen, 1994. *Max Weber's Comparative Historical Sociology*, Chicago, IL: The University of Chicago Press.

Karwa, Vishesh, Aleksandra B. Slavković and Eric T. Donnell, 2011, 'Causal Inference in Transportation Safety Studies: Comparison of the Potential Outcomes and Causal Diagrams ('Bayesian Networks' – in original submission)', *The Annals of Applied Statistics*, 5, 28:1428-1455, retrieved on April 13, 2017 from https://arxiv.org/pdf/1107.4855.pdf

Levy, Jack S., 2001, 'Explaining Events and Developing Theories: History, Political Science, and the Analysis of International Relations', in C. Elman and M. Elman, eds., *Bridges and Boundaries: Historians, Political Scientists, and the Study of International Relations*. Cambridge, MA: MIT Press.

Liberman, Evan S., 2005, 'Nested Analysis as a Mixed-Method Strategy for Comparative Research', *American Political Science Review,* 99, 3:435-452, retrieved on May 31, 2017 from http://www.rochelleterman.com/ComparativeExam/sites/default/files/Bibliography%20and%20Summaries/Lieberman%202005.pdf

Lijphart, Arend, 1971, 'Comparative Politics and the Comparative Method', *American Political Science Review*, 65, 3:691-693.

Marsh, David and Gerry Stocker, eds., 2010, *Theory and Methods in Political Science*, London, UK: Palgrave Macmillan.

Mazman, Ibrahim, 2005. 'Max Weber and Emile Durkheim: A comparative Analysis on the Theory of Social Order and the Methodological Approach to Understanding Society', *Sosyal Billimler Dergisi*, 67-83, retrieved on April 13, 2017 from http://asosindex.com/cache/articles/article-1423867208.pdf

Mills, Melinda, Gerhard G. van de Bunt and Jeanne de Bruijn, 2006, 'Comparative Research. Persistent Problems and Promising Solutions', *International Sociology*, 21, 5:619-631, retrieved on April 21, 2017 from http://euroac.ffri.hr/wp-content/uploads/2012/10/Comparative-Research_Problems-and-Solution.pdf

Münch, Richard, 1988, *Understanding Modernity: Toward a New Perspective Going beyond Durkheim and Weber*, New York, NY: Routledge.

Pearl, Judea, 2009, 'Causal Inference in Statistics: An Overview, *Statistics Surveys* 3:96–146, retrieved on April 13, 2017 from http://ftp.cs.ucla.edu/pub/stat_ser/r350.pdf

Philosophy of Science Online, n.d., 'Causal Inference in Comparative Research', retrieved on April 13, 2017 from http://poli.haifa.ac.il/~levi/inference.html

Pickard, Alison Jane, 2007, *Research Methods in Information,* London, UK: Facet Publishing.

Ragin, Charles C., 2006, 'How to Lure Analytical Social Science Out of the Doldrums: Some Lessons from Comparative Research', *International Sociology*, 21, 6: 633-646.

Ragin, Charles C., 2000, *Fuzzy-Set Social Science*, Chicago, IL: The University of Chicago Press.

Ragin, Charles C., 1999, 'The Distinctiveness of Case-oriented Research', *Journal of Health Services Research*, 34, 5:1137-1151.

Ragin, Charles C., 1997, 'Turning the Tables: How Case-oriented Methods Challenge Variable-oriented Methods, *Comparative Social Research* 16:27-42, retrieved on April 13, 2017.

Ragin, Charles C., 1994, *Constructing Social Research: The Unity and Diversity of Method*, Thousand Oaks, CA: Pine Forge Press/Sage Publications.

Ragin, Charles C., 1989, *The Comparative Method*, Berkeley, CA: University of California Press.

Ragin, Charles C. and David Zaret, 1983, 'Theory and Method in Comparative Research', *Social Forces*, 61:731-754.

Rihoux, Benoît, 2006, 'Qualitative Comparative Analysis (QCA) and Related Systematic Comparative Methods: Recent Advances and Remaining Challenges for Social Science Research', *International Sociology*, 21, 5:679-706.

Ryan, Thomas A., Brian L. Joiner and Barbara F. Ryan, 1978, *Minitab Student Handbook*, North Scituate, MA: Duxbury Press.

Trochim, William M. K and James E. Davis, 1986, 'Computer Simulations for Program Evaluation, *Evaluation Review*, 10, 5:609-634, retrieved on April 13, 2017 from http://www.socialresearchmethods.net/research/Computer%20Simulation%20 for%20Program%20Evaluation.pdf

Von Eye, Alexander, G. Ann Bogat and Jean E. Rodes, 2006, 'Variable-oriented and Person-oriented Perspective of Analysis: The Example of Alcohol Consumption in Adolescence', *Journal of Adolescence,* 61:981-1004, retrieved on April 13, 2017 from http://rhodeslab.org/files/Voneye.pdf

Weber, Max, 1958, *The Protestant Ethic and the Spirit of Capitalism*, translated by Talcott Parsons, New York, NY: Scribner.

Weber, Max, 1968, *Economy and Society: an Outline of Interpretative Sociology*, edited by G. Roth and C. Wittick, translated by E. Fischoff et al., New York, NY: Bedminster Press.

Westby, David L., 1991, *The Growth of Sociological Theory: Human Nature, Knowledge, and Social Change*, Upper Saddle River, NJ: Prentice-Hall Inc.

Wrong, Dennis Hume, ed., 1970, *Max Weber (Makers of Modern Social Science)*, Upper Saddle River, NJ: Prentice-Hall Inc.

8

Brief Descriptions of African-centered Research Methods

Abdul Karim Bangura and Doctoral Scholars

This chapter introduces and describes 22 African-centered research methods. They range from the ancient Egyptian Rekh method to the contemporary Kwame Nkrumah's Consciensist method. Together, these research methods offer a healthy corrective and/or augmentation to the preceding Western/Eurocentric methods for the scientific investigation of African phenomena.

Rekh Methodology

Bangura (in press) informs us that Rekh means knowledge: to know, to be wise, to be acquainted with, become skilled in an art or craft. It is a framework that was used by ancient Egyptians. The Yoruba, a Nigerian ethnic group, used an equivalent concept of knowledge named *Imo* which implies first-hand knowledge involving *naming* and *action*. This knowledge is acquired through direct observation or contact with knowledge rather than being told (Irele 2010).

Falola in *Yoruba Gurus* (1999) shows that despite lacking certificates and connections to the Western academy, Africans were able to construct knowledge through local histories. However, their contributions were misrepresented, ignored, or marginalized by those who got the information as second-hand accounts of the histories. Second-hand knowledge is not very reliable, since distortion is likely to occur as the knowledge is passed on. If one can observe what they have been told

in an account, then second-hand knowledge translates into first-hand knowledge (Babatunde 2015; Bangura in press).

Acquisition of knowledge is like a journey. According to the Yoruba, their environment is the basis of all knowledge and their experience informs their existence. The deities oversee their lives, since they cannot change anything around them. The Yoruba have other sources of epistemologies like life histories, religion, contacts with Arabs, language, post-colonial influences, traditional religion and indigenous culture, and Yoruba kingdoms, to name a few. Alternative sources and action postulates are therefore imperative for knowledge acquisition.

Alternative sources include naming the postulates which are propositions that suggest the existence of facts or truth about a word or set of words by which a person, animal, place or thing is known, addressed or referred to as a basis of reasoning, discussion or beliefs. Such names include the academy, Christianity, Esie images, imam, Oyo-centricism, etc. (Bangura 2015a).

Action postulates are propositions that suggest the existence of facts or truths about processes of doing things, typically to achieve certain aims as a basis of reasoning, discussion, or beliefs. Such actions include deification of heroes, elite formation, use of history, etc.. Bangura reiterates Falola's argument that both history and alternative histories should be allowed to co-exist so that none dominates the other. This will lead to a vibrant intellectual culture, necessary for theory building and a basis for new knowledge (Bangura 2015a).

Utchā and Uhem Methodology

Utcha and *Uhem* are words from ancient Egyptian language or Hieroglyphics. Utchā means to rectify facts while Uhem is a method used to narrate, recount, repeat, and tell a story or a dream. They were both literary methods used simultaneously in ancient Egypt (Bangura 2015a). Scholars used Utchā to rectify misperceptions and misrepresentations, to judge, to decide and to establish a balance, as popularized in Papyrus Atanasi I. The Uhem approach was introduced by Amen-Re, king of the gods, and used by professional orators, proclaimers, narrators, tellers, heralds, registries and lay priests. Bangura, in his book titled *Toyin Falola and African Epistemologies* (2015a), demonstrates that in Falola's first two books, he set out to rectify misconceptions of the Yoruba and other African cultures and issues, using the Utch methodology. In his next 12 books, Falola went on to offer the correct perspectives of African cultures using the Uhem methodology. Bangura was able to tease out this usage of Utch and Uhem by analyzing the contents of Falola's 14 solely-authored books.

According to Manheim and Rich (1981), cited by Bangura and Hopwood (2014), content analysis is a quantification method involving the systematic counting, assessing, and interpreting of the form and substance of communication. It enables the characterization of physical evidences of the functions of and correlation between related data. These could be words, terms, themes, characters, paragraphs, and items (Jones 1971). The steps in content analysis include: specifying the population and unit of analysis, sampling, developing categories, and coding the data (Bangura and Hopwood 2014).

In analyzing Falola's *Counting the Tiger's Teeth: an African Teenager's story* (2014) and *The African Diaspora: Slavery, Modernity and Globalization* (2013), Bangura (2015a) focused on the paragraphs and themes as two units of analysis. Themes were identified from each paragraph and categorized either as Utch or Uhem. A scholar engaged in a historical study would find these methodologies useful in identifying misrepresentation and distorted information and set out to look for the real accounts.

Archaeoastronomical Methodology

Archaeastronomy is the scientific study of ancient astronomies in their cultural contexts by utilizing archaeological and anthropological evidence. Archaeoastronomy, like archaeology, is a science that delves into social phenomena by use of social questions. In attempts to provide viable interpretations of social phenomena under study, the archaeoastronomer invokes existing social theories. Bangura analyzes various aspects of Falola's vast production to provide a wide and rich discourse in Archaeoastronomical Methodology that captures a variety of angles and various insights (Bangura 2015a). One thing is certain: there is an African epistemology based on African indigenous knowledge, and Africans' way of conceptualizing African indigenous knowledge has gained attention and acknowledgement as another form of science that can be used to explain phenomena and socio-cultural realities of diverse African societies (Emeagwali and Shizha 2016). In order to write about Africa and African people, one needs to engage with subaltern African vernacular (Dartmouth University 2015).

The term 'archaeoastronomy' has rightly come to define a field concerned not only with the disposition of monumental construction and landscapes but also with artefacts, iconography, inscriptions, historical documentation, and written accounts. In other words, archaeoastronomy has been used to analyze every conceivable form of data that might provide insights into thoughts and practices relating to astronomy in the past (Ruggles 278). This is well captured

and compressed by Bangura's analysis on Falola discourse on African indigenous knowledge. Other examples include display of power, myth and cosmology, use of calendar, alignment analysis, artefactual analysis, and symbolic analysis.

The methodology's sources include both written and archaeological remains, and it embraces calendrics, practical observation, sky lore, celestial myth, and more. Its true scope establishes it as an 'anthropology of astronomy'. For example, 'the song of rape' by Falola tells the history of agriculture in the Yoruba cities. The nexus between history and references to penis and vagina hinges on the fact that like all Yoruba cities, Ibadan relied on agriculture. The farmers believed that nature and spiritual forces must intercede for crops to grow and yield bountiful harvests. For the land to manifest leniency to farmers, the deities of fertility must be asked to intervene. Like most African groups that have deities of fertility, the people of Ibadan also have gods and goddesses of fertility that are venerated for bountiful crops and humans during the carnival of Oke hill. Reproduction is, therefore, sought through the sex songs. As 'the song of rape' suggests, according to Falola, agricultural production and population increases are represented through the notion of 'devouring the vagina with all energy and passion' (Falola 2005:225).

Another example is the 'Luo' ethnic community in Kenya whose members believed that everything under the sun is blessed with sex. Accordingly, the planting season begins with blessing the selected seeds for planting through sexual intercourse among married couples. This is based on the view that life begins through sex. The seeds to be planted, therefore, must be blessed through sex to ensure bountiful harvests.

Be_hsâu-Pehsa Methodology

The ancient Egyptian *be_hsâu-pehsa*, or predator-prey, phenomenon is a methodology that supposes that there are two interactions between two species: predator and prey. It accounts for the predation or preying of the prey by the predator. It is an exploitative relationship with the prey losing and predator winning. Predator-prey relationships are modelled as differential equations, meaning that the material world is represented as equations noting the rate of change in amount. As a result, the equation contains the derivative of the quantity (Bangura 2014, 2015a, and in press).

The *be_hsâu-pehsa* Methodology was used in ancient Egypt to explain relationships in nature, administration, trade, spatial and heavenly domains. The first contemporary methodological application of differential equations, now known as the Lotka-Volterra model, was done by Alfred James Lotka and Vito

Volterra in 1925 and 1926, respectively. It describes predator-prey interactions in an ecosystem. Mathematical software can now be used in ensuring certainty. Humans are thought to also conform to the same relations: for example, the owners of capital and the have nots. Bangura argues that 'many laws governing natural phenomena are relations (*equations*) involving rates at which things happen (*derivatives*)' (2014:12). Therefore, differential equations involve deterministic relations with varying quantities (modeled by functions) and changes in rates (represented as derivatives) can be established (Bangura 2014, 2015a, and in press).

An example of the use of this methodology is its application to Falola's work by Bangura (2014). In what may have ended up as a subjective hagiography and tribute to Falola's writing, Bangura made his conclusions scientific by 'employing differential equations in the same tradition of the ancient Egyptians, [and] was able to thoroughly test Mwalimu Falola's axioms. This is because many laws governing natural phenomena are relations (equations) involving rates at which things happen (derivatives)' (Bangura 2015a:12). Eleven axioms were identified and developed into differential equations. Mathematical tests were applied to migration and trans-nationalisms. Bangura used the mathematical software ptogram MATLAB's Ordinary Differential Equation (ODE 23 and ODE 45) to test the numerical integration of equations developed for Falola's axioms. Drawing from official data over 22 years, he proved Falola's axioms to not only be tenable but also showed the reasons through another set of data from the from the United States Census Bureau and the Homeland Security Office of Immigration Statistics (Bangura 2015a and in press).

Egyptological Methodology

Egyptology is the study of ancient Egyptian history, language, literature, religion, architecture and art from the 5th Millennium BC until the end of its native religious practices in the 4th Century AD. According to Bangura, Egyptological Methodology is a disciplined approach that allows people to bridge the differences that arise from the singularity of their experiences of the various aspects of the study of ancient Egypt. It postulates that African social knowledge is communicable, compelling, and valid (2011:89).

Using the Egyptological Methodology, many major research questions are investigated. These questions are based on excavation, pharoahnic spirit, intellectual and physiological disciplines, and triangulation approaches of investigation. Bangura lists the following questions that the methodology attempts to answer (2011:99):

a. Do excavation and philological studies supply abundant material for the knowledge of the life, beliefs and theology of ancient Egypt?

b. What type of qualitative change is necessary to understand the pharoahnic spirit?

c. Which precise intellectual and physiological disciplines are necessary to comprehend the psycho-spiritual growth of Egyptian thought?

By utilizing Egyptological Methodology, the following discoveries have been made by various scholars, as noted by Bangura (2011:101-102):

a. *Life* is 'the faculty of assimilating a food and transmuting it in the nature of the living being' and 'Life is the faculty of reacting'. Thus, Life is in all things, a ternary complex formed by an active Cause against a passive resistance that is nonetheless reactive in turn. This reaction is the apparent effect, and the whole is the vital phenomenon (de Lubicz 1977:31).

b. *Consciousness*, according to de Lubicz, is 'the Universe is only consciousness and presents only an evolution of consciousness, from beginning to end, which is the return to its Cause' (Lubicz 1977:27-28).

c. *Intelligence* 'has a double nature: Intellect, or Reason, is direct Intelligence, beyond all comparison. It is the Intelligence of the human being who, incarnating all the possibilities of the Universe, 'knows' this Universe without having to reason it' (de Lubicz 1977:31).

d. *Immortality* is 'the concept and aspiration of eternal life through righteousness.' According to Karenga, 'as early as the Pyramid Texts, there is written evidence of the ancient Egyptian rejection of death as the end of life'. He further states that 'death itself was called 'repeating life' (Karenga 1990:34).

e. *Personal Obligations,* according to Karenga, is the concept that supports 'building moral character and a moral community which sustains and is sustained by such character. As with Maatian ethics, that is virtue ethics, the individual posits the model person as the geru-maa, the truly self-mastered person 'whose whole character is infused with Maat' (Karenga, 1990:96). Thus, one is 'cultivated to do good deeds by instruction in the seven cardinal virtues of Maat: truth, justice, propriety, harmony, balance, reciprocity, and order' (Karenga 1990:97).

Hermeneutic Methodology

Hermeneutic Methodology encompasses a series of methods and theories of interpretation and the art of understanding texts (Bangura 2011). Its meaning can

be traced to the Egyptian origin of the name Hermes, identified with the Egyptian god Thoth (*Webster Dictionary* 1913). Hermes was fabled to be the inventor of astrology and alchemy (Bangura 2011). Contrary to the position of Eurocentric writers, Hermes is a non-Hellenic figure, which was deified from Egyptian mythology. Hermes' main attribute is his mediation in the creation of the World through the use of the Word (*rhema*), as well as recapturing the Word using the Script (*logos*) (Piedra 1985; Bangura 2011). The Greeks' invasion of Egypt (in 332 BC), which led to the establishment of the Alexandria Library, brought about the birth of Hermes as a Greek god, after the tradition of Thot as preserved by the Egyptian priesthood that was culturally appropriated and transformed (Fatunmbi 2002; Bangura 2011 and in press).

According to Fatunmbi (2002), there are seven fundamental principles of Hermetic document manifestation:

1. The Principle of Mentalism – the idea that everything in the universe has some form of consequence, called *ori* in Ifa;

2. The Principle of Correspondence – the idea that everything in the material realm is a reflection of its source in the invisible realm, called *Eji Oko* the farm of heaven and earth in Ifa;

3. The Principle of Vibration – the idea that everything in the universe is in a state of constant motion, called *ase* in Ifa;

4. The Principle of Polarity – the idea that everything exists in relationship to its polar opposite, represented in Ifa by the single and double lines of divination;

5. The Principle of Rhythm – the idea that everything moves through cycles, expressed in Ifa as the movement between *ire* and *ibi*;

6. The Principle of Causation – the idea that everything exists in relationship to cause and effect, called *ayanmo* and meaning 'my spiritual tree or destiny' in Ifa; and

7. The Principle of Gender – the idea that everything has expansive and contractive qualities, called *okunrin* male and *obinrin* female in Ifa (Fatunbi 2002; Bangura 2011 and in press).

Hermeneutic Methodology, thus, can be defined as the art and science of understanding an interpretation (Bangura 2011 and in press). Arguments in favor of this definition justify it with the fact that much of the later history of Hermeneutics can be said to have expended much efforts at setting aside the hard line between the technical and theoretical task of interpretation and the art of

understanding texts, historical periods, and other people. This definition firmly believes that hermeneutics does not only deal with the methods and theories of interpretation of text, but also the art of understanding texts (Bangura 2011 and in press).

The following are some of the many research methods that have been developed or borrowed from other disciplines in the study of Hermeneutics (Bangura 2011):

a. *Exegesis*: This involves an extensive and critical interpretation of an authoritative text, especially of a Holy Scripture, such as the Old and New Testaments of the Bible, the Talmud, the Midrash, the Holy Qur'an, etc. Exegesis is also employed to investigate the elucidation of legal and philosophical texts.

b. *Tafsir*: This means 'explanation' in Arabic. It is a method of Qur'anic exegesis or commentary.

c. *Wesleyan Quadrilateral*: This is a method for theological reflection that was developed by John Wesley, leader of the Methodist movement in the late 18th Century. Upon examination of Wesley's work, Albert C. Outler delineated the following four different sources Wesley used to draw theological conclusions: (1) Scripture—the Holy Bible, (2) tradition—the two millennia history of the Christian Church, (3) reason—rational thinking and sensible interpretation, and (4) experience—a Christian's personal and communal journey in Jesus Christ.

d. *Content Analysis*: This is also called *textual analysis* when dealing exclusively with text and is a method for studying the content of communication. It enables a researcher to include large amounts of textual information and systematically identify its properties (e.g., the frequencies of most used keywords) by determining the more important structures of the communication content. The amounts of textual information must then be categorized according to a particular theoretical framework to provide a meaningful understanding of the content.

e. *Discourse Analysis*: This is a cover term for several approaches employed to analyze written, spoken or signed language usage. The objects of discourse analysis include discourse, writing, talk, conversation, and communicative event. These are variously defined in terms of coherent sequences of sentences, propositions, speech acts, given-new, or turn-taking. It goes beyond the sentence boundary to analyze naturally occurring language use.

Griot Methodology

The following poem about the griots of Mali is from Mamodu Kouyate's narration and translated by Djibril Tamsi Niane (2004):

> We are the vessels of speech,
>
> we are the repositories which harbour secrets many centuries old…
>
> we are the memory of making,
>
> by the spoken word we bring to life the deeds and
>
> exploits of kings for younger generations.

The griot and his female counterpart, the griotte, according to Hale (1997 and 1998), have used oral history/traditions to shape the heritage and identity of politics of numerous West African societies. Known by a multitude of terms including (d) jeli (Bamana), jali (Mandinka), gesere (Soninke), jesere (Songhay), marbo (Fulbe), bendere (Mossi), genene (Dogon), marok'i (Hausa), and enad (Tuareg), these 'artisans of oral history' are born into a hereditary order, or caste, whose profession consists of the preservation and selective transmission of historical knowledge (Hale 1997 and 1998; Jansen 2000). One of the most characteristic and audible manifestations of the griot/griotte encompasses his/her commemoration, 'praise singing' and/or servicing of kings and nobles, and more recently, contemporary African presidents, prime ministers, and diplomats via their verbal artistry mostly in exchange for patronage. However, the griot/griotte go beyond this to use his/her mastery of oral history/traditions to historicize African societies and thereby provide social cohesion and political order (Toure 2011).

According to Fenyo, Griot Methodology is used to chronicle the past of a nation, ethnic group, or political unit by allowing a researcher to establish a sequence that relays or ascertains the correct sequence of origin traditions, rulers, or other landmark events. Thus, Griot Historiography can and has been employed in the following areas (Fenyo, 2011:166):

a. It can and has served to study as an *anthropological* or *ethnological* tool, which no longer needs to be a science inflicted on Africans but becomes a science in the hands and for the benefit of Africans.

b. The griot has been and can be a *mediator* who can reconcile differences that may arise in the interpretation of customs and traditions and in disputes involving leadership.

c. Oral historiography can become a *psychological* tool that serves to restore pride in the collectivity by referring to achievements of the nation and of heroes and heroines of the nation.

   d. The griot tradition has served to instill and enhance eloquence, or the art of *rhetoric,* not only in the context of Africa, but throughout the Diaspora as well.

   e. By definition, Griot Historiography is an *artistic* expression, possibly the most important form of *orature*.

An exemplary work that has employed Griot Methodology is that of Mamadou Kouyate (1965) translated by Djibril Tamsi Niane titled *Sundiata: An Epic of Old Mali* (for details, see Fenyo 2011).

Sankofa Methodology

The Sankofa Methodology has its origins deeply rooted in the Akan people of West Africa. It was originally developed by the Ashanti of Ghana and constitutes concepts or aphorisms of the Akan people of West Africa (Bangura 2011:175). When translated into English Sankofa means 'It is not taboo to go back to the source and fetch what you forgot'. In its essence, *Sankofa* means that as Africans move forward into the future, they need to reach back into their past and take with them all that works and is positive. This implies that the methodology is iterative in nature: i.e. it can be applied repeatedly. *Sankofa* is employed by Pan-Africanists all over the world to promote the notion that African people everywhere must *go back to their roots in order to move forward*. The visual and symbolic representation of *Sankofa* is a mythic bird that flies forward while looking backward with an egg, symbolizing the future, in its mouth (Bangura 2011:175).

    Consequently, four methodological approaches can be said to have emerged in Sankofa studies. These four techniques have been defined as follows (Bangura 2011:181):

   1. *Holistic Approach* involves studying Africans by observing and recording the commonalities that exist amid their diversity. This contrasts with Western approaches that present a fragmented perspective of Africans by focusing solely on the diversity of African people.

   2. *Non-deficit Approach* involves critically assessing the merits of non-African ideas and institutions employed in African societies. This approach is imperative for understanding the context of the culture, history and philosophy of Africans.

   3. *Historical Archaeology* involves asking questions about the past that relate to the present to help the researcher toward a considered and intentional future.

4. *Fuzzy Logic Approach* involves evaluating phenomena based on 'degrees of truth' rather than the usual 'true or false.'

Barbara J. Little (2007), as cited by Bangura (2011), developed the Sankofa *historical archaeology* approach which involves asking questions about the past that relate to the present to help a researcher to move toward a considered and intentional future. She believed that our interest in the past is drawn from our circumstances in the present and our hopes for the future; thus, the questions asked by historical archaeologists are inspired in the same way (Bangura 2011:175). She was fascinated by the challenges in promoting interest in and caring about 'someone else's past' within an increasingly diverse population. She believed that historical archaeology offers opportunities for researchers to become aware of our common humanity and our common struggles. Given the current cynicisms and despair, she saw archaeology as a discipline that could offer glimpses into the human story as a source of hope and renewal. It is her desire, therefore, that we can all hope that respect—or at least tolerance and perhaps even celebration—will flow from the present to the past and back again to the present (Little cited in Bangura 2011:178).

Fenyo's Pan-African Methodologies

Pan-Africanism can be understood in both a broader and a narrower sense. Some scholars extend the concept, in space and in time, to include all or parts of the Diaspora; in other words, persons or groups that can trace their origins to the African continent. 'White' persons and groups outside Africa are usually not part of any definition of Pan-Africa (Fenyo 2011).

Pan-Africanism in a narrower sense may refer to Black Africans, dismissing White settlers in southern and eastern Africa as intruders. Some would exclude Arabs who have settled in North Africa as well. Some authors focus on francophone Africa, which again may or may not include the Maghreb countries where Arabic and Shluh (Berber) are the dominant languages. Fenyo points out that we must recognize that while distinctions are in order in any scholarly discussion, arguments based on ethnicity, religion, or cultural differences are often artificial (Fenyo 2011:130).

Fenyo mentions that Pan-Africanism and the related term 'Africentric' as well as 'African Diaspora,' give rise to a growing literature that is of rather recent vintage. From an on-line catalogue of the Library of Congress (LOC), conducted by Fenyo, consistency and reliability of the library data were noted (Fenyo 2011:130). Fenyo attempts to reduce the multiplicity of connotations and definitions to a manageable few. He proffers propositions which lead to a

conclusion that the concept of Pan-Africanism overlaps or coincides with the historiography of all people of African descent, on any continent, including Africa itself (Fenyo 2011:130-131).

Fenyo states that Pan-Africanism is a vast concept without well-defined boundary lines. It is vast in terms of subject-matter, and it is vast in terms of implications for the future, in terms of policy implications, and in terms of ideology (Fenyo 2011:142). Fenyo also mentions that Pan-Africanism is a set of progressive concepts, almost by definition. The term 'set' is used because it coincides or at least overlaps with Africancentric, with the 'Diaspora,' and with what used to be called African socialism. It is no coincidence that the most prominent advocates of African socialism – Kwame Nkrumah, Julius Nyerere, Amilcar Cabral, and a few others – were also the most prominent Pan-Africanists (Fenyo 2011:142; see also Bangura 2015a & in press).

As it pertains to the fields and disciplines in which Pan-African Methodologies are salient, Fenyo discusses several intellectual pursuits. The first is a Pan-African Methodology that includes the analysis of active movements and organizations already in existence: for instance, the Organization of African Unity (OAU) and its successor, the African Union (AU). The second is a Pan-African Methodology propounded by some economists who, whether dealing with the continent as a whole or focusing on some region, have perceived the difficulties of Africa in Pan-African terms, or as epitomizing the problems of the Third World in general, as prime examples of underdevelopment. The third is a Pan-African Methodology that focuses on the visual. There are at least three popular series on videos or DVDs that were done based on this methodology: (1) Basil Davidson's four-part series, 'Africa and the Africans'; (2) Henry Gates series, 'Wonders of the African World'; and, possibly the most effective, (3) Ali A. Mazrui's eight-part series, 'Africa: Its Triple Heritage', originally commissioned by the National Endowment for the Humanities, but eventually produced by the British Broadcasting Corporation (BBC). Apparently, the United States government agency disavowed Mazrui's work, which may be an indication of its effectiveness (Fenyo 2011:139).

Kwame Nkrumah, the most influential African leader at the dawn of post-independent Africa energetically took the lead role. He convened two Pan-African conferences in Ghana, merely a year after Ghana's independence: the first in April of 1958 and the second in December of 1958. These conferences, according to Thompson (1969), (a) moved Pan-Africanism from 'idealism and romanticism to that of practical politics'; (b) extended its reach to civil society organizations in the continent; (c) facilitated frequent meetings and interactions among leaders of the respective nations of the continent; (d) set the contextual background

for countries that gained their independence after 1958 for their participation in continental politics; (e) accelerated the liberation struggles in Portuguese colonies and Southern Africa; and (f) emphasized the centrality of having a firm organizational structure and base for deliberations, activities, etc. aimed at achieving African unity (Thompson 1969:126-127). Nkrumah's leading role and determination might have invited petty jealousies and covetous dispositions towards the protection of the sovereignty of the newly independent African nations, even though they participated in continental meetings.

Multiplex Methodology

Multiplex, according to the online *Oxford Learner's Dictionary*, means 'a combination of several activities occurring in multiple units concurrently or at different times' (2018:1). Multiplex Methodology allows a researcher to look at an entrenched disagreement as a human encounter that exists when a specific kind of relationship is established between groups at the disagreement's origination (Bangura and McCandless 2007; Boudreau 2009). The methodology focuses on the fact that this relationship is an extreme variety of social relationships between individuals, groups, and societies. It exists because one or both sides perceive a manifest or latent disagreement, which can be defined as a perceived or real incompatibility of interests, goals, blockage, or thwarting efforts by the other group (Bangura and McCandless 2007; Boudreau 2009). Consequently, Multiplex Methodology pays particular attention to the use of case studies, in which contested geographies, human agencies, and epistemologies are central issues. This focus is primarily because entrenched disagreement always unleashes the unexpected. There are three stages of multiplex analysis (Bangura and McCandless 2007; Boudreau 2009):

1. Epistemic Encounter: this is the reality of contest at social construction between two or more knowing subjects or communities.
2. Empirical Encounter: this refers to contesting subjects with their material worlds as they each seek the substances and resources with which to carry out the contest and win complete control.
3. Self-reflective or Cartesian Encounter is upon which the subjects in such an entrenched disagreement reflect and how they incorporate their individual identities and roles into the disagreement.

This methodology can be applied when looking at entrenched disagreements between groups in an often complex phenomenon with many causes. Such disagreements are often characterized by contested geographies, materials,

resources, human agencies, identities, epistemologies, methodologies, outcomes, and even competing cosmologies and religious beliefs. This methodology pays particular attention to the use of case studies in which contested geographies, human agencies, and epistemologies are central issues (Bangura and McCandless 200; Boudreau 2009).

Multiplex Methodology has been applied by Bangura (2011a) in analyzing the last chapter titled 'The Pastor's Ordeal' in Toyin Falola's book, *A Mouth Sweeter than Salt* (2005). The chapter lends itself to such an analysis because it deals with a conflict between the chief of Elepo with the police and a peasant farmer called Jakobu in Nigeria.

Multiplex Methodology has also been employed by Ikechukwu Anthony Kanu in his paper titled 'Suffering in Igbo-African Ontology' (2015) in which he analyzes the three Igbo-African perspectives on human suffering: (1) 'the Igbo Cosmological optimistic view which believes that man is the cause of his suffering and not God', (2) 'the personal god and destiny view which sees human suffering as the product of a person's personal god', and (3) 'a middle course view which sees human suffering as the product of both views'. Multiplex Methodology was also used in *The Africans: A Triple Heritage* (1986) by Mazrui who described the major cause for the suffering of Africans both on the continent and in the Diaspora as follows: 'Europe not only created the African Diaspora by its ruthless export of millions of [enslaved Africans] to the Western hemisphere, Europe also helped to invent Africa as we know it through the ruthless distortions of colonial rule' (Mazrui 1986:99). It also has been used by many researchers looking at disagreements, class struggles, corruption in Africa, slavery and the African–American experiences (see, for example, Bangura 2015a and in press).

Pluridisciplinary Methodology

Pluridisciplinary Methodology is defined by Bangura (2015b and in press) as the systematic utilization of two or more disciplines or branches of learning to investigate a phenomenon, thereby in turn contributing to those disciplines. In his edited book titled *Ancient Civilizations of Africa* (1990), Mokhtar traces the development of Pluridisciplinary Methodology to the works of Diop and Vercoutter. Winters is a major scholar who has advanced the methodology by combing anthropological, historical and linguistic methods to explain the heritage of African people, constituting a third school of Africancentricity (Winters 1998).

According to Nadudere (2003), Pluridisciplinary Methodology involves the maximum use of open community resources. Indigenous languages are therefore

at the center of the effective utilization of the methodology. Winters (1998) states that a plurisdisciplinary specialist is a person who is qualified to employ more than one discipline: for example, history, linguistics, etc.

Bangura (2015b and in press) applied a pluridisciplinary approach to blend linguistics and mathematics in the fractal analysis of the data generated from Falola's book titled *Counting the Tiger's Teeth* (2014). In the analysis, univariate and bivariate statistics were computed to do the descriptive and inferential analyses of the data extracted from the text. In addition, a two-dimensional ad hoc classificatory system was adopted within which the data collected were categorized. The first set of categories entails the presuppositions of order in which there is a logical arrangement among the separate elements such as 'I carried no instruments or weapons, other than the notebooks and pen in my pocket' (Falola 2014:3). The second category encompasses presuppositions of disorder which suggests confusion or disarray such as 'In one stroke of the machete, the agile man in his mid-forties cut the frightened, lean-looking dog into two pieces, almost in the middle of its already over-stretched neck' (Falola 2014:1). After the descriptive and inferential statistical analyses, the data were plotted for oscillations between order and disorder. This technique made it possible to visually display the attractor reconstruction for the text. A total of 8,935 topic entries were extracted from the text; a total of 4, 246 (48%) were presuppositions of order while 4,689 (52%) were presuppositions of disorder. The analysis shows that the examined text moves from periodic fractal rather than stretching all the way to pure order or disorder.

Ubuntugogy Methodology

According to Ganyi and Owan (2016), Ubuntugogy is an African educational paradigm pioneered by Bangura (2010b), who defines it as the art and science of teaching and learning undergirded by humanity towards others. For Ganyi and Owan (2016), Bangura sees this paradigm as superior to pedagogy, andragogy, ergonagogy and heutogogy which were all founded on and reflected different cultural and environmental peculiarities and backgrounds from the African ones. Thus, Bangura indicates that Ubuntugogy is based on the African existential philosophy of ubuntu. Yet, the etymology of the word 'ubuntu' is diverse. However, it is generally believed to have emanated from the Zulu and Xhosa languages. Simply translated, ubuntu means 'humanity towards others' as well as 'love and humanity towards others' (Ganyi and Owan 2016). Bangura (2010b) argues that if Africa needs to develop, it musrt adopt Ubuntugogy Methodology instead of continuously relying on Eurocentric learning approaches. Bangura (2015a & in

press) further establishes what he calls the major elements of Ubuntugogy to be its religiosity, consensus building, and dialogue among the Africans, which are all hinged on their ubuntu concept.

In terms of application, Bangura (2010b) argues that a researcher employing Ubuntugogy Methodology must address the following major research questions:

a. How can African knowledge be increased in the general body of global human knowledge?
b. How can linkages be developed between the sources of African knowledge and the centers of learning on the continent and in the Diaspora?
c. How can centers of learning be established in the communities and ensure that these communities become 'learning societies'?
d. How can knowledge be linked to the production needs of African communities?
e. How can we ensure that science and technology are generated in relevant ways to address problems of the rural communities where the majority of African people live and that this is done in African languages?
f. How can the gap between the African elites and the communities from which they come is reduced by ensuring that education is available to all Africans and that such knowledge is drawn from the communities?

As Bangura (2015a and in press) points out, Falola's *Yoruba Gurus* (1999) is an example of a study where the methodology has been used, albeit unknowingly. Bangura has also employed the methodology to analyze Falola's work, among many others.

Diopian Intercultural Relations Methodology

Cheikh Anta Diop prefaces his arguments about intercultural relations in his book titled *Civilization or Barbarism: An Authentic Anthropology* (1981/1991) by mentioning that its failures and difficulties are shaped by the process in which two given cultures are born, developed, make contact and influence each other. He further asserts that one peculiarity of intercultural relations resides in the domain of linguistic expression. He gave an instance of the Europeans by saying Europeans would have minor difficulties when different countries communicate among themselves while on the other hand the situation is different in Africa because the meaning, concepts, images and expressions are associated with different thoughts that beset Africans with acculturation and cultural alienation. He buttressed this with an instance of poetry. He said the European linguists have yet to assimilate

some of the African terms; therefore, any time an African poet needs to translate an original image of his poetry from the culture of his native language into some European language, the poetic rhythm of the poet is simply inexistent. This led to Diop's reference of Jean-Paul Sartre who coined a concept he referred to as a 'de-Frenchify' process. De-Frenchify is a process whereby African poets express themselves in French, which is quite different from how the 'French' people express themselves. What is implied here is that what African poets say does not mean much to the French people.

Diop further asserts that in the domain of intercultural relations, plastic arts comprise a subject that shows that the specific elements of a given culture are not concentrated. Accordingly, Diop gave two domains that were present in every culture: (1) a specific level where the fundamental components of the culture are produced; and (2) universal concepts that refer to cultures interfering with one another, thereby creating a domain of universal relations. He concludes that the systematic exploration of a subject by using these elements is the essence of the Diopian Intercultural Relations Methodology (Diop 1981/1991).

According to Shirzoi, Ibn Khaldun is also one of the most prolific scholars that contributed to the promotion of intercultural relations. Ibn Khaldun explained that the stability of any state rests upon the solidarity that unified its founders (Shirzoi 2004). Khaldun introduced the concepts of *umran badawi* (which has to do with rural nomads) and *umran hadari* (which has to do with civilised and urban citizens). He presents these concepts to illustrate the general evolution of human society indicating that *badawi* is the first stage and *hadawi* the higher stage (Lacoste 1984; Shirzoi 2004).

With all these concepts in mind, Ibn Khaldun then made his most profound interpretation of human society, which he called *asabiya*. The concept of *asabiya* depicts a force whose nature and evolution are basically dialectical (Lacoste 1984:157). He refers to *asabiya* as a dialectical process because the concept is the product of two antagonistic elements which are (1) tribal egalitarianism and (2) the power of the chieftain (Shirzoi 2004).

Another noted theorist in this school of thought is John Hunwick (2008) who shows how the West African Islamic and scholarly traditions promoted intercultural relations. He presented several important findings from his research on the Arabic Literature of Africa project that covers particular areas of the Western Sudanic region where a strong manuscript tradition can be found. Hunwick delineates four eclectic categories under which Western Sudanic African Arabic writings can be subsumed: (1) historical, (2) pedagogical, (3) devotional, and (4) polemical.

An example of a study in which the methodology has been employed is Falola's *Nationalism and African Intellectuals* (2001) in his discussion on how the Ethiopian intelligentsia and European colonialists and religious institutions furthered intercultural relations by way of scholarship. According to Falola, the pace of the development of the African educated elite began slowly; but as Africans began to demand change, the pace quickened in the 20th Century. The missionaries provided the basis for European literacy as they constructed elementary schools. The need for more educated Africans in commerce, church and government undergirded the relations between Europeans and Africans in the 19th Century. By providing Western education, missionaries were able to propagate Christianity, fight against the slave trade, convert Africans to Christianity and assimilate them into Western cultural practices and ways of thinking (Falola 2001:5-6). Nonetheless, as Falola proffers, despite the similarity of the agendas of the various missionaries, there were variations in terms of the limitations posed by their governments, their methods, and their achievements.

It is such profound views on intercultural relations (and, of course, others) that prompted Falola to assert that 'Diop sought a balance between virtually all types of ideas as they could serve to enhance Africa' (Falola 2001:44). Falola boldly proclaimed that Diop 'deserves both eulogy and evaluation in any discourse on the African intellectual tradition and Pan-Africanism' (Falola, 2001:44).

Diopian Restoration of African Historical Consciousness Methodologies

The Diopian Restoration of African Historical Consciousness Methodology the revival of African Historical awareness as popularized by Cheikh Anta Diop, a famous African historian, anthropologist, physicist, and politician. Indeed, Diop in his works gave an in-depth historical antecedent of the development of the African, as well as Black civilization during the prehistoric period as exemplified in the Nilotic Sudanese civilization which was later regarded as Egyptian civilization. Diop further pontificated that the African cultural traditional system, right from its pre-historical era, was/is anchored fundamentally on matriarch-cum-patriarch historiography, as against the predominant masculine Western ideology. Thus, Diopian ideology, which serves as a nucleus to the development of the above methodology, emphasizes the principle of African interrelated cultural uniformity and continuity.

A classic example of the application of the methodology is seen in the Senegalese language, Wolof, which is utilized as a framework to demonstrate the linguistic unity among the Africans. The argument is centered on the possibility of unifying

other sectors of the African world system through its cultural and linguistic antecedents. Colonialism, according to Diop, dislocated the development of the African ideology as embedded in its historiography (Bangura in press). By the turn of the 21ˢᵗ Century, the restoration of the African consciousness was further strengthened by the works of contemporary African scholars. One such scholar is Falola who has also written extensively on the restoration of African consciousness. In two separate works by Falola, *Nationalism and African Intellectuals* (2001) and *The African Diaspora: Slavery, Modernity, and Globalization* (2013), he provides an anatomy of the African consciousness from a historiographical context. Additionally, *Ifa* is being used among the Yoruba (in Africa and in the Diaspora) as a cultural and religious unity (Olupona and Abiodun 2016). *Ifa* is a traditional system of divination that is common among the Yoruba and serves as a cultural linkage among the various groups that form the Yoruba nation. Indeed, this explicit cultural aspect demonstrates the beauty of Black Africa which gives reasonable room for equal participation of both males and females in the development of the society before the advent of colonialism (Bangura in press; An-Na'im 2002). According to Bangura, this unique 'ancestral aspect needs to be reestablished in modern times as it would facilitate strong and common economic and social developments in African societies (Bangura in press).

Three main examples of African scholars/nationalists—Kwame Nkrumah, Samuel Johnson, and Carl Christian Reinchorf—are used by Falola to emphasize the import of the Diopian Restoration of African Historical Consciousness Methodology. Kwame Nkrumah's *Consciencism: Philosophy and Ideology for Decolonization* (1964) demonstrates a clear work of the philosophy of Pan-Africanism, which also provides a detailed analysis of his Pan-Africanist school of thought. In the same vein, Falola utilizes Samuel Johnson's book titled *The History of the Yorubas from the Earliest Times to the Beginning of the British Protectorate* (1921) to show the enduring African-grown methodology in the pursuit of a revival of African historical awareness. Finally, Carl Christian Reindorf's *History of the Gold Coast and Asante* (1895) is employed by Falola to explain the epochal work on the restoration of African historical awareness.

African Mathematization

Bangura defines Mathematics 'as the systematic study of quantities and relations through numbers and symbols' (2012:2-3 and in press). That Mathematics pervades every branch of human knowledge, he says, is hardly a matter of dispute. He adds that it is a useful and fascinating field of inquiry, and it possesses the

power to solve some of the deepest puzzles that humans encounter (Bangura 2012 and in press).

Bangura highlights the fact that while some aspects of the history of Mathematics in ancient Egypt and northern Africa during the Middle Ages has been discussed, aspects from Africa South of the Sahara have been greatly ignored by most books dealing with the history of Mathematics. These books generally give the impression that there was no Mathematics at all in that part of Africa. He emphasizes that Africa was in the center of Mathematics history for tens of thousands of years, a fact that is undisputable. From the civilizations across the continent emerged contributions which would enrich both ancient and modern understanding of nature through Mathematics. From the measurements used in the African forest kingdoms to the Mathematics used in building the great stone complexes of Zimbabwe, the efficient irrigation technologies, central administration, the great accuracy of the dimensions of the pyramids, and the random number generation of the binary code that led to the invention of the computer, the achievements of Africans remain a fascination (Bangura 2012:3-4 and in press).

Bangura (2012 and in press) draws upon numerous works and other empirical evidence to demonstrate that African mathematization from antiquity to modern times hinges upon the understanding of nature and concern with broader development and humanity or fellow-feeling towards others. He shows this by presenting a sample of the evidence on several mathematical aspects contained in works such as those by Falola (1996, 1998, 2005, 2012, 2014). Bangura then provides a few examples.

First, numbers are composed by words and gestures, in addition to being represented as numerals. The economic development of an African society ultimately determines the development of its numeration system. Second, the earliest mathematical objects in human history include the Lebombo and Ishango Bones. Third, the development of geometrical thinking started early in African history, as early as humans learned to 'geometricize' in the context of their labor activities. Fourth, the roots of modern Mathematics can be traced to Kemet (ancient Egypt). For example, the doorways of many of the massive temples in Kemet are shaped in the symbol of Pi. To rule effectively, the Egyptians had to develop an extensive and efficient administration for collecting taxes, taking census, and maintaining a large army. Since all these activities required mathematics, the Egyptians at first employed counting glyphs. But even by 2000 BC, the hieratic glyphs were being used by Egyptians (Bangura 2012 and in press).

Bangura continues: fifth, from the 9th to the 11th Century, known as the period of the installation and consolidation of Muslim power in the first cities of Spain and the Maghreb, the fields of medicine and calculation were the first scientific endeavors to benefit from teaching, followed by the publication of works, to respond to the needs of certain higher-rank people of society and to lawyers for the resolution of certain problems such as those involved in land measurement or in the partitioning of inheritance. Sixth, Combinatorics saw its earlier growth in Africa via the Mathematics of Medieval Maghreb. Seventh, many quantities which are of interest in the study of physical African designs are directed quantities (vectors) and can take on a continuous range of values, making Calculus methods imperative in investigating them (Bangura 2012 and in press).

Bangura adds: eighth, two critical questions have been addressed by works that employ the Fourier Transform to study African designs: (1) Some scholars have found that all cities (historic, primitive and modern) are fractal precisely because they are complex natural systems. Other scholars have discovered that fractal tiling patterns exist on some of the oldest European tiled floors and in ancient Chinese art. What then does this say for the validity of arguments concerning African fractals? (2) At what number of scales does self-similarity occur in African fractals and what method can a researcher employ to determine self-similarity? Ninth, Mathematics of periodic patterns of one or more shapes, which can be extended across an entire plane infinitely, is present in certain African designs. Tenth, Bifurcation, generally defined as a differential equation system that undergoes a qualitative change in its orbit structure as one or more parameters of the dynamical system are changed, has its roots in ancient Egyptian artifacts. Indeed, classic Egyptians were quite involved with symbolism. Thus, their artifacts were designed and aligned cosmologically. Finally, fractal complexity, a graphical approach whereby the regions are subdivided until the sub-regions are less than one screen pixel in size, is prominent in African settlement architecture and intentions and inventions of designs. They encompass geometric algorithms, scaling, numeric systems, recursion, infinity, and complexity (Bangura 2012 and in press).

Furthermore, Bangura shows in his paper titled 'Domesticating Mathematics in the African Mother Tongue' (2014) that the languages of Africa exhibit mathematical ideas that reflect all nine design features of language. These linguistic features include mode of communication, semanticity, pragmatic function, interchangeability, cultural transmission, arbitrariness, discreteness, displacement and productivity. He also highlights the fact that scholars and other professionals working in the field of Mathematics education in Africa have identified a plethora of problematic issues in the endeavor. These issues include

attitudes, curriculum development, educational change, instruction, academic achievement, standardized and other tests, performance factors, native speakers, etc. He argues that a major reason for these problems is that the mother tongue has been greatly neglected in the teaching of mathematics in Africa and suggests two remedies: First, schools should encourage the use of African languages in order to nurture and promote those languages. Second, more research on the connection between language and the learning and teaching of mathematics from a political standpoint is necessary (Bangura 2014:57). Finally, Bangura (2012) proffers the proposition that just as mathematicians played a major role in the development of African societies during antiquity, they are widely used now to work with experts in other disciplines to help fulfill the African Renaissance.

Complex Methodology

Complex Methodology is a quantitative method that employs mathematical approaches to analyzing complex numbers. Complex Methodology is also referred to as Complex Analysis and traditionally as the Theory of Fractions of a Complex Variable. Zill and Shanahan (2015) define complex numbers as 'those numerical values that can be represented by the form $z = a + ib$ where a and b are real numbers and i is the imaginary unit' (2015:3; also cited in Bangura in press). According to the Department of Mathematics in the School of Science at Osaka University in Japan, the origin of Complex Methodology can be traced to ancient Egyptians 'through their use of abstraction and logical reasoning' (see Bangura in press). That position is further affirmed by Diop (1981) and Sisk and Shea (2011) who discovered that complex projectile technology originated in Africa. This was learned by using a 'Tip Cross-Sectional Perimeter, a more accurate proxy of the force needed to penetrate a target to a lethal depth' (Bangura in press).

Complex Methodology is 'now widely used in many sub-disciplines in mathematics (e.g., applied mathematics, algebraic geometry, and number theory), physics (e.g., thermodynamics and hydrodynamics), and engineering (e.g., electrical, mechanical, and aerospace) (Bangura in press). Bangura employed Complex Methodology in dissecting Falola's book titled *Counting the Tiger's Teeth: An African Teenager's Story* (2014). Bangura (in press) uses the Linguistic Presupposition technique (i.e. systematically teasing out from a stretch of verbal of written discourse implicit assumptions about the universe or background beliefs pertaining to that discourse) and teased out a complex representation of a two-dimensional vector field denoting order and disorder with numbers assigned to each category.

Mo Ibrahim African-centered Indexing Methodology

The general theme of this methodology is good governance and development of Africa from the citizens' perspectives. The methodology argues that African discourse of good governance should rely on the application of various existing African indigenous governance patterns rather than relying on borrowed methods. To this end, the Mo Ibrahim Index of African Governance proposes four major indicators with which African countries should be assessed on good governance. The indicators are Safety and Rule of Law; Participation and Human Rights; Sustainable Economic Opportunity; and Human Development (MIF 2016). The Mo Ibrahim African-centered Indexing Methodology argues that good governance is therefore better understood by applying these index groups to measure the extent of delivery to the citizens of many economies, social and political goods and services by government and non-government actors, particularly in Africa.

The historical emphasis on the relationship between the centrality of citizens as it is attached to good governance was traced to ancient Egypt by Knollová (2011) and Budge (1978) in their works on principles of good governance in ancient Egypt. The Mo Ibrahim Methodology maintains that underdevelopment in Africa is a direct consequence of lack of understanding and application of African development theories by African leaders for the development of the African continent. It means that the underdevelopment suffered by African countries is the result of two factors: (1) African leaders' lack of knowledge of what to do to develop Africa; (2) African leaders' lack of understanding of how to apply ancient African development systems to develop Africa. The method is shown by Bangura (in press) to have been used by Falola in his work titled *Ibadan: Foundation and Change 1830-1960* (2012) to assess the development in the traditional Ibadan community under British colonial rule.

Africancentric Methodology

At the heart of Africancentric Methodology is the shattering of the assumption that Western methodologies are sufficient enough to capture the peculiarities of African experiences. With a focus on the 'commonality of cultural traits among the diverse peoples of Africa' (Bangura 2015a and in press) Africancentric Methodology promotes knowledge production from the African point of view, . As stated by Bangura, Africancentricity simply means that the universe is a collection of relationships, and an individual or a group being in that universe is defined by and dependent upon these relationships' (Bangura 2015a and in press). Africans consider the Cause or God as being a part of His creation and they

thus diverge from Europeans who consider God as separate from His creation. Therefore, Africancentric Methodology bridges the gap between the 'this worldly' and the 'other worldly' positions by locating the divine as pervasively present in the human affairs (Bangura 2015a and in press).

A growing number of African researchers are approaching their analyses of African experiences from the standpoint of Africancentric Methodology by exploring realities that are peculiarly African. An example of an analytical approach in this tradition is Asante's 'three fundamental Afrocentric themes of transcendent discourse' which are: '(1) human relations, (2) humans' relationship to the supernatural, and (3) humans' relationships to their own being' (1987:168; also cited by Bangura 2015a and in press). Asante maintains that if analysts of African experiences conducted their analyses with the consciousness of the interrelatedness of the three themes, they would produce 'a greater understanding of the African being'. The themes are considered critical to the domestication of disciplines such as Anthropology, Theology, History, Psychology, and Linguistics to make them relevant to the realities of African experiences (Bangura 2015a and in press).

Africancentric Methodology has been used extensively by Falola (2001, 2005, 2013, and 2014) to explore different aspects of the Ifa Orisa, which he defines as 'a geomantic divination system that contains 256 ancient Yoruba verses'. Some of the aspects of Ifa Oracle studied are its divination system, divination verses, festival, and tradition. Another application of Africancentric Methodology is found in Abimbola's *Ifa Will Mend Our Broken World: Thoughts on Yoruba Religion and Culture in Africa and the Diaspora* 1976), which captures 'the connection the Yoruba feel with their dead or ancestors'. What is common with these works is that they interrogate the Yoruba experience from the standpoint of the centrality of the divinity to the Yoruba people as contemplated in the Ifa corpus.

Er/Set/Sthenå/S-tut/Tut Methodology

This methodology was gleaned from the ancient Egyptians dating back to the period of Ramesside in the 19th and 20th Dynasties (1292-1064 BC). It was used specifically to train scribes and used for the Papyrus Amen which dates back to around 1650 BC. The Egyptians have been employing the metaphorical method in writing about many aspects varying from legal abstract concepts to love poems starting around 2000 BC to the present. The method was used in ancient Egyptian practices as *Er* meaning 'a sign of the comparative', *Set* and *sthenå* meaning 'to compare', *S-tut* meaning 'to symbolize', 'to make an image' while *Tut* meaning 'Image One', 'likeness', 'statue' (Budge 1978:415,628,707,710 and 717; Bangura in press).

Africans have a way of condensing, in metaphorical expressions, knowledge that cannot be captured by plain language. Bangura (in press) adopts this methodology to study views of Falola and his work held among scholars extracted from responses to a survey conducted via the USA-Africa Dialogue listserv. The metaphorical analysis was done in a two-step process. The first step delineated 'the frames or categories within which identified metaphorical stretches of discourse can be interpreted', [while] the second step discusses 'a range of phenomena that are pertinent to the frames'. The metaphors used are categorized under Academician Metaphors which include original scholar, archetype scholar, *ojogbo*n, distinguished professor, Mwalimu Kubwa (Kiswahili for 'mega professor'), a class of his own, intellectual giant, untiring intellectual, intellectual majesty, great teacher, prolific writer, and Babban Gwani (Hausa for 'expert of experts'). The other forms of metaphors are familial metaphors, personhood metaphors, and animal metaphors (Bangura in press).

An example of a study that has used this methodology is David's article titled 'Ancient Egyptian Forensic Metaphors and Categories' (2017). The study critically examines legal metaphors in ancient Egyptian literary and legal texts that contemporary legal concepts mirror, particularly the scale of justice. The study also identifies how the present legal system relies on the legacy of the metaphorical past of the Egyptian legal system.

Ujamaa Methodology

Ujamaa is a Kiswahili word meaning 'extended family' or 'familyhood', which encompasses people of all races or ethnicities. The concept was coined and applied by the late President of Tanzania Mwalimu Julius Nyerere as the basis of African Socialism whereby every individual is in the service of the community for collective achievement. It also refers to the socialist ideology of subordinating differences for economic transformations (Falola 1998; Bangura 2015a and in press). Specific concepts relating to Ujamaa include nationalization; nationalism; family; equality; freedom (*Uhuru* in Kiswahili), self-discipline, cooperative ideology; socialism; education; leadership; public ownership; humanity; beliefs, etc. *Ujamaa* is underpinned by seven theories, namely (1) Self-reliance, (2) Equality of Leadership and Masses, (3) Kiswahili Guiding Principles (that unifies 126 language groups existing in the archipelago Zanzibar and the mainland Tanganyika), (4) African Socialism, (5) Neo-traditional African Democracy, (6) Contemporary African Revolutionary Thought, and (7) Mazruiana Theoretical Postulates (Bangura 2015 in press).

Ujamaa Methodology is important for understanding social science epistemologies that explain the contributions of Africans to world civilization. This research methodology is insightful for studying what and how Africans can contribute to the world. It emphasizes socialism, unity, and equality, among other key concepts, that can be useful in promoting equality and balanced economic growth. It can also be applied by African leadership in different government policies and programs with the aim of reducing the gap between the poor and the rich. It is studied as a university course and has also been applied in government and politics in Africa for developmental processes aimed at promoting self-reliance.

The methodology has been applied in Tanzania in the area of self-reliance to make the population attempt to advance itself with less government aid. Many of the tenets of *Ujamaa* philosophy have been evident in the leadership of Tanzania's presidents that have followed Nyerere: Ali Hassan Mwinyi (1985-1995), Benjamin Mkapa (1995-2005), Jakaya Kikwete (2005-2015), and John Magufuli (2015-present) (Bangura in press).

Consciencist Methodology

Consciencist Methodology is a 'method of approaching philosophy from the standpoint of its social contention' (McClendon 2003; see also Bangura in press). It is based on Kwame Nkrumah's philosophical consciencism, a philosophical perspective

> born out of a crisis of the African conscience confronted with the three strands of present African society; the African experience of the Islamic and Euro-Christian presence as well as the experience of the traditional African society, and, by gestation, (to be employed) for the harmonious growth and development of that society' (Nkrumah 1964:70; see also Bangura in press).

Some of the major concepts of this methodology are African Personality, Traditional African Outlook, African Renaissance, Rationalism, Empiricism, Idealism, Materialism, Dialectical Materialism, Philosophical Materialism, Dialectical Change, Solipsism, Soul or Spirit, Egalitarianism, Social Political Practice, Positive Action, Negative Action, Colonialism, Neo-colonialism, etc. The following five postulates are identifiable in consciencism: (1) *Principle of Identity of Meaning* or *Law of Identity* (which means 'each thing is the same with itself and different from another'); (2) *Principle of Sufficient Reason* (a philosophical proposition which advances the idea that everything must have a cause, ground, or reason); (3) *Materialist Conception of History* or *Historical Materialism* (refers to

the final causal feature in the history of the production and reproduction of life) is a methodology employed to investigate the historical development of human societies; (4) *Principle of Justice* (how the metaphysical and social generation of things is regulated); and (5) *Principle of Pre-established Harmony* (the proposition that every person possesses 'an inalienable right to develop according to his nature, even if his development requires the suffering and subordination of others either in a political or in an economic sense') (Nkrumah 1964; see also Bangura in press).

Consciencist Methodology can be applied to study any society, but more specifically to study colonies and newly independent and developing countries. It can be quite useful for the proper investigation of African philosophy and history within their contexts. Consciencist Methodology proposes studying an alien philosophy within the context of the intellectual history to which it belongs and within the context of the milieu in which it was born for the furtherance of cultural development and strengthening of human society (Bangura in press).

Falola in his work titled *Ibadan: Foundation Growth and Change 1830-1960* (2012) used the theory to reveal British colonialism in Ibadan vis-à-vis its perceived blessings and its establishment in and imposition on Yorubaland. Falola showed that the British annexation and domination of Ibadan were geared towards binding the city's economy into Britain's world economic system. According to him, this was done by replacing the 'family mode of production' with the capitalist one, developing a wage labor and a peasantry to produce goods for the metropole, taxing the workers and peasants and using the money to maintain the colonial bureaucracy, and selling mass-produced European goods of shoddy quality to the masses in the colony. Falola then outlines a number of problems British colonialism fomented in Ibadan (Bangura 2011:63 and in press).

Abiodun Oríkì Methodology

The Abiodun *Oríkì* Methodology, named after Professor Rowland Abiodun, is an Afrancentric research methodology centered on the Yoruba concept of the head, *ori*. It is a concept propounded by Falola. Its translation in English means 'praise poem/attributive epithet' (Banagura 2015 and in press). It is the systematic investigation of Yoruba verbal and visual invocations. *Oríkì* is an important genre in Yoruba because it is one of the major ways to glorify successful people and events of a community's history, to construct a logical belief system based on origin traditions, and it is employed to establish and verify claims to identity and legitimation. It is a Yoruba genre that incorporates 'all verbal and visual invocations with language that is evocative, exclamatory, laudatory, and hyperbolic'

(Abiodun 2014; Bangura in press). Four points to note about the translation of *oriki* from source (tonal) language to target language are '(1) the intertwining of entertainment and moral message through; (2) the combination of excessive imagery, declamatory speech and onomatopoeia; (3) the advancement of action and meaning through hyperbole and personification; the artistic manipulation of language that is music prone; and (4) the creative use of numerous paralinguistic devices by one preoccupied with the dual authorial intent of edifying and entertaining' (Smith 2001:749; Bangura 2015:138 and in press). *Orí* is the most discussed aspect of *oríkì* because it is believed by the Yorubas to be 'the cause and essence of one's being' (Bangura 2015 and in press).

The strengths of the methodological approach hinge upon its definition, characteristics, and justifications. *Oríkì* can be chanted, spoken, or sung; and can also be intonated on the drum, with speech tones reproducing the drum sounds as a kind of surrogate language. It can also be represented via sculpture and other artistic configurations. Bangura (2015) suggests an Abiodun-Bangura-Falola Oríkì Conceptual Framework as suitable for the Abiodun *Oríkì* Methodology and used all the *oríkìs* as hypotheses to determine different types that can be produced.

The Abiodun *Oriki* Methodology has been used to explore the historical relevance of the *ààlè* or indigenous production of knowledge. Among others, Falola (2013) in his study titled *Ibadan: Foundation Growth and Change 1830-1960* (2012) used *oríkìbòròkìní* as a form of heroic worship through imagery and metaphors depicting achievements, bravery, and courage to demonstrate how *oriki* is used to depict the 19th Century warriors.

References

Abimbola, Wande, 1976, *Ifa Will Mend Our Broken World: Thoughts on Yoruba Religion and Culture in Africa and the Diaspora*, Roxbury, MA: Aim Books.

An-Na'im, Abdullahi A., ed., 2002, *Cultural Transformation and Human Rights in Africa,* London, UK: Zed Books Ltd.

Asante, Molefi Kete, 1987, *The Afrocentric Idea*, Philadelphia, PA: Temple University Press.

Babatunde, Emanuel, 2015, 'Ethnographic Adventures in Yoruba Epistemology', paper presented at the conference on 'Conceptualizing African Epistemologies: Subaltern and Vernacular Ways of Knowing' convened at the University of Texas at Austin, October 03, 2015. Posted on *H-Net Humanities and Social Sciences Online* by Roy Doron on Saturday, September 26, 2015. Retrieved on October 22, 2015 from https://networks.hnet.org/node/5293/discussions/85191/ann-conceptualizing-african-epistemologies-subaltern-and-vernacular

Bangura, Abdul Karim, in press, *Falolaism: The Epistemologies and Methodologies of Africana Knowledge*, Durham, NC: Carolina Academic Press.

Bangura, Abdul Karim, 2015a, *Toyin Falola and African Epistemologies*, New York, NY: Palgrave Macmillan.

Bangura, Abdul Karim, 2015b, 'A Plurisdisciplinary Treatise of the Fractal Complexity in John Mukum Mbaku's *Corrupion in Africa: Causes, Consequences, Challenges and Cleanups', African Social Sciences Review*, .7, 1:1-23.

Bangura, Abdul Karim, 2014 'Domesticating Mathematics in the African Mother Tongue', *The Journal of Pan African Studies*, 6, 7:12-58.

Bangura, Abdul Karim, 2012, *African Mathematics: From Bones to Computers*, Lanham, MD: University Press of America.

Bangura, Abdul Karim, 2011, *African-Centered Research Methodologies: From Ancient Times to the Present*, San Diego, CA: Cognella.

Bangura, Abdul Karim, 2010a, 'Terrorism and Islam in Africa', in J. Davis, ed., *Terrorism in Africa: The Evolving Front in the War on Terror*, Lanham, MD: Lexington Books/ Rowman and Littlefield Publishers, Inc.

Bangura, Abdul Karim, 2010b, Automated Generation of Metadata for Studying and Teaching about Africa from an Africancentric Perspective: Opportunities, Barriers and Signs of Hope', retrieved on April 13, 2017 from https://smartech.gatech.edu/ bitstream/handle/1853/35501/1232454893_AB.pdf

Bangura, Abdul Karim and Junor Hopwood, 2014, *A Comprehensive Introduction to Research MethodsVolume 1: Quantitative Methods*, San Diego, CA: Cognella

Bemath, Abdul Samed, 2005, *The Mazruiana Collection Revisited*, Pretoria, South Africa: Africa Institute of South Africa; New Delhi, India: New Dawn Press, an imprint of Sterling Publishers.

Bleicher, Josef, 1980, *Contemporary Hermeneutics: Hermeneutics as Method, Philosophy and Critique*, London, UK: Routledge and Kegan Paul.

Budge, E. A. Wallace, 1978, *An Egyptian Hieroglyphic Dictionary*, 2 vols., Mineola, NY: Dover Publications.

Dartmouth University, 2015, 'Marginal Positioning: Writing African Women: Conceptualizations at the Intersection of African and Feminist Epistemologies', *Conceptualizing African Epistemologies: Subaltern and Vernacular Ways of Knowing*, retrieved on April 13, 2017 from https://networks.h-net.org/node/73374/ announcements/84900/conference-announcement-conceptualizing-african-epistemologies

David, Arlette, 2007, 'Ancient Egyptian Forensic Metaphors and Categories', *Zeitschrift für Ägyptische Sprache*, 134, 1:1-14.

de Lubicz, René Adolphe Schwaller, 1977, *The Temple In Man*, Rochester, VT: Inner Traditions International.

Diop, Cheikh Anta, 1981/trans. 1991, *Civilization or Barbarism: An Authentic Anthropology*, Brooklyn, NY: Lawrence Hill Books.

Diop, Cheikh Anta, 1974, *Black Africa: The Economic Basis for a Federated State*, Chicago, IL: Lawrence Hill (Africa World Press edition).

Edozie, Rita Kiki, 2009, *Reconstructing the Third Wave of Democracy: Comparative African Democratic Politics*, Lanham, MD: University Press of America.

Emeagwali, Gloria and Edward Shizha, eds., 2016, *African Indigenous Knowledge and the Sciences*, Rotterdam, The Netherlands: Sense Publishers, retrieved on April 13, 2017 from https://www.sensepublishers.com/media/2759-african-indigenous-knowledge-and-the-sciences.pdf

Falola, Toyin, 2014, *Counting the Tiger's Teeth: An African Teenager's Story*, Ann Arbor, MI: The University of Michigan Press.

Falola, Toyin, 2013, *The African Diaspora: Slavery, Modernity, and Globalization*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 2012, *Ibadan: Foundation, Growth and Change 1830-1960*, Ibadan, Nigeria: Bookcraft.

Falola, Toyin, 2005, *A Mouth Sweeter than Salt: An African Memoir*, Ann Arbor, MI: The University of Michigan Press.

Falola, Toyin, 2001, *Nationalism and African Intellectuals*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 1999, *Yoruba Gurus: Indigenous Production of Knowledge in Africa*, Trenton, NJ: Africa World Press, Inc.

Falola, Toyin, 1998, *Violence in Nigeria: The Crisis of Religious Politics and Secular Ideologies*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 1996, *Development Planning and Decolonization in Nigeria*, Gainesville, FL: University Press of Florida.

Fatunmbi, Awo Fa'lokun, 2002, 'Odu and the Ifa Concept of History', retrieved on April 14, 2017 from http://docshare.tips/awo-study-center-odu-and-the-ifa-concept-of-history-part-i_57867efdb6d87f222e8b4781.html

Fenyo, Mario D., 2011, 'Pan-African Methodologies', in A. K. Bangura, *African-Centered Research Methodologies: From Ancient Times to the Present*. San Diego, CA: Cognella.

Ganyi, Francis Mowang and Jayne Ise Owan, 2016, 'Impact of Transculturalism and Globalisation on the Concepts of Oral Literature and 'Ubuntugogy' as Educational Paradigms for African Liberation and Development in 21st Century', *English Language, Literature and Culture* (Science Publishing Group), 1, 3:30-39, retrieved on April 13, 2017 from http://article.sciencepublishinggroup.com/pdf/10.11648.j.ellc.20160103.13.pdf

Hedlund, Stephan and Mats Lundahl, 1989, 'Ideology as a Determinant of Economic Systems: Nyerere and Ujamaa in Tanzania', Uppsala, Sweden: Scandinavian Institute of African Studies.

Hunwick, John, 2008, 'The Arabic Literature of Africa Project', in S. Jeppie and S. B. Diagne, eds., *The Meanings of Timbuktu*, Cape Town, South Africa: Human Sciences Research Council in association with CODESRIA, Dakar, Senegal.

Irele, Bipo, 2010, 'Epistemology and Theory of Knowledge', *The Oxford Encyclopedia of African Thought,* Volume 1:340-343, Oxford, UK: Oxford University Press.

Johnson, Samuel, 1921, *The History of the Yorubas from the Earliest Times to the Beginning of the British Protectorate*, Lagos, Nigeria: CMS.

Kanu, Ikechukwu Anthony, 2015, 'Suffering in Igbo-African Ontology', *Research on Humanities and Social Sciences*, retrieved on April 14, 2017 from http://www.iiste.org/Journals/index.php/RHSS/article/view/11427

Karenga, Maulana, 1990, *The Book Of The Coming Forth By Day*, Los Angeles, CA: University of Sankore Press.

Knollová, Michaela, 2011, Vybrané principy dobré správy ve starověkém Egyptě. [Res: Selected principles of good governance in ancient Egypt]. *Právo, ekonomika, management*, roč.2, č. 1, KEY Publishing s.r.o., Ostrava-Přívoz 2011, ISSN 1804-3550, s. 84-88.

Lacoste, Yves, 1984, *Ibn Khaldun: The Birth of History and The Past of the Third World*, London, UK: Verso.

Little, Barbara J., 2007, *Historical Archaeology: Why the Past Matters*. Walnut Creek, CA: Left Coast Press.

Mazrui, Ali Al'Amin, 1986, *The Africans: A Triple Heritage*, New York, NY: Little Brown and Company.

McMillan, James H., 2012, *Educational Research: Fundamentals for the Consumer*, 6th ed., Upper Saddle River, NJ: Pearson Educational Inc.

Mo Ibrahim Foundation (MIF), 2016. *The Ibrahim Index: 2016 Ibrahim Index of African Governance*. Retrieved on August 15, 2016 from http://mo.ibrahim.foundation/iiag/

Mukhtar, Gamal, 1990, *Ancient Civilizations of Africa,* Berkeley, CA: University of California Press.

Nadudere, Dani Wadada, 2003, 'Towards the Establishment of a Pan-African University A Strategic Concept Paper, *African Journal of Political Sciencw* , 8, 1:1-30, retrieved on April 13, 2017 from http://pdfproc.lib.msu.edu/?file=/DMC/African%20Journals/pdfs/political%20science/volume8n1/ajps008001002.pdf

Nkrumah, Kwame, 1964, *Consciencism: Philosophy and Ideology for Decolonization*, London, UK: Heinemann.

Nyerere, Julius K., 1995, 'Ujamaa—The basis of African Socialism', in F. L. Hord (Mzee Lasana Okpara) and J. S. Lee, eds., *I Am Because We Are: Readings in Black Philosophy*, Amherst, MA: University of Massachusetts Press.

Olupona, Jacob K. Rolwland O. Abiodun, eds., 2016, *Ifa Divination, Knowledge, Power, and Performance.* Bloomington, IN: Indiana University Press.

Oxford Learner's Dictionary online, 2018, Multiplex, Retrieved on November 24, 2018 from https://www.oxfordlearnersdictionaries.com/us/definition/english/multiplex?q=multiplex

Piedra, José, 1985, 'From Monkey Tales to Cuban Songs: On Signification', *MLN* 100, 2:361-390.

Reindorf, Carl Christian, 1895, *History of the Gold Coast and Asante*, Basel, Switzerland: Basel Mission.

Ruggles, Cline L. N., 2011, 'Pushing Back the Frontiers or Still Running around the Same Circles? 'Interpretative Archaeoastronomy' Thirty Years on', *International Symposium on Archaeoastronomy Proceedings IAU Symposium*, 2, S278, retrieved on April 13, 2017 from https://www.cambridge.org/core/journals/proceedings-of-the-international-astronomical-union/article/pushing-back-the-frontiers-or-still-running-around-the-same-circles-interpretative-archaeoastronomy-thirty-years-on/75CF1CC7D6956A22A5F269FA2A357EFC

Shirzoi, Wallied Jean, 2004, 'Ibn Khaldun', in A. K. Bangura, ed., *Islamic Sources of Peace*, Boston, MA: Pearson Publishing.

Webster Dictionary online, 1913, 'Hermeneutics', retrieved on April 14, 2017 from http://machaut.uchicago.edu/cg-bin/WEBSTER.page.sh?page=688

Winters, Clyde Ahmad, 1998), 'The Afrocentric Historical and Linguistic Methods, *The Western Journal of Black Studies* , 22, 2:73-83.

9

Harnessing the Internet for Free Cutting-Edge Computer Software and Other Tools

Abdul Karim Bangura

In this chapter, I describe various ways that the Internet can be utilized to get free state-of-the-art computer software and other apparatuses to conduct research on African phenomena. As Faleh Alshameri and I have shown in several papers (Bangura 2009a and 2009b, Alshameri and Bangura 2013), while a great deal of attention has been paid to the 'digital divide' within developed countries and between those countries and the developing ones, most Africans do not even have such luxury as access to books, periodicals, radio and television channels, which is precisely why information and communication technology (henceforth, ICT) is so important to Africa. ICT has the potential to positively impact Africa's development. So, how can Africans transform that potential into reality? And for the purpose of this chapter, how can African researchers and others conducting research on African phenomena access that technology? Without access, that technology cannot do much for Africans–thus, the significance of digital technology (Bangura 2009a and 2009b, Alshameri and Bangura 2013).

Digital technology often refers to the newest ICT, particularly the Internet. There are, of course, other more widely available forms of ICT, such as radio and telephones. But there are many problems concerning the generally abysmal state of networks of every kind on the continent that make it difficult to fully utilize the development potential of even this technology. Africa's electrical grid

is grossly inadequate, resulting in irregular or nonexistent electrical supplies. The biggest problem is that in many countries, significant power distribution networks are non-existent in rural areas (Bangura 2009a and 2009b, Alshameri and Bangura 2013).

Africa's phone systems are spotty and often rely on antiquated equipment. Progress is often hamstrung by bureaucracy and, in most instances, state-owned monopolies. However, African governments have the power to alter these circumstances and, gradually, some are doing so. The signs of progress are unbelievable. A few years ago, a couple of countries had Internet access. Today, all 54 countries and territories in Africa have permanent connections. There is also rapidly growing public access provided by phone shops, schools, police stations, clinics, and hotels (Bangura 2009a and 2009b, Alshameri and Bangura 2013).

Although Africa is becoming increasingly connected, access to the Internet, however, is progressing at a limited pace. Of the 770 million people in Africa, only one in every 150, or approximately 5.5 million people in total, now use the Internet. There is roughly one Internet user for every 200 people, compared to a world average of one user for every 15 people, and a North American and European average of approximately one in every two people (Bangura 2009a and 2009b, Alshameri and Bangura 2013).

In the rest of this chapter, I discuss various free cutting-edge computer software and other tools that can be accessed via the Internet to conduct research pertaining to African phenomena. Before doing so, however, I will begin by discussing tips for conducting effective Internet searches.

Tips for Conducting Effective Internet Searches

A Google search of the Internet with the phrase 'tips for conducting effective internet searches' at 6:50 PM on Sunday, April 30, 2017 yielded approximately 3,180,000 results in 0.81 seconds, a reflection of the wide coverage the topic has received on the World Wide Web (WWW). Of course, it is impossible, and even unnecessary, to discuss every result here. Instead, I present the following brief statements of those tips I perceive to be the most useful based on my extensive background in conducting Internet searches and training in Computer Science:

    a. Begin by reading the help or tips menu
    b. Prepare yourself before beginning the search
    c. Customize your searches and make them short

d. Start with simple searches and take advantage of the search tools

e. Use both the simple and advanced modes of search tools

f. Use unique or specific terms when possible to get more specific results

g. Use the directories or subject directories in search tools

h. Use more than one search tool

i. Use the MetaSearch (a search tool that utilizes another search engine's data to produce its own results from the Internet) and natural language (a language that has developed naturally in use as contrasted with an artificial language or computer code) tools to begin and/or refine a search

j. Use capitalization when necessary to refine a search

k. Use quotation marks or other symbols to specify a phrase

l. Use Find or Ctrl-F to help navigate search results

m. Use basic math operators (addition + and subtraction -) to narrow down your search results

n. Don't use common words and punctuation

o. Do not use suffixes: i.e. morphemes added at the end of words to form derivatives, e.g., -ation, -fy, -ing, -itis

p. Maximize AutoComplete: i.e. a software function that gives users the option of completing words or forms by a shorthand method based on what has been typed before

q. Use the browser history

r. Set a time limit and then change tactics

s. Search a domain extension (.com, .org, .edu, etc.)

t. Use the wildcard or asterisk (*)

The Java Software Imperative

The Java computer software was released in 1995 as a core component of the platform of the Sun Microsystems, which is now owned by Oracle Corporation. Before downloading and installing any of the computer software discussed in the following sections, a researcher must first download and install the free Java software or upgrade it if one already exists in his/her computer. In fact, none of the following software will download properly if the updated Java software is not in a computer. Julie Anderson and Hervé Franceschi tell the very interesting story of the Java language development as follows:

On May 23, 1995, Sun Microsystems introduced Java, originally named Oak, as a free, object-oriented language targeted at embedded applications for consumer devices. A Java Machine was incorporated immediately into the Netscape Navigator Internet browser and, as the browser grew, small Java programs, known as applets, began to appear on webpages in increasing numbers. Java syntax is basically identical (with some minor exceptions) to that of C++ [a general-purpose programming language with imperative object-oriented and generic programming features and facilities for low-level memory manipulation], and soon programmers all over the world started to realize the benefits of using Java (Anderson and Franceschi 2016:21).

One reason for this popularity of the Java program may be due to its structure. According to Anthony J. Dos Reis and Laura L. Dos Reis, one or more *classes* (or basic units) can be found in a Java program. Embedded in a class are *methods* (i.e. named sequences of statements) and other forms. These authors add that 'The **header** of a method contains the name of the method as well as several other items. It is followed by the **body** of the method. The body consists of a sequence of statements enclosed by braces. When a computer **executes** a method, it performs the operations specified by the statements in its bod' (Dos Reis and Dos Reis 2012:6-7; bolded words are as they appear in the original text).

Another reason for Java's popularity may hinge on the fact that it is an object-oriented (OO) language. Dos Reis and Dos Reis define and state the advantages of this type of programming language as follows:

…Java programs, when executed, can create and use objects. An **object** is a structure that contains data and the methods that operate on that data. Object-oriented programming languages have significant advantages over other types of programming languages [in that] objects are constructed from classes…The Java programming language comes with many predefined classes. Thus, we do not have to create classes before we can create objects; we can simply use the predefined classes as long as they satisfy our requirements (Dos Reis and Dis Reis 2012:12-13; bolded word is as it appears in the original text).

In essence, it is easier to utilize the Java program to compile, debug, learn and write other programming languages, and to also develop modular programs and codes that can be reused.

ATLAS.ti

ATLAS.ti was released in 1993 by Scientific Software Development, which later became ATLAS.ti Scientific Software Development GmbH. The computer

program is described as 'a powerful workbench for the qualitative analysis of large bodies of textual, graphical, audio and video data. [Its] **s**ophisticated tools help you to arrange, reassemble, and manage your material in creative, yet systematic, ways. [It] keeps you focused on the material itself. Whether your field is anthropology, economics, criminology, or medicine, [it] will meet your qualitative analysis needs' (atlasti.com). The program (atlasti.com)

    a.   offers a set of tools and features that are powerful and flexible enough to get to the bottom of even the most complex data material;

    b.   serves as a container for your project's data;

    c.   allows you to code by simply dragging codes onto the selected piece of data; Object Managers, the Project Explorer, and the Co-occurrence Explorer let you browse and navigate through your project data;

    d.   allows you to link your findings in a semantically meaningful way; and

    e.   allows you to visualize your findings and interpretations in a digital mind map as you go.

The following are the key features of ATLAS.ti (atlasti.com):

    a.   The interactive margin area is a unique work space that permits a uniquely intuitive way of interacting with your data, digitally transferring the traditional paper-and-pen analogy in the digital world.

    b.   The quotation level is also radically unique in that it offers an analytic level below coding and better supports inductive, interpretive research approaches like grounded theory, hermeneutic, discourse analysis, sociology of knowledge, or phenomenology than any other software.

    b.   The network/visualization function offers the most integrated way of working with your data; it is a tool for visualization as well as for analysis, for data organization as well as conceptual level analytic work and data presentation.

    c.   Due to the way ATLAS.ti manages data under the hood, it allows for handling much larger projects than other products that contain thousands of documents and/or tens of thousands of coded data segments.

    d.   ATLAS.ti supports collaborative work in several highly effective ways. Dedicated tools as well as some general principles of the software make collaborations easier.

    e.   In order to support multi-method multi-user projects across space and time (longitudinal studies)**,** project data export using XML is available.

f. The Support Center lets you conveniently contact developers via a state-of-the-art helpdesk system, guaranteeing swift turnaround and short response times.

g. Peer-to-peer support is available through the ATLAS.ti User Forum with thousands of members. The ATLAS.ti Research Blog offers a range of articles written by ATLAS.ti users world-wide on a large variety of topics.

h. ATLAS.ti workshops are held worldwide, face-to-face or online. A self-paced E-learning course is also available in English and Spanish.

There is also a free trial version of ATLAS.ti that has no expiration date. This version is fully functional, except that its capacity is limited.

Moreover, the ATLAS.ti user interface is a highly user-friendly interactive feature. Susanne Friese describes this attribute as follows: 'At the top of the user interface you have a title bar which displays the file name. Underneath you find the main menu, the tool bar and a number of drop-down menus. In addition, there is a vertical toolbar at the left margin. The rest of the screen is dedicated to displaying project data' (2012:10).

Excel

Initially released in 1987, Microsoft Excel, part of Microsoft Office, is a spreadsheet developed by Microsoft for Android (a mobile operating system developed by Google), iOS (formerly iPhone OS, a mobile operating system developed by Apple Inc.), macOS (a family of Macintosh operating systems developed by Apple Inc.), and Windows (a metafamily of graphical operating systems developed by Microsoft). Excel comprises calculation, graphing tools, a macro programming language called Visual Basic for Applications, and pivot tables (products.office.com).

The Excel program allows a researcher to gain greater insights into his/her data by doing the following (products.office.com:

a. laying out the data;

b. reformatting and rearranging the data to look at different configurations;

c. doing the analysis;

d. getting a better picture of the data by flowing them into charts and graphs;

e. finding the best storyline by discovering and comparing different ways to represent the data and one's intents visually;

f. highlighting trends and patterns;

g. adding another set of eyes by sharing from the cloud and making sure that everyone has the latest version;

h. collaborating in real time once a researcher has saved his/her spreadsheet to OneDrive, OneDrive for Business, or SharePoint;

i. collaborating on shared projects;

j. jumpstarting a design by showing style and professionalism with templates; and

k. connecting with experts to see what is new and getting classic tips and editors' tricks to develop, edit, and polish documents professionally.

In addition, as Neil J. Salkind has demonstrated, Excel's functions, which are predefined formulae, and Analysis ToolPak can be utilized to do quite sophisticated statistical computations. These attributes can allow a researcher to provide answers to both simple and complex statistical questions about data used in applied circumstances (Salkind 2013:ix).

Flash

First released by Adobe Systems in 1996, Flash or Adobe Flash, written in C++ for Android, BlackBerry OS, Linux, macOS, Microsoft Windows, and Solaris, is a free software meant for using content developed on the Adobe Flash platform to view multimedia, execute rich Internet applications, and stream video and audio. Flash delivers high-impact, rich Web content, and allows for the development of designs, animation, and application user interfaces to be deployed immediately across all browsers and platforms, thereby attracting and engaging users with a rich Web experience. Flash is endowed with the following features (adobe.com):

a. Stage 3D for building stunning, blazing-fast cinematic two-dimensional and three-dimensional games, and using fully accelerated graphic processing unit (GPU) rendering, which leverages the power of OpenGL and DirectX graphics;

b. Concurrency for developing high-performance, more responsive games and content using ActionScript workers and shared ByteArray support, sharing memory, and leveraging machine resources by offloading tasks to background workers that run concurrently;

c. Full-screen support for delivering exciting full-screen games with full keyboard support across browsers (including Chrome, Firefox, and Internet Explorer) and operating systems (Mac and Windows);

d. Enhanced mouse control for developing immersive, panoramic games that take advantage of infinite scrolling, mouse lock, relative mouse coordinates, and right- and middle-click events;

e. High definition (henceforth, HD)-quality video for playing high-quality HD video with industry-standard codecs such as H.264, AAC, and MP3 and using GPU hardware optimization and chipsets that scale across all platforms to provide best-in-class video performance;

f. High quality of service for engaging viewers with optimized and adaptive bitrate video streaming as well as an extensive feature set, and supporting streaming standards such as Hitachi Data Systems (HDS), Real-Time Messaging Protocol (RTMP), and progressive video that allows video content to be delivered efficiently and flexibly across various network and content delivery network (CDN) configurations;

g. Content protection for delivering protected premium video content using Adobe Access, which supports a wide range of business models, including video on demand, live broadcast, HD rental, subscription, and electronic sell-through;

h. Multicore rendering for building high-performance vector graphics and display true 1080-progress-scan videos that take advantage of up to four central processing unit (CPU) cores;

i. Small Web Format (SWF) file optimization for delivering optimized SWF files for faster download through the Lempel–Ziv–Markov chain algorithm (LZMA–an algorithm used to perform lossless data compression); and

j. Advanced bitmap control for delivering smoother animations and interactivity using enhanced high-resolution bitmap support, bitmap caching, and asynchronous bitmap decoding.

A concomittant question is: How can Flash be utilized by a researcher for sophisticated research projects? Yana Weinstein provides a succinct answer to this question. As she states and also demonstrates, Flash can be used to conduct questionnaire-based studies and 'sophisticated experiments involving stimuli such as pictures, dramatic shapes, and animation' (Weinstein 2013:xiv). She adds and shows that the program allows a researcher to have 'absolute control over design and visual aspects and only requires simple online implementation. Accurate reaction time is also possible…' (Weinstein 2013:xiv).

MATLAB

The Matrix Laboratory (henceforth, MATLAB), which interfaces to C, C++, Hadoop (an open source Java-based programming framework that supports the processing and storage of extremely large data sets in a distributed computing

environment), Java, Microsoft Excel, NET (a Microsoft web services strategy used to connect devices, information, people, and systems via software, thereby making it easier for users to share and use their information among multiple computers, programs, and websites), Python (a high-level programming language designed to be easy to read and implement), and structured query language (SQL), is used for numerical computing using Linux, macOS and Windows. MATLAB first appeared in the 1970s but was officially first released by MathWorks in 1984 (mathworks.com; Butt 2010:705). MATLAB is described as follows:

> MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. Typical uses include math and computation; algorithm development; modeling, simulation and prototyping; data analysis, exploration, and visualization; scientific and engineering graphics; application development, including Graphical User Interface building (cimss.ssec.wisc.edu).

The main features of MATLAB are stated as follows (mathworks.com):

   a. High-level language for scientific and engineering computing;
   b. Desktop environment tuned for iterative exploration, design, and problem-solving;
   c. Graphics for visualizing data and tools for creating custom plots;
   d. Applications for curve fitting, data classification, signal analysis, and many other domain-specific tasks;
   e. Add-on toolboxes for a wide range of engineering and scientific applications;
   f. Tools for building applications with custom user interfaces; and
   g. Royalty-free deployment options for sharing MATLAB programs with end users.

It also should be noted that MATLAB comes with a simulation and model-based design called Simulink. It is described as follows:

Simulink is a block diagram environment for multi-domain simulation and Model-Based Design. It supports simulation, automatic code generation, and continuous test and verification of embedded systems. Simulink provides a graphical editor, customizable block libraries, and solvers for modeling and simulating dynamic systems. It is integrated with MATLAB, enabling you to incorporate MATLAB algorithms into models and export simulation results to MATLAB for further analysis (www.mathworks.com).

MATLAB has a free 30-day free-trial period. The six trial packages available during this period include (1) Data Analytics, (2) Image Processing and Computer Vision, (3) Signal Processing and Communications, (4) Computational Finance, (5) Control Systems, and (6) Computational Biology (mathworks.com).

NetLogo

First appearing in 1999, NetLogo is a free multi-agent programmable modeling environment utilized by tens of thousands of students, educators and researchers across the globe to simulate natural and social phenomena. NetLogo also powers HubNet participatory simulations. It is authored by Uri Wilensky and developed at the Northwestern University's Center for Connected Learning and Computer-Based Modeling (CCL) where he is a professor. The advantages of NetLogo are stated as follows (ccl.northwestern.edu):

 a. particularly well suited for modeling complex systems developing over time;
 b. allows users to open simulations and 'play' with them, while exploring their behavior under various conditions;
 c. provides an authoring environment which enables users to develop their own models;
 d. serves as a powerful tool for researchers in many fields;
 e. provides extensive documentation and tutorials, a Models Library, and a large collection of pre-written simulations that can be used and modified;
 f. allows users to utilize simulations that address content areas in the natural and social sciences including biology and medicine, physics and chemistry, mathematics and computer science, and economics and social psychology;
 g. is the next generation of the series of multi-agent modeling languages including StarLogo and StarLogoT; and
 h. runs on the Java virtual machine, so it works on all major platforms (Mac, Windows, Linux, etc.); runs as a desktop application; and a command line operation is also supported.

The preceding advantages are made possible by NetLogo's features which are listed as follows (ccl.northwestern.edu):

 a. System: free, open source; cross-platform: runs on Mac, Windows, Linux, etc.; international character set support;
 b. Programming: fully programmable; approachable syntax; language is Logo dialect extended to support agents; mobile agents (turtles) move over a grid

of stationary agents (patches); link agents connect turtles to make networks, graphs, and aggregates; large vocabulary of built-in language primitives; double precision floating point math; first-class function values (also known as anonymous procedures, closures, lambda); runs are reproducible cross-platform;

c.   Environment: command center for on-the-fly interaction; interface builder with buttons, sliders, switches, choosers, monitors, text boxes, notes, output area; info tab for annotating your model with formatted text and images; HubNet: participatory simulations using networked devices; agent monitors for inspecting and controlling agents; export and import functions (export data, save and restore state of model, make a movie); BehaviorSpace, an open source tool used to collect data from multiple parallel runs of a model; System Dynamics Modeler; NetLogo three-dimension for modeling three-dimensional worlds; headless mode allows doing batch runs from the command line;

d.   Display and visualization: line, bar, and scatter plots; speed slider lets you fast forward your model or see it in slow motion; view your model in either two-dimension or three-dimension; scalable and rotatable vector shapes; turtle and patch labels; and

e.   Application program interfaces (APIs): controlling API allows embedding NetLogo into a script or application; extensions API allows adding new commands and reporters to the NetLogo language; open source example extensions are included.

NVivo

Designed to be used on Microsoft Windows, the first NVivo software was developed by Lyn and Tom Richards in 1999. It was called NUD*IST and comprised tools for detailed analysis and qualitative modeling. NVivo is produced by QSR (Qualitative Software Research) International, and it has emerged as one of the leading qualitative data analysis (QDA) computer software packages. Qualitative researchers in academia, government, and business working with rich text-based and/or multimedia information in which deep levels of analysis on small or large volumes of data are required have found NVivo extremely useful (us.sagepub. com; qsrinternational.com). The following is what QSR International, says about the utility of its software:

NVivo is software that supports qualitative and mixed-methods research. It's designed to help you organize, analyze and find insights in unstructured or

qualitative data like interviews, open-ended survey responses, articles, social media and web content. When working with qualitative data, if you don't use NVivo, your work will be more time consuming, challenging to manage, and hard to navigate. Importantly, completing this kind of research without software can make it very hard to discover connections in your data and find new insights that will give you an edge. NVivo gives you a place to organize and manage your material so that you can start to find insights in your data. It also provides tools that allow you to ask questions of your data in a more efficient way (qsrinternational.com/). QSR International adds that a researcher using NVivo provides the opportunity for a researcher to 'work more efficiently; save time; quickly organize, store and retrieve data; uncover connections in ways that are not possible manually; and rigorously back-up findings with evidence' (qsrinternational.com). The other benefits NVivo provides include the portability of the research, working anywhere, keeping projects secure, collaborating with other researchers; and accessing team-based solutions. NVivo also has a 14-day free trial package that can allow a researcher to switch between editions (qsrinternational.com).

Furthermore, the laudation for NVivo and caution provided by Pat Bazeley are worth quoting here for the researcher who would like to use the software:

> NVivo has been developed by researchers, with extensive researcher feedback, and is designed to support researchers in a varied way [as] they work with data. The use of a computer is not intended to supplant time-honoured ways of learning from data, but to increase the effectiveness and the efficiency of such learning. The computer's capacity for recording, sorting, matching and linking can be harnessed by the researcher to assist in answering their (sic) research questions from the data, without losing access to the source data or contexts from which the data have come (Bazeley 2007:2).

R

First appearing in 1993 and designed by Ross Ihaka and Robert Gentleman, and developed by the R Core Team, the R software system operates on a dynamic multi-paradigm that is array, functional, object-oriented, procedural, and reflective. This free software is utilized for statistical computing (classical statistical tests, classification, clustering, linear and nonlinear modeling, time-series analysis, etc.) and graphical techniques. As an Open Source route for participation by any researcher, R is a highly extensible software that is used to compile and run data on a wide variety of macOS, UNIX, FreeBSD, Linus and Windows platforms. R

is a GNU (a recursive accronym which stands for 'GNU's not Unix') project: i.e. a mass collaborative initiative for the development of free software (r-project.org).

According to the R Core Team, 'One of R's strengths is the ease with which well-designed publication-quality plots can be produced, including mathematical symbols and formulae where needed. Great care has been taken over the defaults for the minor design choices in graphics, but the user retains full control' (r-project. org). The Team also states the following features of the program:

    a. an effective data handling and storage facility;

    b. a suite of operators for calculations on arrays, in particular matrices;

    c. a large, coherent, integrated collection of intermediate tools for data analysis;

    d. graphical facilities for data analysis and display either on-screen or on hardcopy; and

    e. a well-developed, simple and effective programming language which includes conditionals, loops, user-defined recursive functions and input and output facilities.

The R software has both strengths and weaknesses. As it pertains to its strengths, Andy Field, Jeremy Miles and Zoë Field state that 'the beauty of R is that it can be expanded by downloading packages that add specific functionality to the program…These packages as well as the software itself are stored in a central location known as CRAN (Comprehensive R Archive Network). Once a package is stored in the CRAN, anyone with an Internet connection can download it from CRAN and install it to use within their (sic) own capacity of R. R is basically a big global family of fluffy altruistic people contributing to the goal of producing a versatile data analysis too that is free for everyone to use' (2012:63). Also, as John Fox and Sanford Weisberg state, 'In addition to the common arithmetic operators, R includes many–literally hundreds–of functions for mathematical operations, for statistical data analysis, for making graphs, and for other purposes' (2011:4).

Nonetheless, in terms of its weaknesses, as Philip H. Pollock III says that while 'R is powerful, flexible, richly supported, increasingly popular, and free…R is hard; the learning curve is steep. The R interface can be described as either retro or primitive…Although a handful of promising graphical user interfaces (GUIs) exist, R's core power is unlocked by the keyboard, not the mouse. (Yes, R is command line.) Because different programmers have contributed to R's development, not all commands adhere to the same syntactical rules' (2014:2).

SAS

The Statistical Analysis System (henceforth, SAS) software was developed at North Carolina State University from 1966 to 1976, when it was initially released. The development of the software continued during the 1980s and 1990s under the auspices of the SAS Institute when it was incorporated. The software can be used on the International Business Machines (henceforth, IBM) mainframe, OpenVMS Alpha, Unix/Linux, and Windows operating systems. The software is utilized for advanced analytics, business intelligence, data management, multivariate analyses, and predictive analytics. New statistical procedures, additional components, and JMP (more on this later) have been added to the program. In 2004, a point-and-click interface was added in version 9; and in 2010, a social media analytics product was added.

SPSS

The Statistical Package for the Social Sciences (henceforth, SPSS) was long produced and released in 1968 by SPSS Inc. It was acquired by IBM in 2009 and is now referred to as IBM SPSS Statistics. Its companion products in the same family include collaboration and deployment of batch and automated scoring service, IBM SPSS Data Collection, data mining, IBM SPSS Modeler, and text analytics, all of which are employed for survey authoring and deployment, health sciences, and business. SPSS operates on a Java platform and used in Linux, Linux on z Systems, macOS, and Windows (ibm.com).

The SPSS program is described by its owner as a 'leading statistical software used to solve a wide variety of business and research problems. This powerful tool provides a range of techniques, including ad-hoc analysis, hypothesis testing and reporting, to make it easier to access and manage data, select and perform analyses and share your results. The solution offers a base edition with optional add-ons that can be activated to expand your predictive analytics capabilities as you need them' (ibm.com). The software is characterized as having (a) a comprehensive set of statistical tools, (b) improved decision-making, and (c) flexibility and cost-effectiveness.

Pollock III provides us with important information about the various SPSS releases as follows: 'There are many commonalities across releases…including the graphic dialogs and the Chart Editor. Although SPSS [now] uses one editor for all graphics output, there are currently two ways to obtain unedited charts: the Legacy Dialogs and Chart Builder. Chart Builder was meant to be a

one-stop, easy-to-use vehicle for constructing any chart, from the simple to the complex. However, the Legacy Dialogs offer superior flexibility and intuitiveness' (2012:xiv).

STATA

Originally authored by William Gould and developed by StataCorp in 1985, the Stata software is used by biomedical experts, economists, epidemiologists, political scientists and sociologists engaged in research. It is a complete and integrated software that operates on Linus, macOSX, Unix and Windows platforms and utilized for custom programming, data management, graphic designs, regression and other statistical analyses, and simulations. The various packages of Stata/MP (Multiple Processors) for multiprocessor computers (including dual-core and multicore processors) include (a) Stata/SE (Special Edition) for large databases; (b) Stata/IC (Intercooled), which is the standard version; and (c) Small Stata, which is a smaller, student version for educational purchase only (stata.com).

Stata features data management facilities that provide a researcher with complete control of all types of data; matrix programming with Mata that helps a researcher to compile what s/he types into bytecodes, optimizes it, and executes it fast; documentation of over 12,000 pages in 23 volumes; free technical support; extensive new features added by developers and users every day; and cross-platform compatibility. Other valuable resources offered by Stata include the following (stata.com):

a. The *Stata Journal* which is a quarterly publication containing articles about statistics, data analysis, teaching methods, and effective use of Stata's language. The journal publishes reviewed papers together with shorter notes and comments, regular columns, book reviews, and other material of interest to researchers applying statistics in a variety of disciplines.

b. The Stata Press which publishes books, manuals, and journals about Stata and general statistics topics for professional researchers of all disciplines.

c. The *Stata News* which is a free quarterly publication containing articles on using Stata, announcements of new releases and updates, training schedules, new books, Conferences and Users Group meetings, new products, and other announcements of interest to Stata users.

d. The Stata Not Elsewhere Classified (NEC) Stata Blog which keeps users up to date about all things related to Stata, including product announcements, service announcements such as on-site and public training, and timely tips and comments related to the use of Stata. Individually signed, the articles in

the NEC Stata Blog are written by the same people who develop, support, and sell Stata. NEC is informal but useful, and even entertaining.

e. Training for users who would like to become proficient at Stata quickly. Stata provides hands-on public training courses, customized on-site training courses, and online training through NetCourses and video tutorials.

f. Video tutorials for new users to Stata who want to learn a new feature in Stata and professors looking for aids in teaching with Stata.

Pollock III also informs us that on the command side of STATA, a researcher can find the same step-by-step functions of the program across the various releases. On the graphics side of the software, however, things are different: whereas the earlier versions of STATA had drop-down functionality to the program's command-driven graphics capabilities, the later versions feature a graphics editor (Graph Editor) that allows a user to add content- and appearance-enhancing features (Pollock III 2011:xiii).

Furthermore, Stata provides evaluation licenses only to professional researchers who want to explore all the features of Stata while making purchasing decisions. The trial period lasts for 30 days (stata.com).

Other Internet Tools

There are other free Internet tools that can be harnessed to conduct serious research on African phenomena. Discussed here are free online survey tools, METANET, and social media.

Free Online Survey Tools

WebpageFX has done a good job in comparing 11 of the top free online survey tools in terms of types and numbers of surveys, questions, respondents, question design options, and data export options. The 11 survey tools compared, and their rankings are (1) Google Forms, (2) SurveyMonkey, (3) Typeform, (4) SurveyLegend, (5) Polldaddy, (6) Survey Planet, (7) SurveyNutts, (8) Zoho Survey, (9) FreeOnlineSurveys, (10) SDurvs, and (11) SurveyGizmo (webpagefx.com).

METANET

As Alshameri and I point out, the proposed approach for mining massive datasets for studying Africa from an African-centric perspective depends on the METANET concept: a heterogeneous collection of scientific databases envisioned as a national and international digital data library which would be available via

the Internet. We consider a heterogeneous collection of massive databases such as remote sensing data and text data (Bangura 2009a:79, Alshameri and Bangura 2013:352).

Through METANET, Data Documentation Initiative (DDI) and OpenSurvey methodologies can be used to collect data in areas where the technological infrastructure is less developed and less consistent. DDI allows researchers to use XML-based tools, using open standards, to access extensive machine-readable textual descriptions of past surveys, and make them more readily available. OpenSurvey will make it possible for researcher to use survey software and open source software to generate data. The common tools the researcher can use through open survey are (a) AskML, an XML-based metadata standard for a survey instrument, and (b) TabsML, an instrument used to access crosstab reports (Bangura 2009a:79, Alshameri and Bangura 2013:352).

Social Media

ClickZ has done a good job in comparing the top ten social media research tools. The owners of six of these tools charge fees. The following are the four that are free of charge and their capabilities, according to ClickZ (clickz.com):

1. Google Trends is a free tool from Google that a researcher can use to spot trends happening currently in the world. It shows the hottest searches currently going on and a researcher can drill in to find out a little bit more about the trends. This can be useful in creating content on the fly and being relevant to current conversations.

2. Google Insights is a little different than the Trends tool in that a researcher can choose the terms s/he wants to compare in trending. This is helpful in discovering if one word is used more than another, or perhaps one person is more popular than another. It gives a researcher a country breakdown of the popularity too.

3. Twitter Trends are used to look at conversational trends, and identifying those trends that are not promoted can lead a researcher into conversations that are very relevant during the moment and can gain him/her quick insight.

4. Technocrati can help a research team to find key influencers in a community in order to build relationships. By searching on either 'Blog' or 'Post' for certain key phrases, a researcher can discover who the key bloggers are that have some sort of 'sway' with their followers.

References

Alshameri, Faleh J., 2006, 'Automated Generation of Metadata for Mining Image and Text Data,' *Doctoral Dissertation*, George Mason University, Fairfax, Virginia.

Alshameri, Faleh and Abdul Karim Bangura, 2013, 'Generating Metadata to Study and Teach about African Issues', *Information Technology and People* 27, 3:341-365.

Anderson, Julie and Hervé Franceschi, 2016, *Java Illuminated: An Active Learning Approach* 4th ed., Burlington, MA: Jones & Bartlett Learning.

Bangura, Abdul Karim, 2009a, 'A Methodology for the Automated generation of Metadata for Studying and Teaching about Africa', *Documentacion* III, 14:70-81.

Bangura, Abdul Karim, 2009b, 'Africa and the Internet: Barriers and Hopeful Signs', *Documentacion* III, 13:62-69.

Bazeley, Pat, 2007, *Qualitative Data Analysis with NVivo*, Thousand Oaks, CA: Sage Publications.

Butt, Rizwan, 2010, *Introduction to Numerical Analysis Using MATLAB*, Sudbury, MA: Jones and Bartlett Publishers.

Dos Reis, Anthony J. and Laura L. Dos Reis, 2012, *An Introduction to Programming Using Java*, Sudbury, MA: Jones & Bartlett Learning.

Field, Andy, Jeremy Miles and Zoë Field, 2012, *Discovering Statistics Using R*, Thousand Oaks, CA: Sage Publications.

Fox, John and Sanford Weisberg, 2011, *An R Companion to Applied Regression* 2nd ed., Thousand Oaks, CA: Sage Publications.

Friese, Susanne, 2012, *Qualitative Data Analysis with ATLAS.ti*, Thousand Oaks, CA: Sage Publications.

Pollock III, Philip H. 2014, *An R Companion to Political Analysis*, Thousand Oaks, CA: Sage Publications and Congressional Quarterly Press.

Pollock III, Philip H. 2012, *An SPSS Companion to Political Analysis* 4th ed., Thousand Oaks, CA: Sage Publications and Congressional Quarterly Press.

Pollock III, Philip H. 2011, *A STATA Companion to Political Analysis* 2nd ed., Thousand Oaks, CA: Sage Publications and Congressional Quarterly Press.

Salkind, Neil J, 2013, *Excel Statistics: A Quick Guide* 2nd ed., Thousand Oaks, CA: Sage Publications.

Wegman, Edward J., 2003, 'Visual Data Mining', *Statistics in Medicine* 22:1383-1387 plus ten color plates.

Wegman, Edward J., 1997, 'A Guide to Statistical Software', available at http://www.galaxy.gmu.edu/papers/astr1.html

Weinstein, Yana, *Flash programming for the Social & Behavioral Sciences*, Thousand Oaks, CA: Sage Publications.

World Wide Web Sites

https://ccl.northwestern.edu/netlogo/

http://cimss.ssec.wisc.edu/wxwise/class/aos340/spr00/whatismatlab.htm

https://www.mathworks.com/products/matlab.html

https://www.mathworks.com/programs/trials/trial_request.html

http://www.adobe.com/software/flash/about/

http://atlasti.com/)

http://atlasti.com/free-trial-version/)

http://www.techrepublic.com/blog/10-things/10-tips-for-smarter-more-efficient-internet-searching/

https://www.java.com/en/

https://www.sitepoint.com/10-tips-for-conducting-a-more-effective-google-search/

https://www.utm.edu/staff/jimnance/webaccess/tips_to_effective_internet_searc.htm

https://www.lifewire.com/web-search-tricks-to-know-4046148

https://products.office.com/en-us/excel?legRedir=true&CorrelationId=6dad3896-ba69-4828-80fc-95557eb6d0b1

https://us.sagepub.com/en-us/nam/author/lyn-richards

http://www.qsrinternational.com/

https://www.ibm.com/us-en/marketplace/spss-statistics

https://www.ibm.com/analytics/us/en/technology/spss/spss-trials.html

https://www.r-project.org/about.html

https://www.stata.com/

https://www.webpagefx.com/blog /internet/11-free-online-survey-tools-compared/

https://www.clickz.com/10-research-tools-for-social-media-strategies/52694/

10

The Art, Science and Politics of Publishing

Chris Shisanya and Ishmael Munene

Introduction

Academic professionals do research to get published and to get cited. There are, of course, other more elevated motives involved in the everyday practice, but generally speaking 'a successful academic' is 'a publishing academic'. Especially now that the budgeting for scholarly research appears to be getting tighter, the 'publish or perish' principle is as true as ever. Promotions, hiring and firing in academia are, to a large degree, related to the citation record of scholars. Yet, not any publication will do. In order to get cited, it is important to get your work published in the right (hard-copy) journals. Being in the right journal is a necessity but not a sufficient condition for getting the right attention. Being noted is a necessary condition for being persuasive, gaining a reputation, receiving tenure, getting funded, and so on. Noting the works of colleagues is a necessary part of partaking in the game of science. Anyone who partakes in this process of seeking attention and paying attention to other authors who are seeking it faces the two harsh facts of scientific publication. The first fact is the inflation in number of publications that calls for our attention. The second harsh fact is the skewed distribution of attention over all those publications.

This chapter introduces the reader to the art, science and politics of publishing in the world of academia. We begin by attempting to answer the following key questions: Why submit? Why publish? Why review? We then proceed by

providing an overview of the status of Social Science and Humanities publishing in Africa today before taking the reader through the cardinal steps in the art and science of publishing. The flipside of academic publishing is provided by considering its pitfalls. Finally, the chapter concludes by examining Africa's place in scholarly publishing within the framework of its mechanics and how to avoid the dangerous paths.

Why Submit? Why Publish? Why Review?

It goes without saying that most academics get excited at the prospect of seeing their names on the covers of beautiful, glossy books, perhaps on the listing of Amazon, and may be even their own spaces on the shelves in prestigious libraries. However, we need not be quite so ambitious at the start of our publishing careers; perhaps, we should learn to walk before we embark on the marathon involved in producing a complete book? Or, perhaps we should begin by submitting an academic paper for publication in a journal serving our specific discipline?

But where does a novice academician start? Each discipline has its own list of highly regarded journals, that are ranked according to their 'impact factor', and whilst each of us may aspire to appear in the most prestigious publications in the list as early as possible in our academic careers, it is a good idea to gain valuable experience closer to home. For instance, PhD students in many departments within universities produce peer-reviewed journal papers submitted to fellow student editors in their disciplines for publication consideration. Publishing at this level will provide you with useful feedback from experts in your field.

Apart from the personal pleasure of sharing and writing about your work, one of the first and most obvious advantages of publishing a paper is the additional line it provides on your curriculum vitae (henceforth, CV) – a very important line! In fact, the more of these lines there are on your CV, the more attractive it will appear to prospective employers, particularly if those employers are academic institutions that keep a careful eye on their rankings in the Research Excellence Framework (henceforth, REF). The REF is a matter of utmost importance to all research departments in universities throughout the world. The publication contributions of academic staff nominated by each department of each university are evaluated in order to provide each discipline with a ranking. Prospective academic employers planning to hire a newly-graduated academic will cast a critical eye over the applicant's list of current and pending publications with a view to imagining how this individual will be able to help them climb a few rungs on the REF ladder.

However, you may feel that you have enough work to do with your current studies, without worrying about writing research papers and journal articles. But you can make it easy on yourself. For instance, you can rework material from an earlier assignment or from part of an undergraduate or Master's dissertation/thesis. If you plan to have an academic career, it is a very important learning process to receive explicit (and anonymous) reviews of your own work and then revise your initial paper according to these comments. Although at the outset you might face the task with a big sigh and much grumbling, after you have finished, you will realize that your paper really has been improved and, additionally, that you have learned something new in the process!

Another reason for publishing in academia is the need to get your name out in the field and build your academic reputation. You may have found a cure for the common cold or discovered that the earth is flat, so get out there and tell everyone! The dissemination of new academic work typically happens at national and international conferences. The proceedings resulting from these conferences are often considered to be valuable publishing opportunities. One of the main advantages is that you can present at a conference venue, get feedback on your research, write a paper based on your presentation and the feedback received, submit the paper, receive the reviews, revise the paper, re-submit the revised paper, celebrate the paper's acceptance, and see the paper in print, all within the space of a few months.

As an aside, another good thing about attending conferences is the networking you can do while you are there. Getting to know other researchers in your field is not only an interesting social activity but it can ultimately lead to further publications, perhaps as a second author, or possibly as part of a group, where your data may contribute to a larger project.

But perhaps you feel that you are not 'good enough' to publish academically. Maybe you believe that if you write a paper, it would be rejected. First, an important point to note here is that even the most established academics receive rejections, so it is not the end of the world if you, as a novice in the field, also receive one. Second, you can still learn from the comments you have received from the reviewers, who are generally not paid for reviewing your paper and certainly do not reject it just for the sake of it. Their comments are not intended to be a personal criticism of you but should be seen as constructive criticism of the paper you have submitted. Becoming a reviewer yourself can be one method of improving your own academic writing and also extending the knowledge of your field. If there is something wrong with the paper, you need to say what it is and how you believe the problem could be remedied.

Brief Overview of the Status of Social Science and Humanities Publishing in Africa Today

This section focuses on the context of publishing in the social sciences and humanities in Africa today. Of critical importance are the main trends and issues that feature in publications, open access publishing opportunities, and the implications, as well as the 'publish or perish' culture in universities. We sum up the section by looking at the publishing challenges and opportunities in Africa in order to segue into the next section on the mechanics of publishing articles and books.

Publishing Trends and Issues

Ebrima Sall provides an excellent overview of key issues that depict the scholarship trends in the social sciences and humanities in Africa. The issues captured are as follows (Sall 2015):

a. The institutional base for knowledge production in Africa and how it has been evolving, with different generations of institutions and the diversification of institutional types and modes (from what were in the early sixties just a few 'traditional' universities that were almost all public universities, and almost all contact universities – the main exception being UNISA), to the many hundreds – that are now thousands – of public and private higher education institutions (HEIs) of all shapes and kinds, many of which are engaged in mixed modes of delivery, and have not only contact students, but also distance learners, particularly with the revolution in ICTs, and the formidable advancement of internationalisation: virtual universities, off-shore campuses; public and private institutes, centres and laboratories. Today, the complexity of the institutional landscape has become much greater than anybody could imagine. What Zeleza called the "four Cs" – commercialisation, corporatisation, etc has reached enormous levels (Zeleza 2004). Many of these changes are global, but with a particular implication for scholarship in Africa that we need to fully understand.

b. The second set of issues has to do with the social science disciplines: those considered to be the core disciplines of the social sciences and humanities (sociology, political science, anthropology, history, economics, etc), as well as the multidisciplinary fields of study, cultural studies, human rights studies, conflict and peace studies, gender studies, development studies, among others.

c. The third set of issues relates to the scholars themselves, particularly those in the human and social sciences. In a paper published in CODESRIA Bulletin in 1995, Thandika Mkandawire, a former executive secretary of CODESRIA, identified "Three Generations of African Scholars" (Mkandawire 1995; 1997). From the generations that studies or did their research under conditions of colonialism, or the cold war, or apartheid, to the generations of the age of the internet and of neoliberal globalisation, there are great differences: the historical experiences are different; the worldviews are different; the issues facing the societies in which they live are evolving and are different; the ways data collection and research, teaching, publishing, even conferencing are done have all changed.

d. The fourth and last set of issues are research themes that we have been taking up, and the debates in the social sciences and humanities that we have been having in Africa. Here are a few examples: (i) Decolonizing the social sciences and humanities. The transformation of the colonial library is just a first step towards the transformation of the larger "imperial library", and the transformation of the global epistemological order (Zeleza 2004). (ii) The challenge of autonomy has and still is a major challenge for the social sciences and humanities in Africa; the independence of the mind is a precondition for the independence of the nation and the continent. (iii) Our own identity and our own history - the debates about ethnicity and nationhood, and those on 'Africanicity' involving Mafeje and others, and those about "African modes of self-writing" (Mbemba), are good illustrations. so are the debates on ethnic and national identities, and the attempts to re-write our histories (as part of decolonisation of our past. The need to re-write history was also felt after the Rwanda genocide and after apartheid).

Other themes and issues explored include but are not limited to the emancipation and independence of Africa, and liberation from apartheid; the transformation and development of African economies and societies; crises and structural adjustment; politics and governance in Africa, and the challenges of building inclusive, democratic and developmental states and governance systems on our continent; regional integration; environmental change; the health challenges—maternal and infant mortality, HIV/AIDS, malaria, Ebola; basic education and higher education; youth and youth cultures; gender; globalization, among others. The following points can be drawn from the foregoing:

a. The factors that have a role in determining the state of the Social Sciences and Humanities in Africa are many and varied.

b. The criteria for assessing the Social Sciences and Humanities to determine whether they are "healthy" are not different; one can use the bibliometric data, or the citation indexes, most of which are developed in the North, to count the number of articles in what are considered to be the only "international peer reviewed/refereed journals" (a category from which journals produced by scholars in Africa are often excluded); and come to the obvious conclusion that in global terms, Africa hosts very few international journals, produces very little, all disciplines combines; and among the disciplines, the Social Science and Humanities produce even less; African universities are not ranked very highly; whether it is in the Shanghai rankings or in other global rankings.

c. More important, the exercise itself: i.e. determining the state of the Social Sciences and Humanities, whether in Africa or elsewhere, is not a neutral or value free exercise. For instance, African scholars have demonstrated through research that structural adjustment programs (henceforth, SAPs) was very problematic and was unlikely to lead to the desired positive transformation of African economies, societies or politics, and came up with serious criticisms of the SAPs imposed by the Bretton Woods institutions (World Bank and International Monetary Fund) in the world 20 years before former officials of the Bank came round admitting that there were problems with SAPs.

The Open Access Publishing Opportunity

Open access (henceforth, OA) publishing has been defined in several ways, but it is generally known to involve the free availability of the findings of research mainly in the form of scholarly articles. Access is usually in an electronic form via the Internet. For authors, OA can be achieved in two primary methods: (1) publishing articles in open access journals (OAJ) and (2) depositing copies of articles in open access archives (OAA) or repositories often referred to as self-archiving. These two parallel but complementary paths for achieving OA are sometimes referred to as the 'Gold Road' (i.e., publish in an OAJ) and 'Green Road' to open access (i.e. published in a non OAJ but deposited in an OAA) (Harnad et al. 2004).

The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003) defines open access (OA) as a new mode of scholarly communication, through which the author(s) and right holder(s) of scholarly work grant(s) to all users a free, irrevocable, worldwide right of access to, and a license to copy, use, distribute, transmit, and display the work publicly and to

make and distribute derivative works in any digital medium for any responsible purpose, subject to proper attribution of authorship. According to this definition, a complete version of the work and all supplemental materials, including a copy of the permission to use, should be deposited in at least one online repository using the suitable technical standards to enable open access, unrestricted distribution, and long-term archiving of such works.

The new form of scholarly communication is achieved through two main channels: (1) open access journals (OAJ) for electronic refereed journals and (2) self-archiving (Chan & Costa 2005:149). On the other hand, both the Bethesda Statement on Open Access Publishing (2003) and the Berlin Declaration on Open Access to Knowledge in the Science and Humanities (2003) agree that for a work to be OA, the copyright holder must consent in advance to let users 'copy, use, distribute, transmit and display the work publicly and to make and distribute derivative work in any digital medium for any responsible purpose, subject to proper attribution of authorship'. OA is of vital importance to developing countries, which often do not have the capital necessary to access scholarly literature. Although schemes like JSTOR, OARE (Online Access to Research in the Environment), EBSCOhost, and HINARI (Health InterNetwork Access to Research Initiative) sponsored by the World Health Organization (WHO) do give access to scholarly literature at little or no cost, they, however, have restrictions because individual researchers may not register as users unless their institutions have access (Okoye and Ejikeme 2011).

Open Access Journals

Open access journals, also referred to as 'Gold Road' to open access, are peer-reviewed journals that are free of charge to the public through the Internet. Unlike the business publishing model, in open access publishing, the end user is not charged to access journal articles. Instead, various funding strategies such as direct author fees, institutional membership to sponsor all or part of author fees, funding agency payment of author fees, grants to open access publishers, and institutional subsidies are used to cover the costs for publication. It is also possible to access OAJ articles indirectly by using search engines such Google or Google Scholar. Several studies have been conducted on OAJ, which highlight the benefits as follows: (a) free access to information, (b) increased research impart (measured by citations/downloads) of OA articles versus non-open articles (Antelman 2004), and (c) a possible solution to the so-called 'serial crisis' or 'journal affordability problem'. Okoye and Ejikeme (2010) identified the benefits of using OAJ to

include the following: (a) it provides increased citation to published scholarly work, (b) publications are made free for authors, (c) it increases the impact of researchers' work, (d) articles can be accessed online free of charge, (e) it provides free online access to the literature necessary for one's research, (f) it helps in career development, and (g) it provides high quality scholarly work.

Self-archiving

Self-archiving, also referred to as 'Green Road; to OA, is making articles freely available in digital form on the Internet by authors (Budapest Open Access Initiative 2002). There are three most common ways of self-archiving on the Internet: (1) authors' personal websites, (2) disciplinary (research-specific) repositories, and (3) institutional repositories.

The Registry of Open Access Repositories (ROAR) and the Directory of Open Access Repositories (DOAR) provide a list of OA compliant archives from disciplinary and institutional archives worldwide. As the case with OAJ, articles from ROAR or DOAR may be accessed through direct search of respective repositories/directories or indirectly using other search engines. Harnard et al. (2004) noted that there were many advocates of OA who believe that scholars should continue to publish their articles in traditional subscription-based journals but at the same time, should upload OA copies of their paper to subject-based or institutional E-print repositories. This alternative mode of OA is often referred to as green route as opposed to the gold route of the journals themselves being OA.

Opportunities with Open Access Publishing

OA has presented many opportunities to many stakeholders. Suber (2004) eloquently spelled out opportunities presented by OA to various groups of people as follows:

- *Authors*: OA gives them a worldwide audience, larger than that of any subscription-based journal, no matter how prestigious or popular, and probably increases the visibility and impact of their work.
- *Readers*: OA gives them barrier-free access to the literature they need for their research, unconstrained by the budgets of the libraries where they may have access privileges. It increases their convenience, reach, and retrieval power.
- *Libraries*: OA solves the pricing crisis for scholarly journals. It also solves the permission crisis. OA serves libraries' interests in indirect ways, too.

> Librarians want to help users find the information they need, regardless of the budget-enforced limits on the library's own collection. Librarians want to help faculty increase their audience and impact and thereby help the university raise its research profile.

- *Universities*: OA increases the visibility of their faculty and institution, reduces their expenses for journals, and advances their mission to share knowledge.

- *Journals and publishers*: OA makes their articles more visible, discoverable, retrievable, and useful. If a journal is OA, then it can use this superior visibility to attract submissions and advertising, not to mention readers and citations.

- *Funding agencies*: OA increases the return on their investment in research, making the results of the funded research more widely available, more discoverable, more retrievable, and more useful. OA serves public funding agencies by providing public access to the results of publicly-funded research.

- *Governments*: As funders of research, governments benefit from OA in every way that funding agencies do. OA also promotes democracy by sharing government information as rapidly and widely as possible.

- *Citizens*: OA gives them access to peer-reviewed research (most of which is unavailable in public libraries) and gives them access to the research, for which they have already paid through their taxes. It also helps them indirectly by helping the researchers, physicians, manufacturers, technologists, and others who make use of cutting-edge research for their benefit.

A growing number of studies have confirmed that an OA article is more likely to be used and cited than one behind subscription barriers. There is enough evidence that OA documents are most likely to be cited than non-OA documents. This gives OA authors an advantage over other authors, who are skeptical about OA. Scholars are paid by research funders and/or their universities to do research; the published article is the report of the work they have done, rather than an item for commercial gain. The more the article is used, cited, applied and built upon, the better for research as well as for the researcher's career (Suber 2004).

According to Cetto (2001), OA goes beyond the academic circle and spreads its wings to other areas. An OA article can be read by anyone, including professionals, researchers in different fields, media practitioners, politicians, civil servants, etc. OA articles can often be found with a web search, using any general search engine or those specialized for the scholarly/scientific literature. He stated that librarians believe that OA promises to remove both the price barriers and the permission

barriers that undermine library efforts to provide access to journal articles. Most library associations have either signed major OA declarations or created their own. In most universities, the library houses the institutional repository, which provides free access to scholarly work of the university's faculty. Some OA advocates believe that institutional repositories will play a very important role in responding to OA mandates from funders (Cetto 2001).

Most African countries cannot afford books. Most of these books are available internationally but are quite expensive by African standards. This is where OA comes in. In Africa, researchers, students, and scholars in general get materials via OA. This way, they can obtain the latest, updated materials otherwise beyond their reach (Hamel 2005).

The 'Publish or Perish' Culture in Universities

In the daily lives of people working in academia, the maxim "publish or perish" can mean different things depending on where you are in your academic career. For graduate students, it means that if the research you are working on is not 'publishable', you may have a hard time finding a job. For new faculty, 'perish' means not making progress on the track to tenure. For established researchers, you are assumed to be only as good as your last project, so if the results do not get published in a prestigious journal, 'perish' could refer to a loss of research funding or your position with the university.

Universities and academic journals are now equally involved in this pervasive culture of publish or perish. Facing budgetary pressures, institutions must depend on prestige to attract research funding, and one of the best ways to do that is to be highly visible in prestigious journals. For journals, the increase in submissions from academic researchers under pressure to get published raises their operating costs to process them all. In addition, with so many new journals being published every year, the pressure to maintain prominence via Impact Scores and other measures of perceived rank, generates increased pressure to publish groundbreaking research that will garner media attention and larger numbers of citations.

It is easy to dismiss publish or perish as an old maxim that academics use to complain about their terrible working conditions, but research has shown that the longer this culture of pressure persists, the greater the risk to academic integrity. As the players in this publishing game start to suffer, and the cracks begin to appear, we can see real consequences:

    a. *Salami Slicing* – researchers start slicing up their project results in order to generate multiple articles rather than just one large paper.

b. *Multiplication of authorship* – researchers start to join each other's studies as co-authors, contributors, or even guest authors as a way to boost their publication credits.

c. *Publication Bias* – in order to maximize citations, journals choose to only publish research with positive results (But it is important to publish negative results), which in turn limits the number of replication studies to verify those positive results.

d. *Citation Obsession* – journals focus on citations to manipulate their Impact Factor scores, and institutions use citations as a metric for performance reviews and tenure appointments.

e. *Research Integrity is compromised* – peer reviews get manipulated, results are massaged or outright faked, and conflicts of interest are conveniently ignored.

The culture of "publish or perish" is clearly pervasive and appears to be here to stay. Calls for instant distribution and transparency of both authorship and peer review may help to address problems with research quality, but as long as researchers are threatened by the publication venue of their research, the system will remain fundamentally broken.

Publishing Challenges and Opportunities in Africa

There is a preponderance to generally lump scholarly and academic publishing together as though the two are the same. Nonetheless it needs to be categorically stated that scholarly and academic publishing are not one and the same thing. It is therefore prudent to start by examining exactly what is scholarly publishing. The following constitutes scholarly publishing/outputs: (a) peer-reviewed journal articles, (b) peer-reviewed monographs, (c) peer-reviewed conference proceedings, and (d) peer-reviewed research-based books.

Academic publishing mostly comprises the publishing of non-research-based university textbooks meant for teaching. What then distinguishes scholarly books from other types of books? Scholarly books can be defined as follows, according to Ngoben (2012)i: (a) an extensive and scholarly treatment of a topic by one or more scholars, largely comprising significant and original research, embedded in relevant literature; (b) an extensive scholarly exposition by one or more scholars of the available literature on a topic, from a position of demonstrable authority, which makes a significant conceptual or empirical synthesis that advances scholarship; (c) a collected book, assembled by one or more scholars in a field or group of related fields, which as a planned group of individually peer-reviewed

chapters by appropriately qualified authors generates a new conceptual synthesis that advances scholarship; and (d) a collective work assembled by one or more scholars in a number of related fields, in which the individual authors have noted and reviewed each other's chapters and adapted their contributions to generate a new conceptual synthesis that significantly advances scholarship.

The university libraries have been the principal market for the products of university presses. They continue to be the cornerstone of scholarly publishing as the university libraries have been the largest buyers of scholarly books from university presses. Scholars write books, university presses publish them, university libraries buy them, and other scholars read them to produce new knowledge/research. However, since university libraries have been experiencing budget cuts, scholarly publishing has suffered as a result as libraries have now cut down on their purchase of scholarly books in favour of subscribing to journals and other serials. The university press is thus losing its biggest customer. Many university presses are struggling financially due to the following aspects identified by Ngobeni (2012): (a) low university library budgets, (b) a generally under-developed market, (c) generally impoverished university staff, (d) a weakly developed reading culture, (e) short print-runs which are not economically viable, (f) lack of distribution hubs such as bookshops, and (g) lack of intra-Africa book trade.

Across the African continent, bookshops do not stock up on scholarly books but mostly prescribed educational and university textbooks. African university presses also face other challenges such as overcoming the burden of economic problems, political instability and unemployment to name a few. It is our contention therefore that the move towards commercializing university presses, which are the cradle of scholarly expression, pose a serious threat to the growth of scholarly publishing in Africa.

Scholarly publishing on the African continent has also suffered from lack of government funding and oppressive political environments, which have resulted in the sad fact that most of Africa's scholars have migrated and are making their living in countries other than their own across Africa and outside the continent. Their outputs are then claimed as products of their adopted countries. Futhermore, most African universities are impoverished, and so are the lecturers (this is one of a plethora of the push factors) and most universities in the United States, Europe and the Diaspora have superior facilities (this is one of a plethora of pull factors). This has resulted in what we know today as the brain drain.

To all intents and purposes, research institutes and science councils have been in the forefront of scholarly publishing. The Council for the Development of Social Science Research in Africa (henceforth, CODESRIA) in Dakar, Senegal

and the Human Sciences Research Council Press (HSRC Press) in Cape Town, South Africa are cases in point. The latter can do so because it is subsidized by the state and therefore does not publish for gain but uses what we call a 'cost recovery model' and makes its books available for free on-line. Other science councils such as the Africa Institute of South Africa (AISA), and research institutes such as the Centre for Conflict Resolution (CCR) and the Institute for Global Dialogue (IGD) have immensely contributed to the literature, in large part because they are donor- and government-funded and can operate on a 'cost-recovery model' free of the vagaries of commercial enterprise.

The scholarly publishing sector in Africa remains small and therefore in a very precarious situation. Given the precarious nature in which scholarly publishers find themselves, their role has been usurped by academic and educational publishers, in some instances. Elsewhere on the continent, the CODESRIA from West Africa and the Organisation for Social Science Research in Eastern and Southern Africa (OSSREA) in scholarly publishing cannot be over-emphasized. The two have published many important monographs and books which would otherwise not have been published by commercial publishers.

The Art and Science of Publishing

Publications are the principal means used by academics to communicate and disseminate research findings. Without publications, research findings remain out of the realm of public knowledge and, therefore, unusable for policy and practice. Research that is not communicated or disseminated also fails to aid in theory building and development. Publishing in academia encompasses several scholarly artifacts. We are all familiar with books, book chapters, encyclopedia entries, journals, technical reports, and conference papers. When university academics or those working in policy research institutes author these artifacts, they are communicating their findings or perspectives to specific audiences within their fields of expertise. These writings are regarded as a marker of recognition by peers, which allow them to count for promotions or upward mobility in their careers. In most research-oriented universities and research institutes, it is the most published who have been able to scale up the professional ranks.

In this section on publishing, we devote our attention to two scholarly artifacts: (1) journal articles and (2) books. The reason for doing so is the centrality of these two products to the beginning of the careers of many doctoral degree graduates. The journal article and academic book (monograph) provide the best avenues for the recent doctoral graduates to disseminate their research findings to a

specific academic community. Of course, many will have presented aspects of their research in academic conferences and seminars, but formal publication of the research will most likely occur through journal articles and books. Though our focus on academic publishing is on journal articles and books, we are cognizant of other equally important academic authorship outlets.

Writing the Journal Article

As a successful doctoral degree graduate, now that you have conducted a research study, written the report, successfully defended the thesis or dissertation, it is time to communicate with the rest of the academic community. It is time to write. The time is nigh to get published. The most likely route for many upcoming scholars in the making will be writing an article for a journal, a peer-reviewed journal at best. Needless to say, there will be those who will publish articles that are not necessarily based on their doctoral research or other empirical studies but rather based on critical reflection of pertinent issues and review of secondary sources. Either way, the strategies for writing articles remain the same. In this section, our primary focus is on articles emanating from empirical research such as that undertaken in doctoral research.

For those in universities, there are other reasons why publishing in a journal makes the most sense. The regularity with which journals are published (sometimes up to four times a year) means there is an outlet available at a definite time to communicate the work. This provides a partial recourse to administrators' pressure for academics to publish. Furthermore, under conditions of severe fiscal constraints that many universities are going through, travel funds for conferences and seminars have become scarce. Thus, the best means to communicate research findings, keep abreast with developments in the field and exchange ideas is through journal articles. Additionally, journals, owing to their regularity, offer the most viable platform to advance the discipline in terms of new ideas, innovations, theory development and advancement as well as challenge the prevailing orthodoxy (Ngobeni 2012). Reading and publishing in journals is one of the best ways to make connections within the disciplinary field.

In order to publish an article in a journal, one must be cognizant of three important aspects: (1) target audience, (2) journal selection, and (3) strategies of writing the article. We shall look at these issues based on our experience in writing journal articles and serving as article reviewers for disciplinary and area studies journals. We shall also incorporate ideas derived from our own research on this subject.

Determine Target Audience

The target audience comprises the intended readers of your work. You can easily determine the target audience of a journal by looking at the aims and scope section located in the 'About' tab on the journal's website. If you are writing on a theoretical and conceptual topic in political science, sociological analysis, educational technology, or social psychology, then your audience will most likely be university or research academics in these fields. However, if you are writing an article on technology application in the teaching of high school history, then your target audience will most likely be high school teachers. Based on your target audience, you will then be able to identify the appropriate journal that will consider your work for publication. Knowing your target audience is key to selecting a journal outlet for your research.

Select Target Journal

Having determined the target audience, the next immediate step is to identify the suitable journal to publish the work. Selecting the journal early is crucial since it has implications on the format to be used in the writing as well as the content. Broadly speaking, we can identify two major content-related categories of journals in the social sciences:

1. *Disciplinary-focused journals*: these are journals that are specific to a discipline; for instance, political science, sociology, development studies, history, etc. These types of journals only publish articles in their particular disciplines of orientations. CODESRIA has such discipline-specific journals such as *Africa Development, African Journal of International Affairs, African Sociological Review, Journal of Higher Education in Africa,* and *The African Anthropologist.*

2. *Area/Regional Journals*: unlike the disciplinary-focused journals, these journals will accept articles from a variety of social sciences and humanities fields so long as they focus on a certain region or area. Some of the well-known journals that focus on Africa include *African Affairs, African Studies Review, African and Asian Studies,* and *Journal of Global South Studies* (formerly *Journal of Third World Studies*). These journals will publish any social science and humanities articles that focus on their particular areas/regions. In other words, they will accept articles from a variety of disciplinary perspectives.

Besides these two major content-oriented categories, there are also the following three types of journal publishing models of which to be aware:

1. *Open-access model*: these journals are available freely on the Internet, thereby guaranteeing a wide circulation. However, to publish in these journals, authors may be asked to pay a publication fee. Some are owned by large commercial publishers like Routledge, Sage, and Elsevier, others by professional organizations or by private companies.

2. *Subscription-based access model*: articles in these journals are housed behind a pay wall. You will need a subscription or payment to access the articles which means circulation is limited. However, publishing in these journals is generally free of charge.

3. *Hybrid model*: these journals are a mix of the preceding two; they require no publication fee and are open-access. All CODESRIA journals follow this publication model as are many housed in universities.

It is important to mention that the bulk of journals published today are based in the West. Indeed, the United States of America dominates the world in terms of journal series and article publications in the English language (Altbach 2007, 2016; Chew, 2013). This type of dominance translates into a construction of Africa that is Eurocentric and largely colonial, if not neo-colonial. It is a construction that portrays the African continent as underdeveloped, 'tribal', and the theatre of violence and war. It is a paradigm that depicts the people as primitive and in a primodal form of existence (Arowosegbe 2014). If you seek to publish on Africa challenging this Eurocentric view of the continent, your work will most likely be rejected. Furthermore, advancing African-oriented epistemology such as Ubuntogogy as an African educational paradigm superior than pedagogy, andragogy, ergonagy and heutogogy (Bangura 2005 & 2015) will not be welcomed in educational journals that give preeminance to Western educational thought. It is advisable to glean through the aims and scope section of journals, the names of editorial board members, as well as sample some of the airiticles published to discern the orientation of the journal particularly in regard to African issues. This process should also shed light on the methodological approach advanced by the journal.

Emerging scholars should also be aware of Journal Acceptance Rate (henceforth, JAR), which is the percentage of journal articles submitted to a particular journal that are accepted for publication. Some journals are extremely competitive, mostly older and well known, with an acceptance rate of only 5% and a rejection rate of 95%. Newer journals tend to have higher acceptance rates, sometimes accepting up

to 90% of the articles submitted for consideration. For novice scholars submitting work to highly competitive journals which only publish known names can lead to frustration after rejection. On the other hand, seeking to publish in a low-quality journal that accepts any submission may not translate into the challenge needed to grow one's academic career. It is advisable for new doctoral level graduates to initially consider mid-tier, credible and peer-reviewed journals for publication before venturing into the highly competitive periodicals.

A good resource for information on JAR is the Cabell's directory of publishing opportunities, owned by Cabell International, which collects and publishes information about academic journals. Not only does it house information on acceptance rate, it also stores information on subject areas emphasized by each journal, the nature of the review process, time between submission and review notification, and the procedures for revision, if any. Cabell International also provides information about the impact factor of various journals. Overall, the aim of Cabell is to connect scholars, publishers, and libraries to the journals they need[1].

Strategies of Writing a Journal Article

Regardless of the journal selected for submission of an article, the strategies of accomplishing this task are the same. For any journal article, strive for *accuracy* and *clarity*. Clarity is achieved through good organization and a standardized format. Accuracy is attained by writing simply and directly; a journal article explicates an intricate problem that warrants a solution (Bem, 1987). A good article answers the following questions: (a) What is the problem or issue being investigated? (b) Why is the issue of significance or concern? (c) How was the study of the problem or issue undertaken? (d) What are the results? (e) What are the implications of the results? (f) Arising from the findings, what do you recommend for further study?

Many authors have suggested the order in which the writing of a good journal article should proceed. Belt, Mottonen,and Harkonen (2011) have suggested a sequential order that has the following steps: initial outlining of introduction; initial outlining of theory; writing the research elements (results & analysis); research process; finalizing theory; introduction; conclusions; abstract; title; and revision. While the order of writing is important, it bears noting that the order does also correspond to the typical sections that are found in many empirical journal articles in social and behavioral sciences. The sections are as follows: (a) Title, (b) Abstract, (c) Introduction, (d) Theory/Literature Review, (e) Research Method/Process, (f) Results (sometimes divided into results and analysis), and (g)

Conclusions. A good strategy for writing a journal article that neatly corresponds to the above sections is the Introduction, Methods, Results and Discussions (henceforth, IMRaD), as seen in Figure 10.1.
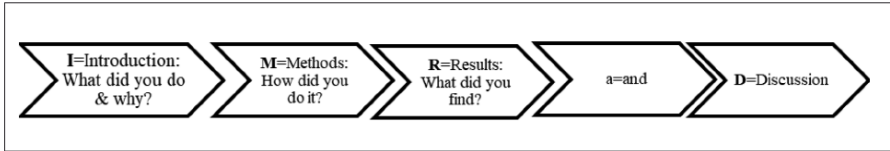

Figure 10.1: The IMRaD Pattern
Source: Self-generated by the Authors

The IMRaD organizational pattern provides the best approach to writing an article because it ensures that all critical elements are covered and addressed sufficiently. An excellent summary table of the key attributes of IMRaD from the abstract to the conclusion can be seen in Cappellen (n.d.). We will briefly review each section including other ancillary sections here.

Title: although not part of the IMRaD, a title provides the first window of what the topic covered is. A good title also ensures visibility of the article especially on the Internet where journal editors want their articles to sell. The title should be succinct, to the point, and unencumbered by unnecessary clutter. A long title throws the reader off as it fails to reveal the true content of the article. Equally, avoid abbreviations in the title. A good title should be between eight and 15 words (Kotze 2007). Citing Grobler, Kotze (2007) suggests the following structure of a title: Main theme or research topic: Research design + population + geographical area. Consider the following illustrations of a good and bad title: *Bad* – 'A Study of Psychological Capital, Psychological Empowerment and Organizational Citizenship Behavior as Management Tools for Healthcare Workers: An Investigation of Nurses in Public Hospitals in Eastern Cape of the Republic of South Africa'. *Good* – Psychological Capital, Psychological Empowerment and Organizational Citizenship Behavior among Nurses in Public Hospitals, Eastern Cape, South Africa'.

Abstract: the abstract is a microcosm of the entire study. With a word length of 200-250, it is the first point of contact between readers and the entire article. A decision whether to read the entire article or not is usually made after reading the abstract. A good abstract should answer the following five questions according to Belt, Mottonen and Harkonen (2011): (1) What is the large thematic area your article corresponds to? (2) What is the purpose of the article? (3) What methodology was used in the study? (4) What are the key findings? (5) What are the implications of the study (and how can these findings be beneficial to policy-makers and practitioners)?

It is advisable to write the abstract after the article has been written. The abstract should be a single paragraph. The abstract is usually followed by four to five keywords depending on the journal. These keywords help capture the main focus of the article and aid library databases to create accurate search results.

Introduction: the task of this section is to introduce the reader to the background and nature of the issue under investigation. It justifies the importance of the study and connects the work to previous research. A funnel structure of introduction is recommended where the author proceeds from general issues to the more specific aspects of the study. Bem (2003) recommended that authors move from a broad opening in which aspects related to the study are highlighted and sentence-by-sentence, paragraph-by-paragraph, the text proceeds onto narrower details. It is only when the author is concluding the introduction that the purpose of the study is presented which provides an excellent transition to the methods section that follows immediately.

This funnel structure allows the reader to place the article in the context of other studies related to the field. The non-specific nature of the opening sentences also allows for non-specialists to appreciate the focus of the study. The following are examples of a bad and a good opening statements of an introduction: *Bad* – Recently, the structural effects of marketization and internationalization of higher education have become evident in the number of scholarly studies examining the nexus between the academy and capitalism in the neoliberal era. *Good* – Of the many changes that have come to characterize the university in the 21st century, none is, perhaps, more transformative than the linking of the university to the marketplace. This shift in the mode of financing higher education has generate ripple effects that has shaped not only the missions of the universities but also how they conducted teaching, research and community service.

A good introduction should be between 500-1,000 words. The key to a good introduction is the evidence of the following attributes: (a) first, identify the broad theme of the study; (b) next, state the significance of the study; (c) review and summarize the pertinent literature; a thematic or chronological approach will suffice; (d) highlight gaps, inconsistencies and / or controversies evident in extant literature; (e) indicate the purpose of the study/key research questions to be addressed; and (f) outline of the structure of the rest of the article (Source?).

A literature review is crucial to linking a study to an existing body of works. However, the work still needs to be anchored in a storyline. This is the work of the theoretical framework of the study. A theory is an explanatory statement that helps to make logical links between the observations of phenomena observed

during the study. Put differently, it guides the research study and permits the researcher to organize his/her ideas. It is also important to revisit the theoretical framework during the discussion part of the article.

Methods: otherwise known as research methodology, this section should be between 500-1000 words in length. It includes details of the steps the researcher took in conducting the research. At the beginning of the section, the researcher will describe the research design adopted for the study and a justification for its use. We cannot stress enough the importance of being very detailed and specific in describing the steps used in conducting the study; it is this description that will enable the journal editor and reviewers to assess the scientific basis of the research and the justification of the results. The methods section should consist of the following subsections, all explained in detail: (a) research design and justification; (b) sampling procedure and sample size; (c) target population, research context and unit of analysis; (d) sampling strategy (procedure); (e) respondents' profile; (f) data collection methods; (g) data gathering instruments; (h) validity and reliability (quantitative); credibility & trustworthiness (qualitative); (i) data analysis technique(s); and (j) positionality and reflexivity, if necessary, for qualitative designs.

Some authors such as Bem (1987) recommend concluding the methods section with a brief summary of procedure and its overall purpose in the context of the study. Given the limitation of space for most journals, it is not a recommendation we would encourage.

Results: this section presents the findings of the study in a write-up that should be between 1,000 to 1,500 words in length. The key to a good results section is to present the findings as concisely as possible without omitting details that would invalidate the conclusions delineated. Generally, it is important to report the central findings first before proceeding to report the more peripheral ones. This ensures there is a logical flow of the results as the idea of the article is built around the key findings of the study. This is akin to the funnel principle whereby the article proceeds from the general to the more specific issues.

The key findings will usually be highlighted visually using tables, graphs, diagrams, etc. Using these visual illustrations for major findings ensures that anyone who skims through the article will focus on the key results and get a feel of your findings. In addition, they are a much more efficient way of presenting your findings. Tables and figures should only be used for detailed findings and avoid repeating the information in the tables and figures in the narrative. At best, consider having 3-5 tables and 1-2 figures in the entire article. Illustrative examples of results sections can be seen in Bem (1987) and Kotze(2007) in addition to many published articles in the social sciences and humanities disciplines.

Discussion: this is the final major section that the article reader will see and should be anywhere between 1,000 to 1,500 words in length. Being the last section, it may actually be the most important part of the article. It means stating explicitly what the results of the study mean. Many good manuscripts are rejected because the discussion section is weak, failing to tie up the findings with the extant literature and theoretical framework.

While the introduction section proceeds in a funnel-shaped fashion, the discussion section proceeds in an hourglass-shaped fashion. The author moves from specific issues related to the findings of the study to more general matters such as methodological strategies and to the broadest generalization of the findings. The characteristics of a good discussion include the following: (a) restates the main purpose of study; (b) makes only statement/declarations supported by the results; (c) avoids unspecific expressions such as 'highly significant', 'low correlation; instead, use quantitative expressions (0.5%; p<0.05); (d) avoids new concepts and ideas; these belong to the introduction; (e) speculations on possible interpretations of the results should be based on facts and need to be linked to these questions: What is the relationship between the results and the original research questions or objectives in the introduction? To what extent are the results consistent with what other researchers have established? Are there discrepancies and inconsistencies? If so, why could this be the case? What alternative explanation of the results might exist?

It is imperative to end with a strong conclusion (Bem 1987). Suggesting areas of further study is common but can also be boring if not well structured. Mahlomaholo, for instance, dramatically ends his article in the following manner:

> Archer's theory is not without limitations in developing the understanding we were looking for, but under the circumstances it was the most useful compared to others such as Anthony Giddens's structuration, Jacques Lacan's post-structuralism, and others… Seemingly, we cannot blame the situation or the context or history anymore, because we are capable of interpretation and acting according to our own understanding of the situation. We can still create history even if this is not under conditions of our own choosing (2015:242).

Conclusion: finally, write a brief conclusion. In some journals, the conclusion is part of the discussion (usually titled as 'discussion and conclusions'); in others, it is a separate section. If the conclusion is a separate section, relate the work to the introduction (research question or hypotheses), summarize the evidence supporting each conclusion and provide the implications, significance of the results, or any other practical applications. It is important, if you write a separate conclusion, to avoid repeating issues presented in the discussion section.

Reacting to Reviewers: based on the reviewer(s) comments, the journal editor may decide to: (a) accept the article as it is, (b) recommend minor revisions and resubmission, (c) recommend major revision and resubmission, or (d) reject the article. Where revisions are recommended, we see these as a positive indication that the work will be published if suggested corrections are affected. It is time to work and correct the work. The best strategy that has proved to be highly effective is to revise the work using a point-to-point format and resubmit the article accompanied by a separate response explaining, point-to-point, the changes made and the page number where these revisions can be seen. This strategy allows the editor to cross-check the revisions for a quick decision.

Writing the Scholarly Book: Turning your Thesis/Dissertation into a Book

In some cases, a very good doctoral research study can be turned into a scholarly book. However, an excellent scholarly dissertation/thesis does not easily translate into a manuscript that publishers would want to feature in their publication catalogue.

An excellent dissertation/thesis is, principally, good for the candidate and his/her committee of advisors and examiners. Its reach is very narrow and counts little for an academic career. It is what you do with the thesis/dissertation once it is completed that has enormous implications on your career and impact on the discipline. Only when you translate it into a valuable commodity in the academic labor market – journal articles, books, grants, etc. – does it begin to serve you. It serves you even better when you transform it into a book published by a major publisher. In a humorous description, Germano (2005) describes the radical shake up that a dissertation/thesis needs in order to be a book:

> When a dissertation crosses my desk, I usually want to grab it by its metaphorical lapels and give it a good shake. "You know something!" I would say if it could hear me. "Now tell it to us in language we can understand!" It isn't the dissertation I want to shake, of course, it's the dissertation's author. The "us" I want the author to speak to isn't just anyone, either, but the targeted readership that will benefit from a scholarly book. The recalcitrant garden-variety dissertation – lips sealed, secrets intact – will find a readership among two hundred library collections at best. Most won't make it even that far, but linger at the ready in electronic format waiting for some brave soul to call for a download or a photocopy (Germano 2005).

How do you ensure that your excellent dissertation/thesis is revised into a book that has wide readership and promotes your career in the academy? Norton (2004), a development editor, refers to the process as 'developmental editing', a 16-step

procedure. Developmental editing is an expensive affair that entails a publishing house hiring a development editor who works with the dissertation/thesis author to write the book. Not many publishers undertake these projects and the few that do so will be university presses such as the University of Chicago Press, the University of California Press, among others. The 16 steps are the following: (1) assessing the market goals, (2) shifting the focus, (3) creating a content summary, (4) distinguishing between theses and subject, (5) distinguishing between theses and theoretical framework, (6) choosing a main thesis, (7) creating a working title, (8) brainstorming the outlines, (9) choosing and fine-tuning the outline, (10) responding to scholarly reviews, (11) adding chapter theses, (12) weighting chapters equally, (13) creating transitions, (14) integrating narrative and theory, (15) drawing conclusions and placing them, and (16) cutting the length.

Revising a dissertation/thesis can be a lonely and scary proposition, like venturing into the turbulent sea without navigational equipment. You will be working without the safety net provided by the dissertation/thesis committee. We shall briefly review some of these steps as a means of providing a compass to navigate these tempestuous waters. Prior to that we briefly highlight the need for an inquiry letter to the publishing house as a way of introducing your dissertation/thesis and its potential.

Inquiry Letter

The best way to sell your publication idea is through the inquiry letter to the acquisition's editor of the publishing house with which you seek to work. The first paragraph of the letter should briefly introduce the work, its scope, and a proposed working title. Indicate that the book will arise from a recently concluded dissertation/thesis. The second paragraph of the letter should focus on the key themes/topics that the book will cover. A bullet listing of these themes/topics will suffice.

In the third paragraph, address briefly the market potential of the book. Who among the reading public will be interested in the dissertation/thesis that has been turned into a book? A brief statement on what current books in this field lack will provide the much-needed punch for the market potential of the work. Conclude the inquiry letter with a short description of your qualifications and suitability to write the book in this area. Once your project is accepted and a development editor assigned, the writing of the book can begin in earnest.

Assessing Market Goals

Assessing the market goals involves exploring all the categories of readers who would be interested in the work. If your work was on the technology diffusion in universities in Africa, for instance, the target group would include policy-makers at the ministries of education, university administrators, university directors of technology, scholars in the field of information technology (henceforth, IT), and trade and academic journals in the field of IT. Each of these will have an interest in the work from its own vantage point. It is important to ensure that the revised work will appeal to as many interested groups as possible.

In assessing the market needs, the author needs to segment the market groups from the specific to the general. The very specific innermost circle will be the academics in universities or research institutes. The middle circle will include policy-makers and practitioners, and practical users of the issues raised in the book. The outer circle includes technology users in other fields such as manufacturers, business people, and those with a general interest in technological evolution. The book must be reviewed widely in order to reach all these groups and generate a sizeable market.

Shifting the Focus

The next stage is to explore the dissertation/thesis table of contents and work to shift its focus from purely scholarly to one that has a broader appeal. Rather than focus on what the researcher read and how he/she conducted the study, the storyline should now focus on what the results of the study mean. It means that the shirt has been worn inside out and that must be corrected.

Eschewing the scholarly focus means moving from a few long chapters to more brief ones, deemphasizing the scholarly sources and theories in chapter titles; removing dates from landmark primary sources; and avoiding quotations as part of the titles. Technical terms and words that betray the author's intension should also be omitted. Words like "contested" conveys the ideas that the author is simply going to present multiple debates on the issue without taking a position. Non-academic readers do not wish to be left in this type of limbo. In Table 10.1, an illustrative example of a revised table of contents using the new university model is presented.

Table 10.1: Example of a Revised Table of Content

Thesis/Dissertation Content	Revised Book Content
Part 1: The Contested University Where has the university gone? In search of liberal educational	Part 1: The New University The market university Incorporating liberal education in the new university

Source: Self-generated by the Authors

Creating Content Summary

Read any dissertation/thesis and the contents proclaim loudly and clearly that it is not for non-specialists in the field. The long-winded abstract is written in highly specialized and technical language that only makes sense to the community of specialists in the discipline. The first one-third of the thesis/dissertation itself addresses theoretical and methodological underpinnings of the research which is of minimal interest to the general reader with an interest in the subject. It is only after these sections do the more germane issues begin to reveal themselves.

The revision of the content summary should eschew the long methodological section. Writing it entails the courage to discard the research, the structure and the prose in order to reframe the subject afresh. A 2-3-page non-specialist content summary that places the general reader at the forefront is what will reveal the market potential of the book, thereby making it attractive to publishers.

Distinguish between Theses and Subjects

Usually the focus of dissertations/theses is on themes, if not theoretical implications of the study. Hidden in the background are the subjects involved in the study. For instance, in a phenomenological study of the lived experience of grade retention in primary (elementary) school, a researcher's focus will be to distill the findings into a coherent set of themes through a process of open, axial and selective coding that involves emic (subject voices) and etic (researcher) voices.

To make the written book more appealing to the reader, it is advisable to select each subject or groups of subjects and generate statements that have a conceptual relevance to the reader. While technical specialists in the discipline can make this conceptual maneuver without assistance, the non-specialists will need the

assistance – hence, the necessity of revising the dissertation/thesis for conversion into a book. Using the lived experience of grade retention, an example of the disaggregation of subject and thesis including theoretical (for the next section) is presented as follows:

> *Subject X*: Lived in the southside, a blue-collar working-class neighborhood
>
> *Possible thesis*: show the link between grade retention & poverty
>
> *Theoretical Framework*: socio-economic status
>
> *Subject Y*: Lived in Vajona village, a tribal homeland.
>
> *Possible thesis*: grade retention and culture.
>
> *Theoretical Framework*: culturally-responsive teaching

Distinguish between Theses and Theoretical Frameworks

The next task is to see to which theoretical framework link the subject and thesis belong to as shown in the example in the previous section. All theses and theoretical frameworks are tentative; some hold good promise and will be retained while others show little promise and will be discarded as the book development proceeds. The linking of subject, theses, and theoretical framework is done in the context of exploring for a single thesis, one large enough to embrace most, if not all, of the others.

Choosing a Main Thesis

In the final analysis, you will discover that you have identified numerous concepts that can very well serve as the main thesis that ties the work together. This calls for narrowing the list further down by eliminating concepts that are not broad enough to encompass the whole work. In narrowing down the promising thesis statements, ask yourself the following question: Is there one that is broad enough to that would allow for a universal expression? For instance, in a grade retention study, an overarching thesis statement would be along these lines: The increase in grade retention practices has been supported by federal policies that emphasize student achievement and reinforced by individual developmental and motivational factors along with some family conditions. Long-term, retained students show less competence, do not learn more than those socially promoted and experience a myriad of psycho-social adjustment issues in adulthood.

Creating a Working Title

Having identified the overarching thesis, the next step is to find a working title. A working title is just that: a working title, not a perfect one. It is a title that signifies the emphasis of the book so that the chapter titles will also flow logically. For our study on grade retention, we would suggest the following working title: *Retained for Life: How Grade Retention Fails the Academic and Social Score*. This working title is dramatic and reflective as it encapsulates all that we desire both in school and in life. It is a good working title from which the book chapters will flow.

Brainstorming the Outlines

According to Norton (2004), most scholarly books employ either one of these two narrative strategies: (1) chronological development or (2) thematic development. Given that a dissertation/thesis deals with the development of a concept, and this is what attracts a university press to consider the work for publication, a good strategy is to have a proportional balance between a chronological sequence and a narrative story-telling one. It is this combination that will also attract a wide diversity of readers, thereby increasing the book's market potential.

A good approach to achieve this balance is to map a chronological timeline against conceptual themes. For instance, in the study of elementary (primary) school retention, one could look at the developmental and motivational impetus propounded by educational authorities to support the practice. One could also explore the out-of-school reinforcing decisions such as policy developments and family structure support. These analyses could be contrasted with the counter-narratives that contemporary research has revealed against grade retention. The same balancing of theme and chronology strategy could be used in a survey of secondary (high) school retention and also for adult life experience.

Choosing and Fine-tuning an Outline

This stage involves working with the development editor closely to get the right outline that balances both the contextual and interpretive factors and the findings and discoveries made in the course of the research. It will be an intense conversation involving written E-mail correspondence and even phone discussions. It is important to achieve the right balance so that the writing phase will proceed smoothly. It is at this stage that a modified overall thesis can be reformulated to capture the agreed changes. It is at this juncture that the author and the development editor send the manuscript proposal for external review.

Responding to Scholarly Reviews

Your manuscript proposal will usually be sent to two or three reviewers in your field for expert assessment. All credible publishers will require letters of support from reviewers concurring that the work is of acceptable standard, contributes to the field, and is publishable.

The reviewers will most likely raise issues that warrant revision. The publisher will require you to respond to the reviews explaining in detail how you are going to address the errors, gaps, and revisions suggested. If you disagree with any aspect of the review, be ready to support your decision with substantive reasons; particularly, how your rejection to the reviewers' comments does not substantively compromise the quality of the work and its market potential.

Adding Chapter Theses

Following the reviewers' recommendations and reactions to them, it is now time to embark on the writing process. The next step requires you to develop a thesis for each chapter of the proposed book. This step may seem to be an impediment or delay in the writing process but makes the writing much easier if one takes time to plan. It is akin to developing an article outline before starting to write. Taking time to bring each chapter into conceptual focus will pay off in the long-run by making the writing process much easier. Working with the development editor is the best way to fine-tune the addition of theses to the various chapters. This step should not be ignored nor taken for granted.

Weighting Chapters Equally

Look at any dissertation/thesis and an immediate organization feature strikes you: the unequal weighting of the various chapters. The first chapter (introduction), the third (methodology) and the fourth and fifth (discussion and conclusion respectively) may be smaller than the rest of the work. In revising the dissertation/thesis for publication into a book, chapters need to be weighted equally. This is a labor-intensive activity that requires the author to figure out what content belongs to which chapter.

To undertake this exercise, the author needs to go through the draft manuscript earmarking passages and assigning working subheadings while noting the length of each. The narrative sections will be easier to situate than the conceptual pieces. The back-and-forth restructuring of the manuscript should, in the end, lead to an equally weighted chapter organization that is less formulaic and more satisfying.

Creating Transitions

Once you have authored the chapters of the new manuscript, it is time to edit the work by attending to the most challenging aspect of editing after converting a dissertation/thesis into a book. This is the task of managing the opening and closing of each chapter. There may be instances where sections of the original work may serve the purpose but, overall, the opening and closing section must be authored anew. Some chapters may open with details that are in tandem with the main thesis, others with a description of the context surrounding its main focus. In a similar vein, some chapters will end with an explicit summation of events, others with a plot development or even a cliff-hanger. It all comes down to what the author and development editor feel serves the manuscript well.

Integrating Narrative and Theory

After writing the entire manuscript, it is time to review it to ensure that the narrative material is well integrated with the scholarly theory. This is a careful editing process that warrants a great deal of input from the development editor. There may be occasional disagreements but in the long run, a coherent integration of both narrative and theory is the ultimate goal of the project. This should be done with the clear understanding that editing, like other life endeavors, is the art of compromise.

Drawing Conclusions and Placing Them

This may be the most challenging part of writing the manuscript. It involves the proper integration of 'scholarly discourse and narrative to draw proper conclusions and place them to advantage' (Norton 2004:65). Norton avers that scholars will spend time and energy gathering evidence through research but are reluctant to make definitive conclusions because late discoveries can shed new light on a theory, completely revising it, and so err on the side of letting others draw the conclusions (Norton 2004). However, for a book to be availed to the general public, it is imperative that the author arrives at definitive conclusions. Three to four strong concluding stands will help solidify the stature of the author as well as the book's market potential.

Cutting the Length

Publishers work on a budget for each book they plan to release. The budget considers the length of the book. It may turn out that your revised dissertation/

thesis is longer than the budget available to produce it into a book. In making the required cuts in order to achieve the desired book length, focus on two aspects: (1) passages that are expendable without affecting the substance of the book and (2) multiple examples and illustrations of the same passage. In doing the cuts, ensure that you retain the right balance between narrative and theory.

Writing the Professional Book: Turning Your Thesis/Dissertation into a Book

Most doctoral level research in the social and behavioral sciences deals with theoretical and academic issues that may have minimal real-life applications. However, there are occasions when a social science doctoral research discovers an innovative and real-world application that can be used to solve a current problem that has confronted a particular professional area. Supposing your doctoral research involved studying an intervention that improves the outcomes of teacher professional development in schools that leads you to design and develop a highly-quality in-service, school-based professional development that is both effective and efficient. Converting such research findings into a book for the professional market falls in the realm of professional publishing.

The number of publishers of such works are few and far between. In the United States, for example, the most well-known publisher of such works is Jossey-Bass which has, over the years, built a reputation for publishing books for the practitioners in a variety of professional areas. Professional publications '…translate challenging ideas into forms that are useful and appealing to the people best positioned to put those ideas into practice', according to Vondeling (2004:212). Professional publications use research findings to make practical difference. It is, at its most basic, knowledge transfer.

The two prominent distinctive features of professional publishing include the following, according to Vondeling (2004): (1) translates theory and best practices into a language understandable by the practitioners and (2) it is defined less by the nature of its content than by its practical benefits to the practitioners. It is imperative that in revising a dissertation/thesis into a professional book, the author takes into account that the work is not for members of a dissertation/thesis committee who are grounded in theoretical and conceptual thinking. Rather, it is for hands-on professionals who deal with every-day realities of their work and seek solutions to immediate challenges. Publishers of professional books will evaluate manuscript proposals based on whether the content meets the criteria of 'need-to-have' by professionals in the field. In other words, Do the potential readers need

this information to perform their work better or is it merely a 'nice-to-know' type of information? The latter will lead to rejection of the manuscript just like the one based on advocacy – a 'should-be-doing/thinking' approach.

It is also important to understand the nature of the professional book reader. Again, Vondeling's (2004) characterization of the reader is instructive: (a) looks for specific information applicable to work-related situations, (b) favors a broad discussion of the general principles coupled with a few practical examples and case studies which will permit them to extrapolate practical applications for their own situational contexts, and (c) loathes jargon and expect writing that is transparent and democratic. Authoring books for this type of audience need special skills and specific knowledge in the field area. The conventions of writing professional books are specific and unique. We consider them using these sub-sections: (a) tone and content, (b) writing the book proposal, (c) attracting professional publishers, (d) selecting the book format, (e) working with the editor, and (f) developing the project. These sub-sections have been developed using the convention suggested by Vondeling (2004) and are captured in Figure 10.2.
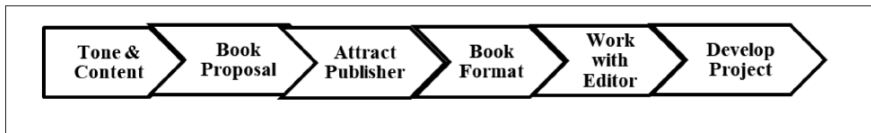
Figure 10.2: Steps in Revising Dissertation/Thesis to a Professional Book
Source: Self-generated by the Authors

Content and Tone

Conventional books will have a predictable format: foreword, preface, acknowledgments, introduction, conclusions, afterword, bibliography and resources. It should not be a surprise if you scan through professional books and discover some of these 'necessities' missing. Instead, publishers and acquisition editors of professional books are more concerned with writers being categorical on the benefits of the work to the readers. Central to this are the content and the preface. The Table of Contents displays the information in the book and also serves as a marketing tool for catalogs, reviews, and online sites. The preface frames the scope, sets the tone, and demonstrates the benefits of the book to the reader. The preface does this by stating the purpose of the book, identifying the audience, explains how the books should be used, and provides a preview of the

content. Thus, the Table of Contents and preface provide a clear indication of what the reader can expect upon reading the book.

There is room for flexibility in terms of tone; the needs of the audience and the level of content will definitely shape its tone. A book on on-site in-service professional development for high school teachers will differ from a similar one for deans of schools and colleges in universities. In all situations, however, professionalism and objectivity should be the standard tone evident in all professional books.

The Book Proposal

Prior to writing the book proposal, investigate publishers who publish for the particular audience you seek to reach. There exists a broad array of such publishers including, but not limited to, trade associations, professional associations with in-house publishing divisions, and commercial publishing houses. Examine their proposal guidelines and adhere to them as you write your book proposal.

Writing the book proposal requires observing the following principles in order to make the work attractive to potential publishers:

a. *Identify the 'need-to-have factor in the work*: having no publication in the field is no guarantee publishers will see your proposed book's value. You have to demonstrate it. Identify the need the in the community you hope to serve – goals not being met, gaps in training, professional development or organizational knowledge and practice, etc.

b. *Explain how your research addresses the needs of the community*: identify the needs and interests of individual target readers, not everyone. A general broad audience means your research information ceases to be 'need-to-have'. It translates into a book that is too generic to be of use to any professional.

c. *Identify competing publications*: Merely indicating there are no other books in this area is no guarantee that your proposed book will be published. It may very well indicate a risk to the publishers. Instead, indicate how your book compares to other related publications in the same field.

d. *Professional competence*: a published writer is more attractive than a novice. Include information about your previous publications – books, book chapter, journal articles, and other periodicals. These demonstrate your writing ability and reading market that you have begun creating.

Attracting the Publisher

Books are expensive to produce and authors who have a clear understanding of the economic nuances of publishing make good clients for publishers. We cannot ignore the marketplace concerns. Besides the 'need-to-have' rationale for adopting a book, publishers will be attracted to authors who are prominent in their disciplines and give public presentations, write reviews, and provide professional development services such as in-service teacher training and professional development. Such venues become critical platforms for promoting the book.

Therefore, you must enhance your book project's attractiveness to publishers by developing a robust multipronged platform that can be leveraged to promote and market the book. This will, in the long-run, translate into higher sales and greater impact to the professional community. Include this rich and diverse array of professional connections in your book proposal.

Selecting the Book Format

It is good to remember that readers of professional books eschew academic-oriented books that tend to be text-based expositions with some graphics and statistical analyses for further illustrations. What they are looking for is knowledge transfer: a format that is quite distinct from the menu served in academic books. Authors are encouraged to think beyond the academic box when crafting the format of their proposed books. Sometimes a workbook format may work well for those seeking to have the book adopted for training. In other instances, integrating an electronic online component may work well for a book that emanates, for example, from an innovation derived from a new method of on-site in-service teacher professional development.

Working with the Editor

Once your project has been accepted by the publisher and an editor assigned, be sure to establish clear and common goals for the project. The two of you should be on the same page. Do not hesitate to ask questions and seek clarifications. Be clear about the timelines and also possibilities of extensions. Also seek clarifications on any contractual obligations on your part as well as that of the publisher.

Developing the Project

Real work begins upon securing the book contract. Each publisher will have a convention on how you will work with the acquisitions editor as you craft the

draft. After the draft is completed, external review is undertaken in order to ensure the quality of the work in terms of knowledge transfer. In most cases, three to four professional peers will be asked to review the manuscript draft. Most publishers will seek reviews from both the academic and professional communities.

The author will then receive, from the editor, a synthesis of the reviewers' assessment of the manuscript along with recommendations. The task of the editor is to distill the recommendations into usable actions and to guide the author in using them to revise the manuscript. The editor also helps in determining which of the reviewers' recommendations merit considerations and those that will not necessarily improve the substance of the book. This gatekeeping role is central to the success of the book.

Conclusion

Academics all over the world place emphasis on research and publications, not only because it is presumed that research enriches both teaching and the learning process as well as contributing to the body of knowledge, but also because it is a major determinant of institutional prestige. To the academic staff, therefore, publishing achieves that dual purpose of enhancing both one's position and the status of the institution.

However, scholarly publishing in Africa is still struggling to keep pace with the rest of the world. Various reasons for this have been discussed in this chapter. We have also highlighted the issue of predatory or standalone journals which are trying to take advantage of challenges in scholarly publishing to exploit the African scholar or writer. As one of the solutions to this problem, we suggest that scholars in Africa should take advantage of the opportunities and benefits of open access journals (OAJ). These provide unlimited access to online peer-reviewed scholarly research works. They are also digital, online, free of charge, and free of most copyright and licensing restrictions.

Note

1   Cabell Internationa can be accessed at the following URL: https://www.cabells.com/

References

Altbach, Philip, 2007, 'The Imperial Tongue: English as the Dominating Academic Language', *International Higher Education*, 49, 2-4, retrieved on May 22, 2017 from https://ejournals.bc.edu/ojs/index.php/ihe/article/download/7986/7137

Altbach, Philip, 2016, *Global Perspectives on Education*, Baltimore, MD: John Hopkins University Press.

Antelman Kristin, 2004, *Do Open Access Articles have a Greater Research Impact*, retrieved on May 10, 2017 from http://eprints.relis.org/bitstream/10760/5463/l/do_open_access_CRL.pdf

Arowosegbe, Jeremiah, 2014, 'African Studies and the Bias of Eurocentrism', *Social Dynamics*, 40, 2:308-321.

Bangura, Abdul Karim, 2015, *Toyin Falola and African Epistemologies*, New York, NY: Palgrave Macmillan.

Bangura, Abdul Karim, 2005, 'Ubuntugogy: An African Educational Paradigm that Transcends Pedagogy, Andragogy, Ergonagy and Heutagogy, *Journal of Third World Studies*, 22, 2:13-53.

Belt, Pekka, Matti Mottonen, and Janne Harkonen, 2011, 'Tips for Writing Scientific Journal Articles', *Industrial Engineering and Management Working Papers 5*. Oulu, Finland: University of Oulu, retrieved on May 22, 2017 from jultika.oulu.fi/files/isbn9789514293801.pdf

Bem, Daryl, 1987, 'Writing the Empirical Journal Article', in M. Zanna, and J. Darley, eds., *The Complete Academic: A Practical Guide for Beginning Social Scientist,* New York, NY: Random House.

Bem, Daryl, 2003, 'Writing the Empirical Article', retrieved on February 23, 2017 from Daryl Bem's Cornell University Home Page: dbem.ws/WritingArticle.pdf

Berlin Declaration on Open Access to Knowledge in the Science and Humanities, 2003, retrieved on May 18, 2017 from http://www.zim.mpg.de/openaccess-berlin/berlin_declaration.pdf

Bjork, Bo-Christer and Ziga Turk, 2006, 'The Electronic Journal of Information Technology in Construction (ITcon): An Open Access Journal Using Unpaid, Volunteer-based Organization', *Information Research* 11, 3:26-37.

Budapest Open Access Initiative, 2002, retrieved on May 20, 2017 from http://www.soros.org/openaccess

Cappellen, Victoria, n.d. 'Writing Tips for Peer-Reviewed Journal Articles', retrieved on May 23, 2017 from School of Earth and Atmospheric Sciences, Georgia Tech: shadow.eas.gatech.edu/~jean/paleo/Writing_tips.pdf

Cetto, Ana Maria, 2001, 'The Contribution of Electronic Communication to Science—Has it Lived Up to its Promise?', Proceedings of the Second ICSU/UNESCO International Conference on Electronic Publishing in Science, Paris: 20-23 February 2001.

Chew, Phyllis, 2013, *Emergent Lingua Francas and World Orders: The Politics and Place of English a World Language*, New York, NY: Routledge.

Germano, William, 200, 'From Dissertation to Book', retrieved on May 25, 2017 from University of Chicago Press: http://www.press.uchicago.edu/Misc/Chicago/288463.html

Harnad, Stevan, Tim Brody Francois Vallieres, Less Carr, Steve Hitchcock Steve, Yves Gingras, Charles Oppenheim and Chawki Hajjem, 2004, 'The Access/Impact Problem and the Green and Gold Roads to Open Access', *Serials Review* 30, 4:301-314.

Hamel Jacques, 2005, 'Knowledge for Sustainable Development in Africa Towards New Policy Initiatives', *World Review of Science, Technology and Sustainable Development* 2, 3:217-229.

Kotze, Theuns, 2007, 'Guidelines on Writing a First Quantitative Academic Article', retrieved on May 23, 2017 from University of Pretoria: www.btsau.kiev.ua/sites/.../Супер%20-%20writing_an_academic_journal_article.pdf

Mahlomaholo, Sechaba, 2015, 'Creating Effective Postgraduate Learning Environments: Analysis of an Intervention from Realist Social Theory', *Journal of Higher Education in Africa*, 13, 1 & 2:229-243.

Mkandawire Thandika, 1995, 'Fiscal Structure, State Contraction and Political Responses in Africa', in M. Thandika and A. Olukoshi, eds., *Between Liberalisation and Oppression: The Politics of Structural Adjustment in Africa*, Dakar, Senegal: CODESRIA.

Mkandawire, Thandika, 1997, 'The Social Sciences in Africa: Breaking Local Barriers and Negotiating International Presence', *African Studies Review* 40, 2:15-36.

Ngobeni, Solani, 2012, *Scholarly Publishing: The Challenges Facing the African University Press*, ASC Working Paper 100/2012 African Studies Centre, Leiden: The Netherlands.

Norton, Scott, 2004, 'Turn Your Dissertation Rightside Out', In B. Luey, ed., *Revising Your Dissertation: Advice from Leading Editors*, Berkeley and Los Angeles, CA: University of California Press.

Okoye Monuchukwu and Anwagwu Ejikeme, 2011, 'Open Access, Institutional Repositories and Scholarly Publishing: The Role of Librarians in South East Nigeria', *Library Philosophy and Practice* 4, 2:25-34.

Sall, Ebrima, 2015, 'Trends and Issues in the Social Sciences and Humanities in Africa', Keynote Lecture delivered at the National Dissertations Workshop organised by the National Institute of Humanities and Social Sciences (NIHSS) of South Africa. Johannesburg, 29-30 July 2015.

Suber, Peter, 2004, 'A Very Brief Introduction to Open Access', retrieved on May 26, 2017 from http://www.earlham.edu/peters/fos/brief.htm

Vondeling, Johanna, 2004, 'Making a Difference: Professional Publishing', in B. Luey, ed., *Revising Your Dissertation: Advice from Leading Editors*, Berkeley and Los Angeles, CA: University of California Press.

Zeleza, Paul Tiyambe, 2004, 'The African Academic Diaspora in the United States and Africa: The Challenges of Productive Engagement', *Comparative Studies of South Asia, Africa and the Middle East* 24, 1:265-278.

11

Research Integrity and Ethics

Joy A. Obando

Introduction

Research is vital in creating knowledge and leads to new insights, discoveries and creations, thereby contributing to the process of societal development. As such, research should be of good quality and conducted with values associated with integrity and ethics. The research community has increasingly become aware of the need for good quality and responsible research. Attention has been drawn to degree certificates which have been withdrawn in cases where research misconduct has been found, even after 20 years. Researchers should therefore strive to be objective and logical and should maintain integrity and ethical principles when conducting research. This chapter presents the importance of research integrity and ethics in the entire research process. The chapter explains the general guidelines for conducting research in a responsible and ethical manner. This is done under five themes: (1) ethical principles,(2) laws and requirements for conducting ethical research, (3) application of ethical principles to practice, (4) ethical review, and (5) professionalism. As emphasized by the National Academy of Sciences (NAS),

> The scientific research enterprise, like other human activities, is built on a foundation of trust. Scientists trust that the results reported by others are valid. Society trusts that the results of research reflect an honest attempt by scientists to describe the world accurately and without bias. The level of trust that has characterized science and its relationship with society has contributed to a period of

unparalleled scientific productivity. But this trust will endure only if the scientific community devotes itself to exemplifying and transmitting the values associated with ethical scientific conduct (NAS 1995:134).

Indeed, research integrity and ethics are an integral part of all the stages in the research process: right from the planning of the research when developing the proposal and reviewing literature, to conducting the research in terms of data collection and analysis, and to disseminating the results through reports and journal articles. *Integrity* is concerned with issues of fairness and requires trustworthy conduct (Abrams and McMillan 2016;) while *ethics* are standards and principles that are used to guide conduct, to determine what is right or wrong, a virtue or vice, good or evil, often related to values and morals (Abrams and McMillan 2016). Thus *integrity* refers to a set of codes of values, while *ethics* relates to accepted standards. For example, while ethics explores aspects such as informed consent and protecting confidentiality, research integrity reflects upon such aspects as honesty, fabrication of data, and plagiarism (Mouton 2017). Thus, *integrity* is the quality of being honest and having strong moral principles, moral uprightness. It is generally a personal choice to hold oneself to consistent moral and ethical standards. Also, in the research process, ethics focuses on the application of ethical standards in the planning of a study, the data collection and analysis, dissemination and use of results. The remainder of this chapter describes the main ethical issues, principles and practices that have been adopted by researchers followed by the framework of Abrams and McMillan (2016).

Ethical Principles

Good research requires patience and sometimes the researcher may become disappointed or discouraged particularly if the planned activities or expected results do not materialize. However, professional ethics must always be the motto of a good researcher; such that the standards of performance and level of professionalism should be maintained. Ethical standards include those that enjoin virtues of honesty, compassion, and empathy when dealing with subjects or other living things. These standards must include the right to life, the right to protection from pain or injury, and the right to privacy (Mugenda 2008).The fundamental ethical principles for professional practice adopted by researchers reflect six main principles as outlined by Abrams and McMillan (2016) and common to research as summarized in Figure 11.1 and briefly defined thereafter.
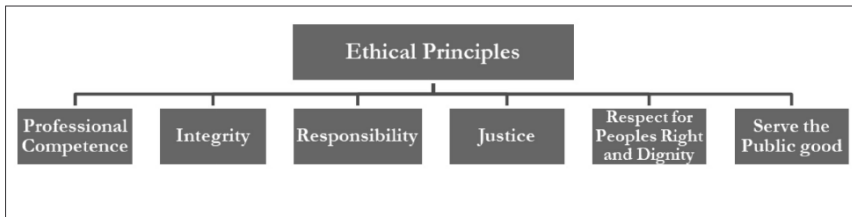
Figure 11.1 Ethical Principles
Source: Self-generated by the Author

1. *Professional competence* addresses the view that researchers understand work within their areas of competence and consult other researchers in areas when needed.

2. *Integrity* is an important principle that speaks to the honest and trustworthy researchers, who should not cheat, steal, deceive or misrepresent, rather they should always promote accuracy.

3. *Responsibility* by the researcher is necessary, and at all times, researchers must accept responsibility for their work and should be sensitive to the ethical behavior of their fellow researchers.

4. *Justice:* researchers should be sensitive to the welfare of all individuals, consider all perspectives in making decisions, and not allow biases to result in unjust actions. The principle of justice demands that the results of research are reported in ways that are sensitive to the different characteristics of the study participants.

5. *Respect for People's Rights and Dignity:* researchers must respect the rights and dignity of all research participants and be sensitive to cultural, individual, sexual, ethnic and role differences. Indeed, all participants must be held in high regard.

6. *Service to Public Good:* researchers pay attention to what is good for the larger society and design and report research findings that result in the greatest public good.

Laws and Requirements for Conducting Ethical Research

All researchers should understand the laws and requirements that regulate and inform the policies for conducting ethical and responsible research. It is important that researchers have knowledge of the legal requirements for conducting ethical research at their institutions as well. The procedures should be clear and

transparent for all researchers and it is the obligation of any research institution to establish clear policies. Researchers should be aware of and comply with the laws and regulations for the different disciplines.

These laws and requirements for conducting ethical research have evolved throughout the history of science and had been acknowledged initially in relation to animal research and medical research (e.g., Charles Darwin) and later to human experiments. Briefly worth noting here are four milestones that have shaped ethical research: (1) the Nuremberg Code, 1949; (2) the Declaration of Helsinki, 1964; (3) the Belmont Principles,1979 and (4) the Singapore Statement on Research Integrity, 2010. These ethical research requirements are briefly described as follows:

- *The Nuremberg Code* is a set of research ethics principles for human experimentation set as a result of the subsequent Nuremberg trials at the end of the Second World War (Nuremburg Code 1949)

- *The Declaration of Helsinki* is a set of ethical principles regarding human experimentation developed for the medical community by the World Medical Association (WMA). It is widely regarded as the cornerstone document on human research ethics (WMA 2017). It has since been amended usually during the general assembly with the changing face of medical research. It presents the scientific requirements and research protocols

- *The Belmont Report* summarizes the guidelines for the protection of human subjects of biomedical and behavioral research. It provides philosophical underpinnings for laws governing research involving human subjects (Belmont Report 1979). Three core principles – (1) respect for persons, (2) beneficence, and (3) justice – are described in relation to application to practice.

- *The Singapore Statement on Research Integrity* provides the codes to promote ethical conduct among scientists (Resnik and Shamoo 2011). The Singapore Statement includes four principles – (1) honesty, (2) accountability, (3) professionalism, and (4) stewardship – and 14 responsibilities for the ethical conduct of research. The responsibilities address such topics as data integrity, data sharing, record keeping, authorship, publication, peer-review, conflict of interest, reporting misconduct and irresponsible research, communication with the public, complying with regulations, education, and social responsibilities.

The National Research Council in any country has the mandate to ensure that laws are in place and are adhered to when conducting research.

Application of Ethical Principles to the Practice of Research

The three core principles that should govern all research and researcher-participant interactions also referred to as the Belmont Principles. As mentioned earlier, they are (1) respect for persons, (2) beneficence, and (3) justice. These principles are summarized in Table 11.1 and briefly described subsequently.

Table 11.1 Belmont Principles and Applications for Research

Principle	Principle in Practice
Respect for persons	Participants are provided with all information about the study in order to make an informed decision through the informed consent and/or child assent process; voluntary participation and withdrawal are supported.
Beneficience	All research should be designed to minimize risk or possible harm and to maximize benefit to the participant and to the society.
Justice	Benefits and burden of medicine/research should be fairly distributed among all populations. Researchers must be careful not to select already burdened or vulnerable groups who might be more easily coerced to participate.

Source: Belmont Report (1979)

Respect for Persons: It is important for researchers to respect the study participants and not take undue advantage, particularly of vulnerable groups such as patients, prisoners, street children, refugees, or drug addicts amongst others. There should be informed voluntary consent of all the participants in the research and vulnerable groups must be protected (Abrams & McMillan, 2016). Respect for persons can be achieved through the informed consent process. A researcher should provide a description of his/her research study, what it entails, and the type of information required to enable the participant to make an informed decision regarding their participation. Thus; the participants should be (a) informed of the objectives of the research,(b) made aware of their rights, and (c)be able to decide if they wish to participate and/or when they wish to terminate their participation. Participants should understand what the study is for, what risks they may take in participating

and the benefits (if any) they might receive. Details of the issues in informed consent are indicated in Table 11.2 and an example of a consent form in Table 11.3.

The contents of the informed consent form (Table 11.3) should be explained prior to the start of an interview or be provided in a questionnaire's introduction section. If the interviews are recorded, this should be done with the permission of the participants. The consent form can also have a section that allows for the recording of the interviews. The consent form can be signed by both the participant(s) and the researcher. Alternatively, there can be a 'gentleman's agreement' regarding the participation without infringing on their rights.

Table 11.2: Elements for Informed Consent for Participants in Social Science Surveys

Individually, identifiable participants in the social research surveys must be informed:
1. that research is being conducted;
2. of the procedures they will be experiencing;
3. of the risks and benefits reasonably to be expected;
4. of the purpose of the research;
5. of the anticipated uses of the information;
6. of the names, addresses, and telephone numbers of the researchers;
7. of the name, addresses, and telephone numbers of the sponsors of the research;
8. that they are free to ask questions and may refuse to participate; and
9. that they may later withdraw from the research and the consequences of such withdrawal (cancellation of income subsidies, etc.).

Source: Belmont Report (1979)

Table 11.3: A Typical Informed Consent Form

Informed Consent to Participate in a Research Study **Title of the Study** Assessment of the hydrogeology and the geochemistry of the groundwater systems in Kenyatta University and the emerging surrounding settlements **Description of the Research and Your Participation** You are invited to participate in a research study being carried out by Miriam Adongo and Moses Tsuma. Before you decide, you need to understand what the

study is for, what risks you might take by participating, and what benefits you might receive. Please read the following information carefully and feel free to ask questions if there is anything that is not clear or if you need more information.

This study has two broad objectives:

1. To assess the hydrogeology and geochemistry of the area to determine groundwater vulnerability
2. To assess the groundwater quality and come up a Water Quality Index for the area.

We will be taking borehole water level measurements, collecting water samples, and carrying out geophysical experiments. The data mentioned above will be collected on a monthly basis from May to September. Your participation will significantly contribute to achievement of the objectives.

Risks and Discomforts

The research is strictly for academic purpose thus there are no known risks associated with this research.

Potential Benefits

If you request, we will provide you with the results of the analysis of your water sample; this will also include information on what you should do if a high level of certain chemicals tested is found in your borehole water.

Voluntary Participation

Your participation in this research study is voluntary. You may choose not to participate, and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Your Rights

Protecting your privacy is an important part of this study.

When you sign this consent form you give us permission to:

- Access your borehole to take water level measurements ones in a month from May-Sep 2016
- Collect at least 1 liter of water from your borehole/shallow well

Your name and contact information will be kept secure by the research team at Kenyatta University. Your contact information will not be shared with others without your permission. Your name will not appear in any report or article published as a result of this study.

After you have signed this consent form you will be given a copy. If you have any questions or concerns about the study, you may contact Research Principal Investigator Dr. Mary Makokha or Research Co-principal Investigator Prof. Joy Obando both of the Department of Geography, Kenyatta University. P. O. Box 43844-00100, Nairobi, Kenya, Telephone: +254-20-871901.

Consent

I have read, and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

_____   _____   _____
Name of Participant   Date   Signature

_____   _____   _____
Name of Researcher   Date   Signature

Respect for persons includes respecting diverse cultures, marginalized groups such as pastoralists, persons with special needs such as orphans, refugees and internally displaced persons. These groups may be illiterate and in translating the survey instruments the researcher should adhere to ethical standards to ensure that they fully understand the research purpose as well as their rights. During fieldwork, researchers should also respect the diverse cultures and should not offend by way of addressing and in the manner in which different members of the community are addressed. Researchers must have a prior knowledge and understanding of the participant community so that they are sensitive to their needs and to therefore embrace these diverse ways of life: for example, the pastoralists who may still be leading a nomadic lifestyle.

Researchers are advised to desist from giving incentives to participants as a means of increasing participation during data collection. This is discouraged since the participants can develop an attitude for requesting payment before responding and feel that it is their right to be paid for participating in a research. Instead, the potential benefits to the participants can be explained in terms of the results from the study. It is important that the researcher includes community dissemination in the research plan and to share the findings in a workshop at the end of the research. Sometimes, the dissemination of preliminary findings to the community can serve as a validation of the results and will also give an opportunity to participants

to provide further information while clarifying their responses. In circumstances where the results may have a negative impact on the participants, a researcher may share the findings with the relevant authorities. In the African context, for most researchers the entry point to the community may be a respected authority such as an administrative chief who can guide one in the dissemination of the results, and possible a way forward for results that may reveal some harm to the community.

Beneficence: The principle of beneficence brings to the fore the need for researchers to protect the participants from harm and to act in a manner that maximizes benefit while minimizing risk. Research in the social sciences can be considered to have a low risk threshold (Abrams & McMillan, 2016). However, where patients may be involved or situations where blood samples (health related studies) may be required from the participants, there can be considerable risk. In studies that involved, for example, quality of water from boreholes used by a community, results may provide high rates of contamination. It is the responsibility of the researcher to bring this information to the authorities without alarming the participants, since this may be their only source of water. Remedial measures can be taken through the authorities who are usually the entry point at the initiation phase of the research.

In addition, there should be confidentiality of the responses from participants in order to minimize risks. Participants should not be identified by name during interviews in sensitive studies where information on, for example, health status, since this can lead to harm such as stigma from other community members. In situations where the participants insist for their names to be used, it is important that the names are kept confidential. The participants should be free in providing information knowing that it will be used in confidence and only for academic purposes. Furthermore, the reports from the surveys should not identify the participants by name in such cases. The procedures developed for the research should maintain confidentiality. Issues relating to data integrity are important. Thus, it is unethical to subject the participants to situations in which they do not feel safe during the research process. Indeed, in current calls for research proposals, applicants must articulate how any potential ethical and health and safety issues have been considered and how they will be addressed, ensuring that all the necessary ethical approvals are in place before the project commences and all risks are minimized.

Justice is a principle addressing the 'fairness' in dealing with research participants. There should be equity in distributing risks and benefits in the participant community, as well as between institutions and research partners. The results from a study should be able to provide solutions that benefit the community under investigation: for instance, in the case of quality of water, the same community can

be advised on appropriate methods of the management of water, including treatment and storage, thereby reducing the risk to contamination. Multidisciplinary research projects involving partners from different countries must draw up memoranda of agreement/understanding indicating the benefits, including the intellectual property rights for the researchers and the institutions involved.

Ethical Review

Institutional Review Boards (IRBs) or Ethical Review Committees (ERCs) have been institutionalized in universities and research institutions to ensure that ethical standards, codes and practices are adhered to during the research process. At the national level, the research council sets up statutes to guide the institutions and, thus, ensure standards that are the same across the board. These ethical standards are also in sync with those developed at the international level. The main mandate of the review boards is to evaluate the projects under defined protocols and approve or reject them. The ethical review committees may make modifications to the research protocol before issuance to research permits. A typical evaluation protocol considers aspects such as those indicated in Table 11.4. The ethical considerations have become an important part of the research and need to be included in the proposal from the planning phase.

The review process can be one of these three types based on the level of perceived risk in the study. The *exempt review* applies to studies with minimal risk to subjects and, therefore, will not be subject to government regulations. In the US, generally the chair of the review committee will make the determination of the exempt status. For studies that are classified as *expedited review*, the risk is equally minimal but the level of involvement by the research subjects is greater. The researcher may interview or observe participants using strategies that require interactions and recordings. This level of review will involve some members of the review board. Finally, the *full review* classification of research studies applies to investigations that pose a greater risk to the participants. Research studies involving vulnerable groups like children, prisoners, refugees, patients, victims of abuse and torture etc., require the input of the entire review board in order to sufficiently assess the risk/benefit ratio of the study.

The research protocols must be submitted for consideration, comment, guidance and approval to the concerned research ethics board before a study begins. The committee has the right to monitor the research and at the end of the study, the researchers must submit a final report with a summary of the study findings and conclusions.

Table 11.4: Evaluation Protocol for Ethical Review Committees

- Scientific design and conduct of study
- Recruitment of research participants
- Care and protection of research participants
- Protection of research participant's confidentiality
- Informed consent process
- Community considerations

Source: Self-generated by the Author

Professionalism

Professionalism encompasses responsible and ethical conduct of a researcher. In this regard, three main issues are discussed: (1) conflict of interest, (2) accuracy, and (3) intellectual property (IP) rights. Researchers should declare conflict of interests during review of research projects and of other academic papers and should ensure that they report results as accurately as possible. In addition, researchers should protect intellectual property emanating from the research. Lack of professionalism is a major form of research misconduct and can be a result of lack of leadership and pressure to complete the research or publication.

Conflict of Interest: A conflict of interest in research exists when an individual has interests in the outcome of the research that may lead to a personal advantage and that might, therefore, in actuality or appearance, compromise the integrity of the research (NAS1995). Conflicts of interest can occur in situations where a researcher is called upon to review grant proposals or manuscripts for publication. A reviewer should be able to declare the conflict of interest to the administrator of the grant or editor and explain before reviewing and, of course, confidentiality must always be maintained. Generally, the guidelines for the review process usually provide procedures for declaring a conflict of interest.

Accuracy: Researchers must always report results in an accurate manner. As indicated earlier, good research requires patience and sometimes disappointment and discouragement may occur when the expected results do not materialize. The planned activities may also be interrupted, thereby affecting the expected results. A researcher has the obligation to explain the results from the collected and analyzed data, rather than altering the data and results. The pressure to 'publish or perish' or for promotion at the university has sometimes led researchers to report only the

expected results and omit results that do not fit well with the norm, which could lead to 'perishing'. According to Wright (2016), the increasing pressure to publish may encourage some authors to misreport their data, while the rapidly growing development of statistical techniques have made it (a) more likely that authors may incorrectly apply a particular technique and (b) more difficult for reviewers and editors to identify when either of the above has occurred.

*Intellectual Property Rights***:** Intellectual property rights (henceforth, IPRs) are the protections granted to the creators of intellectual property (henceforth, IP), including patents, copyrights, trade secrets, new plant varieties, utility models, and industrial designs. An IPR policy considers IP as well as issues related to collaboration, confidentiality in material transfer, disclosure on inventions, distribution of revenues, and disputes (KU 2010). It is noted that often research students are not aware of the IP laws and plagiarism, or the penalties of plagiarism (Cheema et al 2011). Regarding IPR, three main issues are discussed here: (1) authorship,(2) plagiarism, and (3) data fabrication.

Authorship: Research is incomplete until published, and it is the desire of every researcher to publish in a credible journal. There are several issues that need to be considered for the authorship, such as 'Who should be an author?' There are significant responsibilities in publishing, including accurate, complete, clear, and unbiased representation of the research. An author should only be listed if s/he has made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data; drafted the article or revised it critically for important intellectual content; and approved of the final version to be published. It is common practice that the main author has made the most contribution to the article than the subsequent co-authors. Most journals require an indication of the individual role and contributions of each author. Other members may be acknowledged for collecting data or entering data for analysis and may not warrant being listed as authors.

Researchers involved in collaborative research should always state the roles, responsibilities, and order of the authors. Where there is equal contribution, then the alphabetical order can be used. Other unethical practices include instances where the supervisor/professor claims to be the principal author for a publication from a student's thesis/dissertation. This practice is discouraged, and with proper mentoring, such cases should be on the decline. Shisanya and Munene (2017, Chapter 12 in this handbook) provide the art, science and politics of publishing.

Plagiarism is the use of another person's original work without giving him/her due credit. There are many forms of plagiarism, the most common being

copy and paste. Plagiarism is a theft of IP and is unethical since it undermines scientific integrity, contribution to knowledge and one's integrity. Much literature now exists on the prevalence of plagiarism in all disciplines including biomedical science (Baždarić et al. 2014; Cheema et al. 2011). *Plagiarism*, *self-plagiarism* and *data fabrication* (falsification) are major forms of research misconduct. Self-plagiarism exists in instances where a researcher reuses portions of his/her own work without acknowledging it in another work.

Researchers should be cautious in citation of literature to avoid plagiarism, deliberate or otherwise. One should check: Does the writing provide appropriate credit to previous work? Is the work written in your own words as an author? Of course, it is increasingly becoming more difficult to recognize, and what constitutes plagiarism is becoming more difficult. The White Paper on The Plagiarism Spectrum provides instructor insights into the ten types of plagiarism (Lancaster and Clarke 2014). Software exists for checking for similarity to other cited works. These can be used by the authors to enhance their writing skills, particularly where the researcher can identify areas where citing the sources may have been omitted. Researchers are advised to be cautious when using any of the existing software.

A good researcher should be able to acknowledge all the sources of the work used in a report using the recommended citing styles. Furthermore, s/he should disclose any information that could lead to conflict of interest. Indeed, a good report should also build on existing works, so that a researcher does not exaggerate his/her research findings.

Data Fabrication is a serious misconduct that involves making up data or results and recording or reporting them or failing to report data that contradict expected results. It can also be selective reporting, negative or detrimental studies not published. In addition, the research materials, equipment and processes may be falsified or manipulated in what is usually referred to as 'cooking data'. Or a researcher may omit data records to obtain certain results, by the donor. Human error also contributes to loss of data integrity. Data integrity is the assurance of accuracy and consistency of stored data, indicated by an absence of any alteration in data between two updates of a data record. Researchers should also strive to answer specific questions and not just collect or mine data. Furthermore, statistical issues such as sample size and methods of sampling are an important part of a research design which ensures that the research data are likely to accurately answer the question(s) posed. Issues relating to data acquisition, management, sharing, and ownership should also be considered in relation to IP.

Conclusion

Research integrity is an important aspect of the moral character and experience of any researcher or institution. It involves, above all, a commitment to intellectual honesty and personal responsibility for one's actions and to a range of practices that characterize responsible research conduct. Good quality research provides objective and accurate results that can contribute to societal development. Thus, researchers should be aware and adhere to the code of ethics or guidelines, including procedures for obtaining research permits. Furthermore, there is institutional responsibility in maintaining research integrity which should include a culture of compliance, training and policy environment. All research institutions have an obligation to address allegations of research misconduct. Institutions should also have processes and procedures to investigate misconduct and mete out justice as is appropriate. It is the duty of a researcher to conduct research in a way that earns and maintains public confidence in his/her integrity, and to inform of incidences of research misconduct.

Indeed, the mentoring process provides a good avenue for promoting responsible conduct of research and reducing the risk of research misconduct. Research students should grow with the knowledge of ethical and responsible research. Through the mentoring process, the young upcoming researchers can be encouraged to understand and apply the frameworks that influence a research project in terms of the ethical principles, the laws and legal requirements, the application of the ethical principles, the role of the review boards, and the professionalism required in conducting responsible research.

References

Abrams, Lisa and James H. McMillan, 2016, 'Chapter 2: Ethical Issues, Principles and Practices', in James H. McMillan, (Ed), *Educational Research: Fundamentals for the Consumer*, 6th ed., Upper Saddle River, NJ: Pearson Educational Inc.

Baždarić Ksenija, Martina Mavrinac, Vanja Pupovac, Lidija Bili -Zulle, Gordana Brumini and Mladen Petrovečki, 2014. *Features and prevalence of plagiarism in biomedical science.* In Proceedings of Conference on Medical Informatics in Europe, January 01, 2014.

Belmont Report, 1979, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*, Superintendent of Documents.

Brainard, Jeffrey, Stephen Burd, and Ben Gose, 2000, 'The Clinton Legacy in Higher Education', *Chronicle of Higher Education* 47, 16:A31.

Cheema, Zulfiqar Ali., Sheikh Tariq Mahmood, Azhar Mahmood, and Makhdoom Ali Shah, A. 2011, 'Conceptual awareness of research scholars about plagiarism at higher education level: Intellectual Property Right and Patent,' *International Journal of Academic Research*, 3, 1:665-670.

DAAD 2004, *Violation of Social and Scientific research ethics and the way forward*, Proceedings of Workshop on Research Ethics, Maseno University, Kenya.

Eastwood, Susan, Pamela Derish, Evangeline Leash, and Stephen Ordway, 1996, 'Ethical Issues in Biomedical Research: Perceptions and Practices of Postdoctoral Research Fellows Responding to a Survey', *Science and Engineering Ethics* 2, 1:89-114.

Israel, Mark, 2014, *Research Ethics and Integrity for Social Scientists: Beyond Regulatory Compliance*, Thousand Oaks, CA: Sage Publications.

Kenya Law Reports. 2010, 'Anne Nang'unda Kukali v Mary A. Ogola & another', *Kenya Law Reports*, retrieved on April 11, 2017 from http://kenyalaw.org/newsletter/20110325.html

Kenyatta University, 2010, Kenyatta University Intellectual Property Rights Policy, Nairobi, Kenya.

Lancaster Thomas and Robert Clarke, 2014, *Using Turnitin as a Tool for Attribution in Cases of Contract Cheating*, retrieved on June 1, 2017 from https://www.heacademy.ac.uk/knowledge-hub/using-turnitin-tool-attribution-cases-contract-cheating

Mouton, Johann, 2016, 'Ethics and Research Integrity in Doctoral Education', Presentation at Seminar on *Quality Doctoral Education – A Prerequisite for Strong Universities in Africa*, IUCEA and DAAD, Nairobi September 26-28, 2016.

Mugenda, Abel Gitau, 2008, 'Social Science Research: Theory and Practice', *Applied Research and Training Services*, Nairobi, Kenya.

National Academy of Sciences, NAS, 2017, National Academy of Engineering, & Institute of Medicine. (1995). *On Being a Scientist: Responsible Conduct in Research,* retrieved on April 11, 2017 fromhttp://www.nap.edu/readingroom/books/obas

National Science Advisory Board for Biosecurity, 2007. *Proposed Framework for the Oversight of Dual Use Life Sciences Research: Strategies for Minimizing the Potential Misuse of Research Information*, retrieved on April 11, 2017 from

http://oba.od.nih.gov/biosecurity/pdf/Framework%20for%20transmittal%200807_Sept07.pdf

Nuremberg Code, 1949, *Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law*10, 2:181-182, Washington, D.C.: U.S. Government Printing Office.

Resnik, David B. and Adil E. Shamoo, 2011, 'The Singapore Statement on Research Integrity', *Accountability in Research*, 18, 2:71-75.

Russell, William Moy Stratton, Rex Leonard Burch, and Charles Westley Hume, 1959, *The Principles of Humane Experimental Technique*, retrieved on April 11, 2017 from http://altweb.jhsph.edu/pubs/books/humane_exp/het-toc

Turnitin White Paper, 2017, 'The Plagiarism Spectrum', retrieved on May 12, 2017 from http://*www.ed.ac.uk/files/atoms/files/10-types-of-plagiarism.pdf*

World Medical Association (WMA), 2017, *Declaration of Helsinki, Ethical Principles for Medical Research Involving Human Subjects*, retrieved June 1, 2017 from https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/

Wright Patrick, M., 2016, 'Ensuring Research Integrity: An Editor's Perspective', *Journal of Management*, 42, 5:1037-1043.

Yadav, Sankalp, Gautam Rawal, and Mudit Baxi, 2016, 'Plagiarism—A Serious Scientific Misconduct', *International Journal of Health Sciences Research* 6, 2:364-366.

12

Research Methodology: Knowledge Gained through Direct Experience

Robert Kakuru

Introduction

The subtitle of this chapter reads 'Knowledge Gained through Direct Experience'. This is because the chapter was motivated by my participation in the Council for the Development of Social Science Research in Africa (CODESRIA) College of Mentors Institute that was convened at Kenyatta University in Nairobi, Kenya between April 10 and 20, 2017. Knowledge gained through direct experience, we are informed, is the first credible source of information that a person comes to know. The modes of gaining this type of knowledge range from relatively passive observations to active manipulations of abstract variables in completely controlled environments.

During the Institute, I acquired new knowledge on inductive and deductive approaches to research, emic and etic research approaches, qualitative and quantitative content analysis, and a cocktail of sampling strategies. I also gained infinite knowledge on qualitative and quantitative data analytical techniques using a variety of computer software such as MATLAB, Statistical Package for the Social Sciences (SPSS), NVivo, and Atlas.ti. In addition, I learnt many other qualitative and quantitative research methods that are quite vital for my research journey. These include hermeneutic, pluridisciplinary, ubuntugogy, ethnographic, consciencist, and phenomenological research methods, among many others.

In any systematic study, research methods are an indispensable part. They determine the success of the study, its credibility, and trustworthiness (for qualitative studies), validity and reliability (for quantitative studies). In this chapter, I use the knowledge gained from the abovementioned institute to present a combination of distinct and systematic, yet complementary, qualitative research methods that were used to investigate the social protection for Children Living on the Streets (henceforth, CLS) in Uganda and the application of the human rights-based approach (henceforth, HRBA). Social protection refers to cash and in-kind support, including basic and social services that are of a public, private and informal nature to mitigate poverty, inequality, vulnerability and risks associated (ILO & UNDP 2011), while the Human Rights Based Approach is a conceptual framework for the process of human development that is normatively based on international human rights standards (United Nations-Office of the High Commissioner for Human Rights 2006). Researchers worldwide use qualitative methods to capture and describe the depth, richness, and complexity of research (Ariño et al. 2016). I therefore employed qualitative research methods, with an inductive research approach, applying both emic and epic data collection and analytical approaches for this study. The qualitative research methods included content analysis (both conventional and summative), as well as in-depth interviews. The respondents were selected using purposive sampling methods: namely, critical case, maximum variation/heterogeneous, criterion and snowball sampling.

It is uniquely evident that a triangulation of conventional and summative content analytical approaches is good for social protection studies. A blend of inductive, descriptive and exploratory approaches to content analysis presented me with an opportunity to succinctly explore and describe the key thematic areas under social protection studies. Correspondingly, in-depth interviews were utilized to complement content analysis in order to enhance the credibility and trustworthiness of the research findings. In this chapter, I conceptualize the methods that were used which entailed *what*, *why* and *how* I used the methods. The research was prompted by the recurring challenges encountered in undertaking qualitative studies on CLS, specifically on how to obtain samples. Thus, the adoption of qualitative approaches was a daunting task that required triangulation to enhance the trustworthiness and credibility of the research findings. The chapter further demonstrates that a solid qualitative study on CLS cannot be conducted without an appropriate conceptualization of the phenomenon under investigation and the research methods to be used.

Key Terms

There are many terms that can be used in a case study research design, depending on whether the researcher is employing quantitative, qualitative, or a mixture of both approaches. In this study, I mainly use a qualitative approach. The terms described in Table 12.1 are the major ones employed in this chapter.

Table 12.1: Key Terms

Term	Description
Case Study	The collection and presentation of detailed information about a particular participant or small group, frequently including data derived from the subjects themselves (USC 2017).
Qualitative Research	This is a study that primarily describes a situation, phenomenon, problem or event, where data is non-numerical (Ranjit 2011; USC 2017).
Exploratory Research	This is when a study is undertaken with the objective either to explore an area where little is known or to investigate the possibilities of undertaking a particular research study (Ranjit 2011).
Descriptive Research	An attempt to systematically describe a situation, problem, phenomenon, service or programme (Ranjit 2011). The researcher provides a description of their observations, findings and results of data analyses (USC 2017).
Inductive	A form of reasoning in which a generalized conclusion is formulated from particular instances (USC 2017).
Interpretivism	The theoretical paradigm where research seeks knowledge through the interpretation of human action, by examining how people make meanings of them (Oxford University 2009).
Constructivism	The idea that reality is socially constructed. It is the view that reality cannot be understood outside of the way humans interact and the idea that knowledge is constructed, not discovered (USC 2017).
Phenomenology	This is the study of how people experience the world, (Oxford University, 2009).
Emic Approach	This is where the research participants' words and perspectives are the starting point, and it is an insider, or bottom-up, approach (Olive 2014).

Etic Approach	This is where, theories, concepts, and ideas are studied; it is an outsider, or top-down, approach (Olive 2014).
Bias	This is a loss of balance and accuracy in the use of research methods. It is also a deliberate attempt to either conceal or highlight something (Ranjit 2011).
Saturation	A situation in which data analysis begins to reveal repetition and redundancy and when new data tend to confirm existing findings rather than expand upon them (USC 2017).

Source: Self-generated by the Author using the sources cited in the Table

Research Design

According to Greener (2008), a research design is a grand plan of approach to a research topic. It is also a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems (Kerlinger 1986, cited in Ranjit 2011). The plan is the complete scheme or programme of the research. It includes an outline of what the investigator did from writing the research questions, hypotheses and the operational implications to the final analysis of data (Kerlinger 1986 cited in Ranjit 2011). According to Yin (1984), three conditions determine the type of research design: (1) the type of research question, (2) the degree of possible investigator control, and (3) the degree of focus on contemporary events desired.

Given the preceding conditions, I used a case study research design with both exploratory and descriptive attributes. Despite the widespread use of case study methods throughout the social sciences, no consensus has emerged for a single definition (Ragin & Becker 1992; Gerring 2007 cited in Baxter & Jack 2008). According to Bormley (1990), a case study is 'a systematic inquiry into an event or a set of related events which aims at describing and explaining the phenomenon of interest'. Yin defines it as 'an empirical inquiry which: investigates a contemporary phenomenon within its real-life context: when the boundaries between phenomenon and context are not clearly evident and where multiple sources of evidence are used' (Yin 1984 in Schel 1992. 1). According to Yin (1994), a case study as an interpretive and inductive form of research, explores the details and meanings of experiences and do not usually attempt to test a priori hypotheses; instead, the researcher identifies important patterns and themes in the data.

In a case study, the unit of analysis can vary from an individual person, group, location, organization/company and event (Bormley 1990), and many others. A unit of analysis is an object, event, individual, group, organisation, or society. It is

the 'who' or 'what' the researcher wants to explore, describe, explain or understand (Oxford University 2009). Therefore, I was aware of the many types of case studies like: multisite, intrinsic, collective, and illustrative; however, for this study, I used single case design with exploratory and descriptive attributes as elucidated in the following sub-section.

Single Case Study Research Design

A single case study design can be divided into two types: (1) *idiographic* and (2) *nomothetic* (Levy 2008; Willis 2014). The two concepts were used in Kantian Philosophy to describe two different approaches to knowledge. The word 'idiographic' originates from the Greek word *idios* meaning *own* or *private*. An ideographic approach offers a full description of a given case. Idiographic case studies describe, explain, interpret, and/or understand a single case as an end rather than a vehicle for developing broader theoretical generalizations (Levy 2008). In contrast, the word 'nomothetic' originates from a Greek word *nomos* meaning *law*. A nomothetic approach aims at studying and establishing laws or generalizations, mainly to obtain objective knowledge through scientific methods (Levy 2008). Therefore, in any research, a nomothetic approach offers a generalized and indiscriminate understanding of a given case. In this study, the idiographic case study design employed was mainly descriptive in nature. The idiographic case was used to describe the (a) mechanisms and processes for social protection of children living on the streets in Kampala, Uganda; (b) context of implementing social protection for children living on the streets; and (c) strengths and weaknesses of the human rights-based approach to social protection for children living on the streets in the Ugandan context.

The nomothetic case design was mostly used to test the hypothetical propositions of the study. These propositions are (a) the socio-economic, political, and institutional contexts in Uganda cannot facilitate social protection for children living on the streets; and (b) in the Ugandan context, the human rights-based approach cannot be applied to social protection for children living on the streets. The single case study design was for the following reasons:

a. to cover contextual conditions for social protection of CLS, because they could be easily captured under a case study;

b. the boundaries between the phenomenon of social protection and context under investigation were not clear;

c. both idiographic and nomothetic single case studies were advantageous, notably the empirically–rich, context–specific, holistic accounts that they

offered, their contribution to theory building-the human rights-based approach, and to a lesser extent, theory-testing too (May 2011); therefore a single case design is ideal for applying a theory and building a theory; while describing single case designs, Yin (2009) assigned them roles in applying, testing, or building of theory, as well as in the study of unique cases;

d. in this study, a single case design was used because it blended well with an inductive research approach; given that this study had inductive attribute; According to Bennett and Elman (2010), the use of inductive process tracing in a single case study has the advantage of generating new hypotheses, either particular to that individual case or potentially generalisable to a broader population; single case analysis can therefore be valuable for the testing of theoretical propositions, provided that predictions are relatively precise (Levy 2008);

e. a single case study was used because it offered a methodological rigor (Bennett and Checkel 2012); I used this design due to its procedural objectivity and consistency in order to develop a context and process for social protection of CLS in Uganda; hence, 'a single case study design is a more free–form approach advantageous in delving into the subtleties and particularities of individual cases' (Lyotards 1994);

f. in this single case study, there was process tracing; this helped in addressing the complexity of path-dependent explanations and critical junctures in the study (Bennett and Elman 2006b); also, a signal advantage of the single case study existed at a more practical rather than theoretical level; according to Eckstein (1975), a single case design is economical in all aspects: money, manpower, time and effort; and

g. it also entailed descriptive accounts; yet, the design could also be used in an intellectually rigorous manner to achieve experimental isolation of one or more selected social factors within a real-life context (Yin 1994).

h. It was against such a milieu that I used a single-case design to gain an in-depth understanding of contextual influences on the interpretations of institutions (governmental and non-governmental organizations) and examining the implementation of social protection, as well as application of the HRBA to the social protection for CLS. Particular interest was centered on international and national contexts and the public institutions. Therefore, a qualitative single case study research design was used. The understanding of issues relating to the human rights-based approach to social protection for CLS was largely qualitative. The analysis from the literature review and the

responses from the respondents on the subject were qualitative, descriptive and exploratory statements.

i. Nonetheless, I was also aware that the use of a single case study research design in this study had a number of limitations. Some of these are as follows:

j. Like any other research design, a single case study is not without limitations. The design has been subject to many criticisms, the most common of which concerns the interrelated issues of methodological rigor, researcher subjectivity, and external validity (Willis 2014). Maoz (2002: 172) argues that 'the use of the case study absolves the author from any kind of methodological considerations. Case studies have become in many cases a synonym for freeform research where anything goes'. The absence of systematic procedures for case study research is something that Yin (2009) sees as traditionally the greatest concern due to a relative absence of methodological guidelines. However, this criticism appears rather unfair. Many contemporary case study practitioners have increasingly sought to clarify and develop their methodological techniques and epistemological grounding (Bennett and Elman 2010). In this study, the research systematically explained all the data collection methods and research approaches. This action therefore negated such a criticism.

k. In addition, incorporating construct validity, the reliability and replicability of various forms of single case study analysis is challenged. This is usually tied to a broader critique of qualitative research methods, as a whole (Willis 2014). Nonetheless, I utilized a triangulation of both content analysis and interviews to enhance reliability and replicability of the findings of the study. Triangulation is a multi-method or pluralistic approach, using different methods in order to focus on the research topic from different viewpoints and to produce a multi-faceted set of data (USC 2017).

l. External validity or generalizability is also a critical challenge of the single case study. For example, it is hard for one case to reliably offer something beyond the particular. Generalizability is the extent to which research findings and conclusions conducted on a specific study to groups or situations can be applied to the population at large (Oxford University 2009). King et al. (1994) wrote: 'in all social science research and all prediction, it is important that we be as explicit as possible about the degree of uncertainty that accompanies our prediction'. In a single case study, the criticism is 'mitigated by the fact that its capability to do so is never claimed by its exponents; in fact, it is often explicitly repudiated' (in Eckstein 1975: 212). In this regard,

in this particular study, I found that the criticism of generalisability is of little relevance when the intention was that of particularisation.

m. According to Willis (2014), single case studies are clearly less appropriate for statistical generalization, but arguably retain significant utility for analytical generalization. Indeed, in this study, I employed qualitative approaches to enhance the analytical generalization. Additionally, Seawright and Gerring (2008) argue that the generalisability of case studies can be increased by a careful and systematic selection of cases. Alternatively, *appropriately used*, atypical or extreme cases often reveal more information (Bennett and Elman 2006a). However, in this study, I carefully and purposively selected the cases to elicit relevant and reliable data.

n. According to May (2011), many research methods and approaches possess clear limitations. Indeed, any research method involves necessary tradeoffs. However, this can potentially be offset by situating them within a broader, pluralistic mixed-method research strategy, which I did during this study. May (2011) adds that whether or not single case studies are used in any fashion, they clearly have a great deal to offer.

Single Case Design versus a Phenomenological Design

Many qualitative studies use similar research designs, data gathering and analytical techniques. Their discrepancy is mainly premised on the intention of a researcher. For example, given that this study was on CLS, one could argue that I ought to have used a *Phenomenological Research Design*: i.e. the study of the lived experiences of participants who have gone through a traumatic experience like CLS. However, the main goal of this study was to examine existing mechanisms for social protection of CLS in Uganda and the strengths as well as weaknesses of applying the Human Rights-Based Approach (HRBA) to social protection for these children in the current context. Therefore, although a phenomenological design is good for a study on CLS, it was not ideal for this particular study. Participants are individuals whose physiological and/or behavioral characteristics and responses are the object of study in a research project (USC 2017).

Descriptive and Exploratory Attributes in the Case Study

I employed a mixture of descriptive and exploratory attributes within the single case study design as described in the following subsections.

Descriptive Attribute

A descriptive approach was used to define the characteristics of the population or phenomenon that was studied. A *descriptive study* systematically illustrates a situation, problem, phenomenon, service or programme, or provides information about, say, the living conditions of a community, or describes attitudes towards an issue (Ranjit 2011). In this context, the study described the nature of social protection services provided to children on the streets of Kampala and analyzed the application of the human rights-based approach to the delivery of these social protection services.

A descriptive case study is different from other types of case studies in the sense that it is a qualitative methodology that uses the illustrative approach to demonstrate facts, focusing on a single or specific nature of a phenomenon. According to Tobin (2012), a descriptive case study is focused and detailed on propositions, questions about a phenomenon that is carefully scrutinized, and articulated at the outset. According to Jack (2008), a descriptive case study methodology is a means to providing tools for researchers to study complex phenomena within their contexts. The main goal of a descriptive case study is to assess a sample in detail and in depth, based on an articulation, informed by a descriptive theory. Descriptive studies reveal patterns and connections in the data in relation to theoretical constructs in order to advance theory development. Some researchers refer to descriptive case studies as intensive or focused case studies. These are semantically helpful terms for directing a researcher's desired level of intellectual penetration of a phenomenon (Jack 2008). The descriptive theory must respect the depth and scope of the case under study, which is conveyed through robust propositions. If a descriptive theory cannot be developed easily before a case study, then a researcher may want to consider whether the case is more of an exploratory case study or not.

Exploratory Attribute

Exploratory research is conducted for a problem that has not been studied more clearly before. It establishes priorities, develops operational definitions, and improves the final research design. Exploratory research is when a study is undertaken with the objective either of exploring an area where little is known or investigating the possibilities of undertaking a particular research study (Ranjit 2011). An exploratory case study is a qualitative design conducted about a research problem when there are few or no earlier studies to refer to, with the intention of identifying key issues and variables (Omero and Mselle 2017).

The focus is on gaining insights and familiarity for later investigation, which may be undertaken when problems are in a preliminary stage of investigation. In this study, in tandem with Mansur's (2015) view, the exploratory research involved a broad range of literature search and conducting interviews to learn more about the context and process of social protection for CLS in Uganda, and the application of the human rights-based approach. The exploration of a new phenomenon in this way helps a researcher to better understand a phenomenon (Mansur 2015).

Research Approach

This study used a qualitative, inductive research approach, which is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. In qualitative research, a researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting (Creswell 1998). In inductive studies, researchers begin with specific observations that are used to produce generalized theories through which conclusions are drawn from the research. The inductive approach was mainly used for the current study because it takes into account the context where research effort is active, while it is also the most appropriate for small samples that produce qualitative data (Denzin & Lincoln 2005). Samples imply the population researched in a particular study (USC 2017). According to Thomas (2003), the primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data. However, the main weakness of the inductive approach is the production of generalized theories and conclusions based only on a small number of observations, thereby impacting the trustworthiness of research results (Thomas 2003).

Implicit in the inductive approach was an *unstructured approach* that was also employed. In the unstructured approach, everything that formed the research process – objectives, design, sample, and the questions that the researcher asked respondents – was not predetermined. The unstructured approach was mainly used because it allowed flexibility in all aspects (design, objectives, questions, etc.) of the research process (Ranjit 2011). The unstructured approach was predominantly used to explore its *nature*: in other words, variation/diversity per se in a phenomenon, issue, problem or attitude towards an issue (Ranjit 2011). According to Ranjit (2011), before undertaking a structured inquiry, an unstructured analysis must be undertaken to ascertain the diversity of the phenomenon. Later, another study

can be conducted to provide quantified information through a structured inquiry. Therefore, both structured and unstructured approaches have their place, and they are accorded equal weight (Ranjit 2011). Largely, this was why this particular study was conducted using an inductive, unstructured approach.

Etic and Emic Approaches

In addition to the inductive and unstructured approaches, I also generated and used both etic and emic data. Emic and etic are two divergent approaches to conducting research on human beings. In the emic approach, the research participants' words and perspectives are the starting point, and it is an insider, or bottom-up, approach. In the etic method, theories, concepts and ideas are studied. It is an outsider, or top-down, approach. Emic is culture-specific and etic is universal.

The terms 'emic' and 'etic' were first coined by the linguistics theoretician Kenneth Pike in 1954. Pike derived the term 'etic' from the suffix of the word *phonetic* which pertains to the study of sounds in isolation that are universally and specifically used in human language: i.e. the function of sounds within a language regardless of their meanings. Similarly, 'emic' stems from the word *phonemic* which is primarily concerned with the acoustics, external properties, and meanings of words (Helfrich 1999; Yin, 2010 and Olive 2014). Applied to this study is Pike's (1967:37) in Olive (2014: 13), 'the etic viewpoint studies behavior or a phenomenon from the outside of a particular system, while the 'emic viewpoint studies behavior or phenomenon from inside the system'. The application of these divergent perspectives has grown and spans numerous fields of study and genres of qualitative research. Headland (1990: 21) argues that 'emic and etic approaches diffused into other branches of science during the 1970s and at the same time became common words in the English language'. As the use of emic and etic became more prevalent, so did the confusion regarding their definitions and how their distinctions were applied. Headland observed that 'authors equate emic and etic with verbal versus nonverbal, or as subjective knowledge versus scientific knowledge, or as good versus bad, or as ideal behavior versus actual behavior, or as description versus theory, or as private versus public, or as ethnographic ... versus ethnological ...' (Headland 1990: 21). Due to the confusion surrounding these terms, I provide brief explanations of how the 'emic' and 'etic' perspectives are frequently defined and how the two approaches were utilized in this study in the following subsections.

The Emic View

Emic, which is the insider view, is focused on culturally-bound data and looks at how people within one culture (in this context, CLS) think, perceive, and understand their world. This approach allows for a description of social protection that was meaningful to the children within their 'culture' and/or condition (Margret 2013). In the social protection research that I conducted, the emic perspective typically represented the interna l – view–context of CLS (Merriam 2009). An emic perspective captures the participants' indigenous and homogeneous meanings of real-world events (Yin 2010) and looks at things through the eyes of members of CLS (Willis 2007). There is a supposition that the emic perspective is more relevant: i.e. it is impossible to truly comprehend and appreciate the nuances of a particular group's culture. An outsider's (etic) perspective can never fully capture what it really means to be a part of a particular culture (Olive 2014).

From the emic perspective, respondents, specifically the CLS, were asked about the kind of social protection services that they received from the state and other actors like the NGOs. One respondent stated that *while on the streets, we don't receive any social protection services, not even any other single service (emphasis added). If one is lucky to be taken off the streets by some organizations that is when such a person is provided with; education, accommodation, clothing and food and other services. The only 'protection' we get from government institutions like Kampala Capital City Authority is harassment to leave the street without alternative support,"* (CLS14, 2017).

The Etic View

Contrary to the emic view, the etic view is based on observations and interpretation made by the researcher. This is where we arrive at the insider and outsider distinction. Lett (1990), defines etic constructs as accounts, descriptions, and analyses expressed in terms of the conceptual schemes and categories regarded as meaningful and appropriate by the community of scientific observers. In reality, emic versus etic is not a dichotomy: i.e. not mutually exclusive (Margret 2013). The etic perspective encompasses an external view on the context of social protection for CLS. I also took an etic approach to this study because it enabled comparisons to be made across multiple cultures and populations that differed contextually (Morris et al. 1999; Olive 2014).

From the etic perspective, the findings of the study suggest that existing social protection mechanisms for CLS in Uganda were *preventive* in nature, as they

sought to avert multiple forms of deprivation. However, these social protection mechanisms fell short of international human rights values and standards: i.e. the human rights-based approach.

Emic-Etic Tensions

Like in many other studies, the emic-etic tensions had to be explained. In qualitative research, there are a number of methodologies which significantly favor the emic over the etic approach and vice versa. Regardless of the methodology being employed, many social researchers subscribe to this view (Olive 2014). According to Olive, given the inescapable subjectivity that every researcher brings to a study through his or her past experiences, ideas and perspectives, a solely emic perspective is impossible to achieve. Subjectivity is a way of thinking that is 'conditioned' by one's educational background, discipline, philosophy, experience and skills. It is the quality of being based on or influenced by personal feelings, tastes, or opinions (Ranjit 2011). Conversely, if a researcher takes a purely etic perspective or approach to a study, he or she risks the possibility of overlooking the hidden nuances, meanings, and concepts within a given culture that can only be collected through interviews and observations (Olive 2014).

Vidich and Lyman (2000) explain that the tensions are prevalent due to questions such as 'By which values are observations to be guided?' and 'How is it possible to understand the other when the other's values are not one's own?' Yin (2010, in Olive 2014) argues that differences between emic and etic perspectives are always present due to a researcher's own value system which ultimately guides the design, execution, and reporting of results in a study. Personal characteristics such as age, gender, sexual orientation, race, and ethnicity can play a significant role in the divergence between emic and etic views on the same subject, even in cases where a real-world event is being described. I was therefore mindful of Rosa's (2012) views to the effect that inductive research requires a careful use of both etic and emic approaches. Rosa adds that within the field of qualitative research, it has become a custom to invoke and use the emic–etic approaches to conduct research (Rosa 2012). From this perspective, the use of emic and etic approaches facilitated the translation of social protection systems extracted from the reality of CLS and key informants. Emic knowledge was essential to the intuitive and empathic understanding of the practices developed by the CLS and key informants, while etic knowledge was essential for comparing these practices (Rosa 2012). Ensuring equilibrium between emic and etic views remained critical to guarantee the most accurate depiction of research participants during this study. This enhanced a

balanced, objective, credible and trustworthy synthesis, as well as the triangulation of data and reporting.

The Theoretical Framework for the Human Rights-Based Approach

A *theory* is a generalized logical statement that shows the relationship between two or more hypotheses (Bangura 2017). On the other hand, the University of Southern California Libraries System in Bangura 2017) defines and characterizes a theoretical framework as follows:

> a structure that can hold or support a theory of a study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists. A theoretical framework consists of concepts and, together with their definitions and reference to relevant scholarly literature, existing theory that is used for a particular study. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of your research…and that relate to the broader areas of knowledge being considered… The selection of a theory should depend on its appropriateness, ease of application, and explanatory power.

In this study, I used a human rights-based approach (HRBA) as a theoretical framework. The HRBA has been defined differently by many scholars and organizations. According to the United Nations' Office of the High Commissioner for Human Rights (UN-OHCHR), a human rights-based approach is a conceptual framework for the process of human development that is normatively based on international human rights standards and operationally directed to promoting and protecting human rights (UN-OHCHR 2006).

The HRBA seeks to analyse the inequalities that lie at the heart of development problems and redress discriminatory practices and unjust distributions of power that impede development progress (UN-OHCHR 2006). Under the HRBA, all the international and national plans, policies and processes of development are anchored in a system of rights and corresponding obligations established by international law. This aims at promoting the sustainability of development work, empowering people themselves, especially the most marginalized, to participate in policy formulation and hold accountable those who have a duty to act (UN-OHCHR 2006). The choice of HRBA for this study was based on the following factors:

a. The HRBA principles emphasize that social protection for CLS should be guided by identification of the poor, national and international human rights frameworks, equality and non-discrimination, participation, monitoring and accountability, and international assistance and cooperation.

b. The HRBA emphasizes enhancing the capacity of rights holders (demand for social protection) and duty bearers (supply of social protection) for children living on the streets.

c. According to the HRBA, social protection plans, policies and processes for CLS in Uganda should be anchored in a system of rights and corresponding obligations established by international law. This was yet to be realized in Uganda. Social protection is being implemented as a need and a matter of charity rather than a human right.

Area of Study: Kampala

The study was conducted in Kampala city, specifically in the Central Division. The choice of Kampala was based on three factors: (1) It is the capital city of Uganda, a home to many CLS compared to other urban areas in Uganda; (2) It is also home to many organizations, both national and international, coupled with local NGOs that are mandated to implement social protection for CLS; and (3) a study on CLS in Kampala presented a representative and credible position on the topic indeed. The Central Division was chosen for several reasons. First, the Central Division has a Central Business District (CBD), which is regarded the 'heart' of Kampala with many business and socio-economic opportunities that attract many children to the street compared to other divisions. These children are attracted by opportunities like picking scrap metals, casual working, like winnowing maize and millet, and begging opportunities among many. Secondly, the Central Division also hosts many government and international and local organizations compared to other divisions.

Sample Size

Samples for qualitative studies are generally much smaller than those used in quantitative studies. According to Mason (2010), a number of issues can affect sample size in qualitative research. However, the guiding principle should be the concept of saturation. Ritchie et al. (2003) argue that this is because of diminishing returns due to saturation in a qualitative sample. As the study progresses, more data do not necessarily lead to new information. Frequencies are rarely important in qualitative research, as one occurrence of the data is potentially as useful as many in understanding the process behind a topic. This is because qualitative research is concerned with meaning and not making generalised hypotheses (Crouch and McKenzie 2006). Glaser and Strauss (1967 cited in Mason 2010) argue that qualitative studies should generally follow the principle of saturation.

They also maintain that within any research area, different participants can have diverse opinions. Qualitative samples therefore must be large enough to ensure that most or all the perceptions that might be important are uncovered; but at the same time, if the sample is too large, data become repetitive and, eventually, superfluous. Ritchie et al. (2003) suggest the following seven factors that can influence qualitative sample sizes: (1) heterogeneity of the population, (2) number of selection criteria, (3) extent to which 'nesting' of criteria is needed; (4) groups of special interest that require intensive study, (5) multiple samples within one study, (6) types of data collection methods used, and (7) the budget and resources available. Morse (2000) adds that the scope of the study, the nature of the topic, the quality of the data, and the study design also contribute to the determination of a sample size. Lee et al. (2002) also suggest that studies that use more than one method require fewer participants as do studies that use multiple (very in-depth) interviews with the same participant (e.g., longitudinal or panel studies).

Mason (2010) uses a sample of 560 PhD students' projects using qualitative approaches and qualitative interviews as the method of data collection was taken from *theses.com* and the contents were analyzed for their sample sizes. The results revealed a pre-meditated approach to sample size that was not wholly congruent with the principles of qualitative research (Mason 2010). Mason found that the standard mean of the sample size was the use of 31 respondents. Other researchers have suggested guidelines for determining qualitative sample sizes. According to Ritchie et al. (2003), qualitative samples frequently 'lie under 50'. Charmaz (2006) proposes that 25 respondents are adequate for small projects, while Green and Thorogood (2009) postulate that the experience in most qualitative researches is that in interview studies little, that is, 'new' comes out of transcripts after you have interviewed 20 or so people. Although these scholars do not provide a statistical formula and a logical conclusion of how they arrived at their proposed sample sizes, it appears that their respective proposals have been ratified internationally by many researchers. I used a total of 33 respondents. I was equally aware of the view by Leech (2005) that it is a mistake to presume that all qualitative research must inevitably use small samples, which ignores a growing body of studies that utilize text-mining and/or data-mining. Lokesh and Parul (2013: 36), defined text mining as 'the non-trivial extraction of hidden, previously unknown, and potentially useful information from – large amount of – textual data, or the process of analyzing text to extract information that is useful for a specific purpose.' Oxford University (2009), defined data mining as the process of analyzing data from different perspectives and summarizing it into useful information, often to discover patterns and/or systematic relationships among variables. According to Navathe et

al. (2000) in Lokesh and Parul (2013), text mining is similar to data mining, except that data mining tools are designed to handle structured data from databases, but text mining can also work with unstructured or semi-structured data sets such as emails, text documents etc. As a result, text mining is a far better solution.

Sampling Frame

Salant and Dillman (1994) define a sample as a set of respondents selected from a larger population for a survey. Even if qualitatively-oriented studies often work with small samples with single case studies, researchers must describe and provide justifications for the sample size and sampling strategy (Mayring 2014). Therefore, the determination of a sample size is a common task for many researchers. Inappropriate, inadequate, or excessive sample sizes influence the quality, accuracy, credibility, and trustworthiness of research (Bartlett et al. 2001). According to Maleske (1995), samples must be representative enough so that they allow a researcher to make inferences or generalisations from the sample statistics to the population under study. Peil (1995) argues that the choice of varied respondent categories presents an opportunity to have a number that is representative with different features and views and selected from different information backgrounds to provide credible, reliable, valid and theoretically-meaningful information.

Studies on homelessness generally face a problem of failure to obtain representative samples (Robertson 1992; Susser, Conover and Struening 1989; Tessler and Dennis 1989). A representative sample is a sample that includes cases or individuals from all subgroups of the targeted population (Oxford University 2009). Many of these studies on homelessness have not documented their sampling methods at all, while other studies have generally focused on single localities, often sampling from only one or two sites in a particular city. Although convenient for a researcher, sampling entirely from one source may miss a sizeable segment of a homeless population (Toro 1999). In this study, the sampling framework was systematically geared toward covering social protection institutions and CLS. Considering the preceding views, I used various non–random sampling techniques, also known as purposive sampling techniques, to cover both social protection institutions and CLS. These techniques are discussed in the subsections that follow.

Critical Case Sampling

This is a type of sampling in which only one case was chosen for study. I expected that studying this one case would reveal insights that could be applied to similar cases. The critical case in this study was selected because it demonstrated success

in implementing social protection for children living on the streets. This sampling method was good for selecting respondents from the Ministry of Gender Labor and Social Development (MoGLSD), which, at the time of my study, was believed to have good social protection programmes for CLS.

Deviant Case Sampling

According to Patton (2001), extreme or deviant case sampling looks at highly unusual manifestations of the phenomenon of interest, such as outstanding success and notable failures, top of the class/dropouts, exotic events, crises. This strategy tries to select particular cases that would glean the most information, given the research question. This sampling method was used to study organizations (the outliers) that were believed to deviate from the standards of social protection for CLS and the application of the human rights-based approach. This was used to get information from organizations like Save Street Children Uganda (SASCU) and Children at Risk Network that were believed to have minimal social protection programmes and integration of the human rights-based approach in their programmes, which were identified and studied through a combination of snowball, criterion and maximum variation sampling methods.

Criterion Sampling

This can be defined as a sampling method that is used to select individuals with certain important characteristics. McMillan (2016) states that in criterion sampling, the researcher selects participants on the basis of identified characteristics or traits that will provide needed information. For this study, the main characteristics of respondents were gender and disability. The criterion sampling method was used to determine girls and children with disabilities living on the streets. The selection of girls and children with disabilities was significant in eliciting and integrating the gender and disability issues in the study. This was also significant in analyzing the double jeopardy that these children experience to justify the advocacy of affirmative action for them.

Maximum Variation/Heterogeneous

This was where the respondents were selected to provide a diverse range of cases relevant to a particular phenomenon of social protection for CLS. The purpose of using this sampling design was to provide as much insight as possible into the nature of social protection, the context and process of social protection for CLS. The respondents selected and maximized variation in terms of age was 10–17 years

for CLS. I also paid particular attention to ensure a maximum gender variation for all respondents. This was purposely done to collect and analyze gender sensitive data in order to enhance gender mainstreaming at all levels of the study. In any case, out of the 33 respondents, 15 were males and 18 were males. I did not intend to collect equal numbers of male and female respondents, or even more female respondents, since the study was not purely a gender study.

Snowball Sampling

Katz (2006), defined snow ball sampling as a non-probability method for developing a research sample where existing study subjects recruit future subjects from among their acquaintances. This sampling method was used to get information on CLS. It was used because I selected one child to lead to the next respondent, since they are homeless, and it was hard to locate them. It was easy to reach these children using this sampling method, since their locations were less known.

Data Collection Methods

The research methods that I employed in my study fall under the extensive category of qualitative research. In this study, qualitative methods posed several merits that include (a) the ability to undertake a basic conceptualization of social protection and the application of the HRBA and (b) the capacity to delve into the contexts and processes for application of the HRBA to social protection for CLS that could largely be conducted through an inductive qualitative study.

It was through qualitative research methods that I got a clear construct of the social protection mechanisms for CLS. I was also able to loosen the connection between the concepts and practices of both social protection and the employment of the human rights-based approach.

Primary Data Collection

For this study, primary data were collected and analyzed to compliment secondary data as well as bridge the pertinent gaps identified in secondary data. Primary data were collected through in-depth interviews. Also used were existing international human rights law instruments as well as national laws and policies as primary data.

Content Analysis

There is no single definition of content analysis. Thus, a number of definitions of content analysis have been advanced. Kerlinger (1986) and USC (2017) define

content analysis as a method of studying and analyzing communication in a systematic, objective and quantitative manner for measuring variables. It is a family of procedures for the systematic, replicable analysis of text (Rose et al. 2015); any technique adopted to make inferences through systematically and objectively identifying specified characteristics of messages (Holsti 1968). It is a research methodology that utilizes a set of procedures to make valid inferences from a text (Weber 1985). I use Hsieh and Shannon's (2005) definition of qualitative content analysis. For them, it is a process designed to condense raw data into categories or themes based on valid inference and interpretation.

This process uses inductive reasoning by which themes and categories emerge from the data through a researcher's careful examination and constant comparison of categories. Content analysis requires a systematic coding and categorising of texts to determine the trends and patterns of words through establishing their frequency, relationships, and structures found in communication discourses (Grbich 2006; Pope et al. 2006). Every analysis requires a context in which the available texts are examined (Krippendorff 2004).

There are two approaches to content analysis: (1) inductive and (2) deductive. Inductive analysis is used when there are no previous studies dealing with a phenomenon; thus, coded categories are derived directly from the text (Hseih and Shannon 2005; Vaismoradi et al. 2013). Deductive analysis aims at testing a previous theory in a different situation or to compare categories at different periods (Hseih and Shannon 2005). This study used an inductive approach to content analysis, given the lack of adequate theorization on the topic under investigation in the Ugandan context. Content analysis, like other research methods, conforms to three basic principles of scientific method: (1) *objectivity,* meaning that the analysis is pursued on the basis of explicit rules, which enable different researchers to obtain the same results from the same documents or messages; (2) *systematicity,* referring to the inclusion or exclusion of content and is done according to some consistently applied rules whereby the possibility of including only materials which support a researcher's ideas is eliminated; and (3) *generalizability,* implying that the determination of whether results obtained by the researcher can be applied to similar situations.

Content analysis can be carried out both quantitatively and qualitatively (Rose et al. 2015). The technique provides a structured way of analysing data that are typically open-ended and unstructured. Two important aims of such analysis strategies are (1) *description* – the focus is on describing features of the message content (Rose et al. 2015); and (2) prediction – the main aim is to predict the outcome or effect of the messages being analysed (Neuendorf 2002).

In this study, I systematically analyzed the written content. This included books, journal articles, international treaties and declarations, national policies and laws for social protection, and programme documents from both government and NGOs. Some of the documents reviewed included The National Development Plan II, Ministry of Gender Labour and Social Development Strategic Investment Plan, Ministry of Gender, Labor and Social Development Annual Reports, Uganda National Social Protection Policy, Expanding Social Protection Programme reports, UNICEF Uganda Country Reports, NGO Reports, etc. Regarding the laws and policies, The Convention on the Rights of the Child and the Bill of Rights, the Constitution of the Republic of Uganda, and the National Social Protection Policy 2015, and many others were reviewed. I utilized a triangulation of conventional and summative content analysis techniques, in addition to the inductive content analysis approach (Vaismoradi et al. 2013). I further employed descriptive and explorative views to content analysis (Mayring 2014). A blend of these approaches presented an opportunity for me to succinctly explore and describe the key thematic areas that emerged from the study's findings (refer to the section on Data Analysis section for these themes).

Understanding Qualitative In-depth Interviews

Kvale (1996: 174) defines an interview as 'a conversation, whose purpose is to gather descriptions of the (life-world) of the interviewee' with respect to interpretation of the meanings of the 'described phenomena'. Similarly, Schostak (2006: 54), states that an interview is an extendable conversation between partners that aims at having an 'in-depth information extraction about a certain topic or subject; and through which a phenomenon could be interpreted in terms of the meanings interviewees bring to it'. For Dörnyei (2007) in Alshenqeeti (2014: 40), an interview is 'a natural and socially acceptable' way of collecting data as it can be used in various situations covering a variety of topics. Researchers like Bell (1987), Kvale (1996), and Berg (2007) recommend that interviewing should be adopted as a method for research, as it facilitates obtaining 'direct' explanations for human actions through comprehensive speech interactions.

For this study, qualitative unstructured interviews were used. Gubrium and Holstein (2002) point out that unlike a structured interview, an unstructured interview is open and has greater flexibility and freedom to both the interviewer and interviewee. The interviewer is more 'keen to follow up interesting developments and to let the interviewee elaborate on various issues' (Dörnyei 2007: 136). Interviewing is 'a valuable method for exploring the construction and negotiation of meanings in a natural setting' (Cohen et al. 2007: 29)

An in-depth interview can be defined as a discovery-oriented or open-ended research method which is mainly employed in order to obtain detailed information about any topic from participants (Sravani 2017). This helps in delineating in-depth views of respondents' experiences, feelings, and perspectives on a topic under investigation (Sravani 2017). In-depth interviews were generally preferred because of their strength in accessing in-depth information (Marshall and Rossman 1995). Henn et al. (2006) provided qualitative in-depth data by allowing interviewees to talk about the subject in terms of their own frames of reference (Henn et al. 2006). The un-structured in-depth interviews, on the other hand, are a more flexible as 'they allow in-depth information to be achieved, providing the opportunity to the interviewer to probe and expand the interviewee's responses' (Rubin and Rubin 2005, cited in Alshenqeeti 2014: 40).

For the current study, a total of 33 in-depth interviews were conducted. One-on-one, in-depth, semi-structured interviews were conducted with 15 CLS who were deemed to have privy or extensive knowledge of the issues on social protection, based on their age, exposure to urban life, as well as livelihood shocks. As noted earlier, these were children between the ages of 10 and 17 years. Also 15 of the in-depth interview respondents were key informants. A key informant is someone who can offer specific, specialized knowledge on a particular issue that the researcher wishes to understand better (Center for Substance Abuse Prevention 2004).

During the field work, a voice recorder was used in some in-depth interviews with the permission of the respondents. Subsequently, transcription was done. In cases where the voice recorder was not used during the in-depth, because it was deemed inappropriate for the setting or it was rejected by the participants, a note book and a pen were used to write field notes (as suggested by Matt 2013). Field notes presented an advantage in that I could easily refer to them during data coding and analysis. Coding is a way of indexing or categorizing the text in order to establish a framework of thematic ideas about it (Gibbs 2007).

Data Analysis

At the end of each fieldwork day, interview-guide questions were checked and reviewed to identify any inconsistencies and anomalies; and if detected, appropriate corrections were made to ensure consistency and completeness. All data from the interviews were transcribed and summarized to enable easy identification of the key emerging issues and to allow the display of qualitative coding aimed at manual and computerized analysis. A content–driven and thematic approach was used in the analysis of the qualitative data.

Like any other qualitative research, coding was central in this study. I took time to read through the responses from the interviews and content analysis notes. Prior to this coding, the transcription of the interviews had been done. During the reading of interviews and content analysis notes, I identified words and phrases that were prominent to develop open codes. More on these codes follows.

Open Codes: this is where I read through the data several times and developed tentative labels for large amounts of data that summarized the key emerging issues. I ensured that the existing theories do not bias my judgment in this categorization. The establishment of these codes was based on the meanings that emerged from the data. Participants' words were recorded to establish properties of each code.

At this level, I looked for concepts and categories in the data that formed the basic units in the data analysis. Khandkar (2017) states that open codes can be divided into line-by-line and word-by-word coding. However, I utilized line-by-line coding because of its flexibility and ability to manage large quantities of data. For example, the codes in Table 12.2 emerged from the question: What are the existing mechanisms for social protection of CLS?

Table 12.2: An Excerpt of Open Codes

Open Code	Properties	Specimens of Participants' Responses
Enabling access to Education	Enrolment in primary school. Enrolment in secondary school. Providing scholastic materials. Paying school fees. Monitoring access and retention in primary schools.	Enrolment of children. Scholastic materials. School fees. Retention of children. Monitoring access.
Providing Food and Nutrition	The supply and availability of food in a quantity and quality sufficient for the needs of children. Access to good diet nutrition. Adequate dietary in-take, Providing nutrition knowledge.	Availability of food Access to food. Good diet. Providing knowledge.

Source: Self-generated by the Author

The open codes in Table 12.2 were later amalgamated into larger codes called Axial Codes, also known as Category Codes. More on these codes follows.

Axial codes: These were constructed by identifying relationships among the open codes. It was easier to appreciate the emerging themes from the data at this stage. During axial coding, I used concepts and categories while re-reading the text to (a) confirm that the concepts and categories accurately represented interview responses and (b) explore how the concepts and categories were related. The axial codes were then merged to a small group of major codes to form themes. The themes produced Selective Codes, also known as Thematic Codes, discussed in the following paragraph.

Selective Codes: The selective codes helped to define the core variables that included all the themes in the data. I read all the transcripts again and selectively coded all of the data that related to the core variables. This procedure is explained in Table 12.3.

Table 12.3: Excerpt of an Amalgamation of Open, Axial, and Selective Codes

Open Codes	Axial Codes	Selective Code
Facilitating access to education: Enrolment in primary school; Enrolment in secondary school; Providing scholastic materials; Paying school fees; Monitoring access and retention in both primary and secondary school.	Enabling environment for access to education as a support service for CLS.	The preventive and in-kind social protection mechanisms to basically avert deprivation.
Providing food and nutrition: The supply and availability of food in a quantity and quality sufficient to satisfy the needs of children; Accessibility of such food; Access to good dietary nutrition; Adequate in take; Providing nutrition knowledge.	Access to quality food and nutrition for CLS.	

Source: Self-generated by the Author

Therefore, central to the data analysis were a family of codes that were generated in a hierarchical order but related to the context and process of social protection for CLS. Several sub-themes emerged from the broad themes of the study. Some

of the key broad themes included (a) the instruments for social protection of CLS; (b) the process of social protection for CLS; and (c) the context of implementing social protection for CLS

Thereafter, the primary qualitative data codes were integrated with the secondary data codes to make qualitative inferences. Where necessary and applicable, relevant computer software such as Microsoft Office and Atlas-ti were used during data analysis. Microsoft Office was only used during typesetting and transcription of raw data. The transcribed and typeset data were exported to Atlas-ti software for analysis. The data analysis was both descriptive and exploratory, as earlier indicated, defined and justified in discussion of the research design. Throughout the data analysis stage, emphasis was mainly premised on credibility and trustworthiness of the data and research findings. Trustworthiness was unearthed through a triangulation of qualitative research methods, conducting quality checks, and comparing various data sources.

Data Quality Control

For purposes of data quality control, interview guides were subjected to expert review, and a discussion for modification was conducted. This was done to ensure the clarity, accuracy, correctness, and relevance of the data collected. These issues are discussed under the five rubrics discussed in the subsections that follow.

Objectivity in Qualitative Research

Mayring (2014) defines objectivity as total independence of the research results from the researcher. An objective researcher is assumed to be free of individual views, biases and prejudices during the research process (USC 2017). Objectivity is held to be difficult to achieve within qualitative approaches. The objectivity conflict between quantitative and qualitative research is not new. For example, in 1959, Snow diagnosed two cultures in his research, working with different methods: a postmodern constructivist and a realistic position (Snow 1959). In the 1990s, after the postmodern constructivism (the Sokal hoax') the situation worsened leading to a science war (Ross 1996; Bucchi 2004). In one corner stands a rigid positivistic conceptualization of research with a quantitative methodology, and on the other stands an open, explorative, descriptive, interpretive conception using qualitative methods (Mayring 2014).

In agreement with Kanakulya (2015), I was aware of the usual doubts raised by those in favor of quantitative methodology that hold that qualitative methods may have a problem with objectivity. They usually consider qualitative research as

'unscientific, or only exploratory, or entirely personal and full of biases' (Denzin and Lincoln 1994 cited in Kanakulya 2015: 56). The label 'unscientific' is commonly given to qualitative research to imply that such methodology is not 'objective'; but as Lorraine Daston and Peter Galison (1992 cited in Kanakulya 2015: 56) comprehensively discuss, 'objectivity' is a discourse wherein epistemic power is negotiated for the sake of advantage in epistemic-economics and academic politics. In most cases, what is considered 'scientific' is automatically presumed to be 'objective'.

Nonetheless, it has been noted that 'objectivity' itself emerged out of a discourse; thus, as Daston and Galison observe, 'philosophers of science routinely use *objectivity* as a pan-historical honorific, awarding it to this or that discipline… but paying little attention to when objectivity itself developed, or to what served as its source' (Daston and Galison 1992: 84). Therefore, since both qualitative and quantitative approaches have their strengths and weaknesses, and advantages and disadvantages, 'neither one is markedly superior to the other in all respects' (Ackroyd and Hughes 1992: 30 in Ranjit 2011: 33). The measurement and analysis of the variables about which information is obtained in a study are dependent upon the purpose of the study (Akroyd and Hughes 1992).

Credibility and Trustworthiness

Validity, reliability, and objectivity are criteria used to evaluate the quality of research in the conventional positivist research paradigm. As an interpretive method, a qualitative study differs from the positivist tradition in its fundamental assumptions, research purposes, and inference processes, thereby making the conventional criteria unsuitable for judging its research results (Bradley 1993). Recognizing this gap, Lincoln and Guba (1985) proposed four criteria for evaluating interpretive research work: (1) credibility, (2) transferability, (3) dependability, and (4) conformability.

Credibility and Transferability

Credibility is a researcher's ability to demonstrate that the object of a study is accurately identified and described based on the way in which the study was conducted (USC 2017). *Credibility* also refers to the adequate representation of the constructions of the social world under study (Bradley 1993). Lincoln and Guba (1985) recommend a set of activities that would help improve the credibility of research results: (a) prolonged engagement in the field, (b) persistent observation, (c) triangulation, (d) negative case analysis, (e) checking interpretations against raw data, (f) peer debriefing; and (g) members checking.

To enhance the credibility of the results for this study, I designed data collection strategies that were able to solicit adequate representations, designed transparent processes for coding, and drawing conclusions from the raw data. Peer scrutiny of the research tools as well as supervision and guidance by my academic supervisors and doctoral committee also enhanced the credibility of the research findings. I further recognized the strengths and limitations of the selected research methods, design, and approach used in the study. I further justified the appropriateness of the research methods and research design. Therefore, an in-depth methodological description of the study's approaches was conducted to enhance and allow the integrity of research results.

Transferability refers to the extent to which a researcher's working hypothesis can be applied to other contexts. It was not my task to provide an index of transferability but, rather, I provided data sets and explanations that were rich enough to enable other researchers to make judgments about the findings of the study and their applicability to different settings or contexts (as suggested by Hsieh and Shannon 2005). This was done through providing the content analysis data sources as well as coded data to enhance the transferability of my research findings.

Dependability and Confirmability

Dependability refers to 'the coherence of the internal processes and the way the researcher accounts for changing conditions in the phenomenon' (Bradley 1993). Dependability is being able to account for changes in the design of the study and the changing conditions surrounding what was studied (USC 2017). I paid adequate attention to the internal processes of primary data collection and content analysis. I also employed 'overlapping methods' and 'overarching' in-depth methodological approaches to render the study's results dependable. Dependability was enhanced by ensuring the consistency of the study's processes, from conception, data collection, analysis, and report writing to dissemination of research findings (Hsieh and Shannon 2005).

Confirmability: refers to 'the extent to which the characteristics of the data, as posited by the researcher, can be confirmed by others who read or review the research results' (Bradley 1993). The major technique for establishing confirmability is through audits of the research processes and findings (Hsieh and Shannon 2005). Confirmability was mainly enhanced using content analysis because the data sets from content analysis could be easily presented and confirmed by other researchers. I further adopted a triangulation of methods to reduce the effect of investigator bias.

I argue that credibility and trustworthiness are usually less of a problem within qualitative approaches. This is because qualitative studies seek to be subject-centered, close to everyday life (naturalistic perspective), especially when the research process remains theory driven (Mayring 2014). I was also aware that subjectivity can threaten the trustworthiness of the research results (Jae-Eun 2016). Although some scholars argue that qualitative researchers should embrace subjectivity, in this study, I tried to minimize subjectivity by (a) removing and minimizing subjective errors in the research tools; (b) during data analysis and report writing, I also minimized the use of subjective statements; (c) deducing researcher's bias at the different stages of the research process; and (d) using positionality in the research process. I interacted well with respondents during the in-depth interviews. Positionality also helped me to minimize the bias during content analysis. The term positionality both describes an individual's world view and the position they have chosen to adopt in relation to a specific research task (Foote and Bartell 2011; Savin, and Major 2013). Positionality "...reflects the position that the researcher has chosen to adopt within a given research study" (Savin and Major 2013: 71). The individual's world view or 'where the researcher is coming from concerns ontological assumptions (the nature of social reality), epistemological assumptions (the nature of knowledge) and assumptions about human nature and agency (Sikes 2004).

The preceding aspects not only enhanced the integrity of the data but also the research process and the analysis, as well as the interpretation of the data (Mosseleson 2010). I was aware that ensuring *refutability* and/or *falsifiability* (i.e. the belief that for any hypothesis to have credence, it must be inherently disprovable before it can become accepted as a scientific hypothesis or theory) of information can be important in generating theories that are testable and realistic, thereby minimizing subjectivity. Nonetheless, I did not select this approach to minimizing subjectivity. This was because falsifiability is very strict in its definitions and does not take into account that many studies are observational and descriptive. In any case, this particular study had descriptive and explorative attributes.

Research Constraints

The cosmopolitan nature of urban areas made it complicated to locate the respondents, mainly CLS. This problem was largely solved by using snowball sampling and making use of research gates in communities to locate these children. I anticipated the non-availability of some respondents, mainly the key informants – respondents who can offer specific, specialized knowledge on

the study (Education Development Center 2004) – because of their busy work schedules, and CLS, due to their 'nomadic' lifestyle and the nature of activities that they undertake during the day. This was partly true with some respondents during the fieldwork. Nonetheless, this was solved by making prior appointments with the carefully selected key informants. I further selected respondents (CLS) in a systematic manner that ensured that they were reached.

There were also language barriers with some children who could not speak Luganda, the dominant local spoken language in Kampala. To solve this constraint, I used research assistants that spoke other local languages fluently.

Some respondents asked for some logistics and/or incentives before accepting to be interviewed due to their vulnerability. This was solved by informing them of the ethical values of the study in order to make them informed as well as highlighting how the logistics could compromise the findings and responses they would give. Nonetheless, I provided some simple refreshments to children who participated in the study given their vulnerability. The logistics were limited to the required exigencies not to undermine or in any way influence the findings of the study.

Community apathy was also another major constraint to the study. Many organizations and individuals have conducted research on vulnerable children, including CLS. Inadvertently, these children have become objects of study. They continue to ponder that such research findings should have delivered lasting solutions to their problems, albeit such is yet to happen. I overcame this problem by visibly substantiating the impetus of the study – academic purposes only and possible unforeseen interventions that could be undertaken based the results from this study.

Ethical Considerations of the Study

The research complied with the ethical requirements as outlined in the Makerere University's Directorate of Research and Graduate Training Guidelines for Research Proposals, Research Reports, Thesis and Dissertations, September (2013). The Study was also guided by the National Guidelines for Research involving Humans as Research Participants (July 2014) by the Uganda National Council for Science and Technology (UNCST). The research proposal was approved by Gulu University's Research Ethics Committee (REC). The key ethical aspects and considerations during this study were the following:

a. The researcher recognized that some participants, specifically CLS, were vulnerable and ensured that the study was conducted with full respect

for the autonomy and dignity of these children. Power differentials that existed between community members and researchers were purposefully mitigated during the research planning and data collection stages. These were mitigated by explaining the purpose of the study to the community members, especially community leaders like the Chairperson Local Council.

b. Privacy and confidentiality were ensured. I made sure that the right to privacy for all respondents was respected and protected. This included ensuring anonymity and confidentiality in record-keeping and report-writing. Whatever the respondents said in the interview sessions remained anonymous. Privacy, confidentiality and anonymity were upheld. Confidentiality is a research condition in which no one except the researcher(s) knows the identities of the participants in a study (USC 2017). On the other hand, anonymity is a research condition in which no one, including the researcher, knows the identities of research participants (ibid).

c. As argued by Cliggett (2012), qualitative researchers must control the access to information and systemic anonymization of information. This was done for this study.

d. Informed consent and assent: obtaining informed consent and assent from the participants was central to the research. This gestured respect for the research participants' dignity, their capability to express their views, and their right to have them heard in matters that affect them – that is to say, the quest for social protection. Consent and assent were asked for and given voluntarily and, where necessary, was renegotiated so that the respondents, particularly children, were free to withdraw at any stage of the research/ interview process.

e. Harm: the study tried to minimize harm to all respondents, especially CLS. I modified all the questions to ensure that they did not cause any emotional harm to the respondents. On the other hand, I ably justified the benefits of participating in this study to the respondents like creating knowledge on social protection mechanisms to directly influence academia and policy in a long-run. I also ensured the safety and protection of participants. This meant ensuring that the environment for respondents was physically and emotionally safe for the researcher and respondents.

Overall, the study was guided by the principles of; *autonomy*, *beneficence*, *non-maleficence*, and *justice.* These principles underpinned the need for all research participants to be respected, protected, properly acknowledged, and adequately compensated.

Cracked/Fractured Lines of Consent for Children

Most researchers and human rights scholars argue and assume that all research with children under the age of 18 years requires formal consent from the parents and or guardians and assent from the children. In this case, a child's assent is obtained after parental/guardian's consent. Nonetheless, a child's assent or dissent takes precedence over the parent's or guardian's consent (UNCST 2014). However, for this study, I argue that in the context of CLS, this argument is not clear-cut. This is because CLS are in most cases 'independent children'. They are independent in a sense that they autonomously make decisions and execute them without permission from their parents/guardians. I also argue that this consent must be limited to the required exigencies. If parents of such children live in an urban area, and can be reached, it is imperative to seek formal consent. If the reverse is true, then a researcher ought to engage children as an 'independent child'. In any case, the 1986 Convention on the Rights of the Child (CRC) provides for the best interest of the child as the key principle in the promotion and protection of children's rights. This further answers the following questions: Is a child aged 17 years and eleven months necessarily less mature and able to consent for him/herself than a person aged 18 years and one day? Is it always ethical to let parents or guardians have the final say about participation in research if their son or daughter wants to take part?

Implicit in this argument is that even when parents/guardians are available, the best interest of the child should help inform the need for formal consent by parents and assent by the children. Therefore, although it is a formal requirement, sometimes, parental or guardian consent may not be required for some children above ten years and under age 18 years to take part in a study; especially, when the research is not risky. Nonetheless, assent must be sought from these children themselves, which I proficiently did. Therefore, children can be competent in assessing and acting in their interests for inclusive development, although sometimes with parental and or guardian assistance.

Environmental Considerations

I recognized the interrelatedness of environment and human rights. During this study, I paid attention to environmental issues that may exacerbate vulnerability among children in street situations. During the study, I also minimized actions that could potentially cause environmental degradation, such as printing many copies for sharing with the academic supervisors, mentor, and editors. I shared soft copies instead of printed ones.

Gender Consideration

I further recognized the contribution of gender to the vulnerability of CLS. Therefore, gender must be a critical component of any research on social protection. Consequently, gender aspects were integral to this study. During the research, gender mainstreaming was done and, where applicable, affirmative action-related recommendations were made.

Conclusion

In this chapter, I have presented the qualitative methodological aspects of a study on social protection for CLS, focusing on the application of the human rights-based approach. I have discussed the merits and demerits of the single case study design, content analysis, and interviews – i.e. the qualitative methods that were used in this study – in order to minimize research bias. In terms of novelty, in this chapter, I introduced the concept of 'independent children' as a part of research ethics of conducting studies on children.

I further showed how triangulation of both qualitative content analysis (conventional and summative) and qualitative interviews were very rich research methods to assess the context and processes of social protection for CLS. Consequently, I strongly recommended the use of these methods to researchers that were considering conducting similar studies. However, for any researcher to use these methods and approaches, the research approach, design, objectives and questions should be put into consideration and should essentially resonate with such a methodology. It also must be noted that the research methods and approaches used for this chapter were founded on personal research experience and were context specific. The research methods and approaches vary. It is imperative that in the use of this work researchers exercise their own judgments regarding the suitability of the research approach.

References

Ackroyd, Stephen and John A. Hughes, 1992, *Data Collection in Context*, New York, NY: Longman.

Alshenqeeti, Hamza, 2014, 'Interviewing as a Data Collection Method: A Critical Review', *English Linguistics Research* 3, 1:2014.

Arino, Africa, Curtis LeBaron and Frances J. Milliken, 2016, 'Publishing Qualitative Research in Academy of Management Discoveries', *Academy of Management Discoveries* 2, 2:109–113.

Bangura, Abdul Karim, 2017, 'Scientific Research: Revisiting the Basics', lecture given at the CODESRIA College of Mentors Institute, Nairobi, Kenya, April 10-20, 2017.

Baxter, Pamela and Susan Jack, 2008, 'Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers', *The Qualitative Report, 13(4),* 544-559.

Bell, Judith, 1987, 'Doing Your Research Project: A Guide for First-time Researchers', *Education and Social Science* 4th ed. Retrieved on April 14, 2017 from file:///C:/Users/AKBANG~1/AppData/Local/Temp/LIVRO_Judith%20Bell%20-%20 Doing_Your_Research_Project.pdf

Bennett, Andrew and Colin Elman, 2006a, 'Qualitative Research: Recent Developments in Case Study Methods', *Annual Review of Political Science* 9:455-476.

Bennett, Andrew and Colin Elman, 2006b, 'Complex Causal Relations and Case Study Methods: The Example of Path Dependence', *Political Analysis*, 14, 3:250-267.

Bennett, Andrew and Colin Elman, 2010, 'Case Study Methods', in C. Reus-Smit and D. Snidal, eds., *The Oxford Handbook of International Relations*, Oxford, UK: Oxford University Press: Oxford.

Berg, Bruce, L., 2007, *Qualitative Research Methods for the Social Sciences,* London, UK: Pearson.

Bradley, Jana, 1993, 'Methodological Issues and Practices in Qualitative Research', *Library Quarterly,* 63, 4:431-449.

Bucchi, Massimiano, 2004, *An Introduction to Social Studies of Science*, 1st ed., London, UK: Routledge.

Charmaz, Kathy, 2006, *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis.* Thousand Oaks, CA: Sage Publications.

Cliggett, Lisa, 2012*, Strategies of Data Archiving for Cultural Anthropology, Using Gwembe Tonga Research Project Data,* Lusaka, Zambia: National Science Foundation, BCS-1157418.

Cohen Louis, Manion Lawrence, and Morrison Keith, 2007, *Research Methods in Education.* (6th ed.). London: Routledge.

Creswell, John, W, 1998, *Qualitative Inquiry and Research Design: Choosing among Five Traditions,* Thousand Oaks, CA: Sage Publications.

Crouch, Mira and Heather McKenzie, 2006, 'The Logic of Small Samples in Interview-based Qualitative Research, *Social Science Information*, 45, 4:483-499.

Daston, Lorraine, ed., 2000, *Biographies of Scientific Objects*, Chicago, IL: The University of Chicago Press.

Daston, Lorraine and Peter Galison, 1992, 'The Image of Objectivity', *Representations*, 40:81-128.

Dörnyei, Zoltan, 2007, *Research Methods in Applied Linguistics: Quantitative, Qualitative, and Mixed Methodologies*, Oxford, UK: Oxford University Press.

Eckstein, Harry, 1975, 'Case Study and Theory in Political Science', in F. Greenstein and N. Polsby, eds., *Handbook of Political Science*, Reading, MA: Addison-Wesley.

Education Development Center, 2004, *Key Informant Interviews*, available on; https://www.oasas.ny.gov/prevention/needs/documents/KeyInformantInterviews.pdf, retrieved on 23rd November, 2018

Gibbs, Graham. R., 2007, *Thematic Coding and Categorizing, Analyzing Qualitative Data*. SAGE Publications Ltd., London.

Grbich Carol, 2006, *Qualitative Data Analysis: An Introduction*, London, UK: Sage Publications.

Green, Judith and Nicki Thorogood, 2009, *Qualitative Methods for Health Research*, 2nd ed., Thousand Oaks, CA: Sage Publications.

Greener, Sue, 2008, *Business Research Methods*, Frederiksberg, Denmark: Ventus Publishing ApS

Griffiths, Howard, T., 2016, 'Application of Summative Content Analysis to a Postal Questionnaire', *Nurse Researcher*, 23, 3:30-36.

Gubrium, Jaber F. and James A. Holstein, eds., 2002, *Handbook of Interview Research: Context and Method*, Thousand Oaks, CA: Sage Publications.

Harris, Howard, 2001, 'Content Analysis of Secondary Data: A Study of Courage in Managerial Decision Making', *Journal of Business Ethics*, 34, 3/4:191–208.

Headland, Thomas, N., 1990, 'Introduction: A dialogue between Kenneth Pike and Marvin Harris on Emics and Etics', *Frontiers of Anthropology* 7:13-27.

Helfrich, Hede, 1999, 'Human Reliability from a Social-Psychological Perspective', *International Journal of Human-Computer Studies,* 50:193-212.

Henn Matt, Weinstein, Mark and Foard, Nick, 2006, *A Short Introduction to Social Science Research.*

Holsti, Ole, R., 1968, 'Content Analysis', in G. Lindsey and E. Aronson, eds., *The Handbook of Social Psychology*, 2nd ed., New Delhi, India: Amerind Publishing Co.

Hsieh, Hsiu-Fang and Sarah E. Shannon, 2005, 'Three Approaches to Qualitative Content Analysis', *Qualitative Health Research* 15, 9:1277-1288.

Kanakulya, Dickson, 2015, 'Governance and Development of the East African Community: The Ethical Sustainability Framework', Doctor of Philosophy Thesis, Makerere University, Kampala, Uganda.

Katz, Hagai, 2006, *Global Surveys or Multi-national Surveys? On sampling for Global Surveys,* Thoughts for the Globalization and Social Science Data Workshop UCSB, November 9, 2006.

Kerlinger, Fred, N., 1986, *Foundations of Behavioural Research*, 3rd ed., New York, NY: Holt, Rinehart and Winston.

Khandkar, Shahedul H., 2017, 'Open Coding', retrieved on May 27, 2017 from http://www.ssnpstudents.com/wp/wp-content/uploads/2015/02/open-coding.pdf

King, Garry, Robert O. Keohane and Sidney Verba, 1994, *Designing Social Inquiry: Scientific Inference in Qualitative Research. How Many Are Enough?* Princeton, NJ: Princeton University Press.

Krippendorff, Klaus H., 2004, *Content Analysis: An Introduction to Its Methodology*, 2nd ed. London, UK: Sage Publications.

Kvale, Steinar, 1996, *Interviews: An Introduction to Qualitative Research Interviewing*. Thousand Oaks, CA: Sage Publications.

Lee, Der-Tsai F., John Woo and Ellison A. Mackenzie, 2002, 'The Cultural Context of Adjusting to Nursing Home Life: Chinese Elders' Perspectives', *The Gerontologist*, 42, 5:667-675.

Leech, Nancy, L., 2005, 'The Role of Sampling in Qualitative Research', *Academic Exchange Quarterly*, 9, 3:280-288.

Lett, James, 1990, 'Emics and Etics: Notes on the Epistemology of Anthropology', in T. N. Headland et al., eds. *The Insider/Outsider Debate*, Newbury Park, CA: Sage Publications.

Levy, Jack, S., 2008, 'Case Studies: Types, Designs, and Logics of Inference', *Conflict Management and Peace Science*, 25:1-18.

Lincoln, Yvonna S. and Egon G. Guba, 1985, *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.

Lokesh Kumar, Parul Kalra B. 2013, 'Text Mining: Concepts, Process and Applications,' *Journal of Global Research in Computer Science*, Volume 4, No. 3, March 2013

Maoz, Zeev, 2002, 'Case Study Methodology in International Studies: From Storytelling to Hypothesis Testing', in F. Harvey and M. Brecher, eds., *Evaluating Methodology in International Studies*, Ann Arbor, MI: Michigan University Press.

Mason, Mark, 2010, 'Sample Size and Saturation in PhD Studies Using Qualitative Interviews' [63 paragraphs]. Forum Qualitative Sozialforschung / Forum: *Qualitative Social Research*, 11, 3, 8. Retrieved on April 15, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/1428/3027

Matt, Wallace, 2013, 'High School Teachers and African American Parents: A (Not So) Collaborative Effort to Increase Student Success', *The High School Journal*, 96, 3:195-208.

May, Tim, 2011, *Social Research: Issues, Methods and Process*, Maidenhead, UK: Open University Press.

Mayring, Philipp, 2014, *Qualitative Content Analysis: Theoretical Foundation, Basic Procedures and Software Solution*, Klagenfurt, Austria: Psych Open Publishing.

Merriam, Sharan, B., 2009, *Qualitative Research: A Guide to Design and Implementation*, 3rd ed., Hoboken, NJ: Jossey-Bass.

Morris, Michael W. et al., 1999, 'Views from Inside and Outside: Integrating Emic and Etic Insights about Culture and Justice Judgment', *Academy of Management Review* 24, 4:781-796.

Morse, Janice M., 2000, 'Determining Sample Size', *Qualitative Health Research*, 10, 1:3-5.

Mosseleson Jacqueline, 2010, 'Subjectivity and Reflexivity: Locating the Self in Research on Dislocation', *International Journal of Qualitative Studies in Education*, 23, 4:479-494.

Navathe, Shamkant B., and Elmasri Ramez, 2000, *Data Warehousing and Data Mining, in – Fundamentals of Database Systems*, Pearson Education pvt Inc, Singapore, 841-872,

2000 in Lokesh Kumar, and Parul Kalra B., 2013, 'Text Mining: Concepts, Process And Applications,' *Journal of Global Research in Computer Science*, Volume 4, No. 3, March 2013.

Neuendorf, Kimberly A., 2002, *The Content Analysis Guidebook*. Thousand Oaks, CA: Sage Publications.

Olive, James L., 2014, 'Reflecting on the Tensions between Emic and Etic Perspectives in Life History Research: Lessons Learned,' *Qualitative Social Research*, 15, 2, 6, retrieved on April 15, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/2072/3656

Omero, Gonekani M. and Lillian T. Mselle, 2017, 'Exploring Barriers to Utilization of Mental Health Services in Malawi, *Mental Health and Prevention* 5:52-62.

Oxford University, 2009, *Glossary of Key Terms*, Oxford, UK: Oxford University Press.

Patton, Michael, Q., 2001, Qualitative evaluation and research methods (3rd ed.). Newbury Park, CA: Sage Publications.

Pike, Keneth, L., 1967*, Language in Relation to a Unified Theory of the Structures of Human Behavior,* 2nd ed., The Hague, The Netherlands: Mouton Publishers.

Ranjit, Kumar, 2011, *Research Methodology: A Step-by-Step Guide for Beginners*, 3rd ed., Los Angeles, CA: Sage Publications.

Ritchie, Jane, Jane Lewis, and Gilian Elam, 2003, 'Designing and Selecting Samples', in J. Ritchie and Jane Lewis, eds., *Qualitative Research Practice: A guide for Social Science Students and Researchers*, Thousand Oaks, CA: Sage Publications.

Rosa, Milton and Daniel C. Orey, 2012, 'The Field of Research in Ethnomodeling: Emic, Etic and Dialectical Approaches', *Educação Pesquisa*, 38, 4:865-879, Universidade Federal de Ouro Preto, São Paulo, Brazil.

Rose, Susan, Nigel S. Spinks and Ana Isabel Canhoto, 2015, *Management Research: Applying the Principles*, London, UK: Routledge.

Ross, Andrew, ed., 1996, *Science Wars*. Durham, North Carolina: Duke University Press.

Schel, Charles, 1992, *The Value of the Case Study as a Research Strategy*, Manchester, UK: Manchester Business School.

Schostak, John, 2006, *Interviewing and Representation in Qualitative Research*, Open University Press.

Seawright, Jason and John Gerring, 2008, 'Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options', *Political Research Quarterly*, 61, 2:294-308.

Snow, Charles P, 1959, *The Two Cultures and the Scientific Revolution*, New York, NY: Cambridge University Press.

Sravani, 2017, *In-depth Interview: Advantages and Disadvantages,* retrieved on May 24, 2017 from https://content.wisestep.com/depth-interview-advantages-disadvantages/

Thomas, David R., 2003, 'A General Inductive Approach for Qualitative Data Analysis', Uackland, New Zealand: University of Auckland, retrieved on May 24, 2017 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.5445&rep=rep1&type=pdf

Tobin, Ruthanne, 2012, *Encyclopedia of Case Study Research.* Thousand Oaks, CA: Sage Publications.

Toro, Paul, A., et at., 1999, 'Obtaining Representative Samples of Homeless Persons: A Two-City Study, *Journal of Community Psychology*, 27, 2:157–177.

Uganda National Council for Science and Technology, 2014, 'National Guidelines for Research involving Humans as Research Participants', Kampala, Uganda.

United Nations Office of the High Commissioner for Human Rights, 2006, *Frequently Asked Questions on A Human Rights-Based Approach to Development Cooperation*, New York, NY and Geneva, Switzerland: United Nations Publication.

University of Southern California (USC), 2017, 'Organizing Your Social Sciences Research Paper: Glossary of Research Terms', retrieved on May 24, 2017 from

http://libguides.usc.edu/writingguide/researchglossary accessed on 20th May 2017.

University of Southern California (USC) Libraries, April 21, 2017, 'Theoretical Framework' in A. K. Bangura, 'Scientific Research: Revisiting the Basics', lecture given at the CODESRIA College of Mentors Institute, Nairobi, Kenya, April 10-20, 2017.

Vaismoradi. Mojtaba' Hannele Turenen and Terese Bondas, 2013, 'Content Analysis and thematic Analysis: Implications for Conducting a Qualitative Descriptive Study', *Nursing and Health Sciences.* 15, 3:398-405.

Vidich, Arthur, J. and Stanford, M. Lyman, 2000, 'Qualitative Methods: Their History in Sociology and Anthropology', in N. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage Publications, 2:23-44, retrieved on May 24, 2017 from http://jan.ucc.nau.edu/~pms/cj355/readings/vidich&lyman.pdf

Weber, Robert P., 1985, *Basic Content Analysis*, New Delhi, India: Sage Publications.

Willis, Ben, 2014, 'The Advantages and Limitations of Single Case Study Analysis', *E-Interntional Relations Students*, retrieved on May 24, 2017 from http://www.e-ir.info/2014/07/05/the-advantages-and-limitations-of-single-case-study-analysis/

Willis, Jerry, W., 2007, *Foundations of Qualitative Research: Interpretive and Critical Approaches.* Thousand Oaks, CA: Sage Publications.

Yin, Robert K., 2010, *Qualitative Research from Start to Finish.* New York, NY: The Guilford Press.

Yin, Robert, K., 2009, *Case Study Research: Design and Methods*, London, UK: Sage Publications.

Yin, Robert, K., 1994, *Case Study: Design and Methods*, Thousand Oaks, CA. Sage Publications.

Yin, Robert, K., 1984, *Case Study Research: Design and Methods*, Newbury Park Ca, Sage Publications, also in C. Schel, 1992, *The Value of the Case Study as a Research Strategy*, Manchester, UK: Manchester Business School.

Appendices

Appendix A

African academic diaspora support to african universities program Codesria college of academic mentors institute

Inaugural session – 10-20 April 2017, nairobi, kenya

List of doctoral scholars Institutions, contact information, titles of proposals, countries of origin, and academic disciplines

N°	Name	Gender	Address	Title Of Proposal	Country Of Origin	Academic Discipline
GROUP 1						
1	Esther Nkhukhu-Orlando	F	University of Botswana School of Sociology/ Tsholofelo East, Plot no: 62379, Broadhurst, Gaborone, Email: Nkhukhu.orlando@mopipi.ub.bw; nkhukhu@yahoo.co.uk	The mediating effect of organizational commitment on technological innovation: the case of Blended Learning at the University of Botswana	Botswana	Sociology
	Eben-ezer Lemven Wirba	M	University of Bamenda, Department of Economics Email: ebeno17@yahoo.com	Role of Relative Income and Rural Nonfarm Diversification on Food Poverty and Vulnerability in Cameroon	Cameroon	Economics
	Chick Love-line Ayoh	F	University of Yaounde I Post Graduate School for Social and Educational Sciences/Doctoral Research Unit for Humanities and Social Sciences Department of Anthropology Email ndiloveline44@yahoo.fr	Social Responses And Health Beliefs on Chronic Sexually Transmitted Infections In Cameroon: A Comparative Study on HIV And Hepatitis B Patients In The University Teaching Hospital Yaoundé	Cameroon	Anthropology
	Divine Ngenyeh Kangami	F	University of The Witwatersrand School of Economic and Business Sciences Email: divine.ngenyeh@gmail.com; 0700610h@students.wits.ac.za	Common Currency, Intra-Regional Trade Flows And Economic Growth: Evidence From The CEMAC Custom Union	Cameroon	Economics

Nº	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
	Shingirayi Florence Chamisa	F	University of Fort Hare The Faculty of Industrial Psychology Email: rchamisa@gmail.com	Psychological capital, Psychological empowerment and Organizational Citizenship behavior among nurses in public hospitals in Eastern Cape of South Africa	Zimbabwe	Industrial Psychology
GROUP 2						
	Charles MASSIMO	M	Bindura University of Science Education, Faculty of Social Sciences and Humanities Department of Peace and Governance P. Bag 1020 Zimbabwe Email: chassimo2000@gmail.com	Critical Success Factor Model And The Implementation of Public Private Partnerships For Educational Infrastructure Development In Zimbabwe State Universities	Zimbabwe	public Policy Analysis (Public-Private-Patnerships)
	Gabriel Acha EKOBI	M	North-West University, South Africa Email: gabriel.ekobi@gmail.com	The Impact of Street Food Vending on Poverty And Unemployment In The Mafikeng Local Municipality, North West Province, South Africa	Cameroon	Development Studies
	Ermias Werkilul ASFAW	M	Addis Ababa University College of Business and Economics/ P.O. Box: 150 580, Sidist Kilo, Addis Ababa, Ethiopia Email: ermias.werkilul@gmail.com	Readiness for Change in Public Corporations: Evidence from Ethiopia	Ethiopia	Management

N°	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
	Epeti likowo ndive	F	University of Buea Faculty of Agribusiness and Veterinary Medicines Email: epetikofele@yahoo.com	Financing SMS Farms: Examining Gender-Based Finance Mechanisms in South West Region in Cameroon	Cameroon	Economist
	Yikaalo welu kidanemariam	M	Addis Ababa University School of business and economics/Department of Management Email: yikallo2008@yahoo.com	Human Capital Process In Emerging Economies: The Case of Ethiopia	Ethiopia	Management
	Fabrice tambe endoh	M	North West University Faculty of Law, Department of Criminal and Procedural Law North West University Mafikeng Campus Private Bag: X2046 Mmabatho: 2735 Email fablosa88@yahoo.com; fabriceendoh21@gmail.com	Selective morality in the enforcement of International Criminal Justice with particular reference to Article 13 of the Rome Statute	Cameroon	Law
	Samuel kehinde okunade	M	University of KwaZulu-Natal Department of Conflict Transformation and Peace Studies, College of Humanities, School of Social Sciences, University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa. Email samuel_okunade@yahoo.com	Cross-Border Insurgency And The Coping Strategies Of Border Communities In The North-Eastern Nigeria	Nigeria	Conflict Studies

№	Name	Gen der	Address	Title Of Proposal	Country Of rigin	Academic Discipline
				GROUP 3		
	Lydia Amoah	F	University of Ghana, Legon Institute of African Studies University of Cape Coast Institute of Development Studies (IDS) Email: lydiaamoah2003@gmail.com	Women, Peace and Security. The Role of Akan Queen Mothers As Intermediaries In Conflict Resolution.	Ghana	Gender Studies
	Levina Nyameye Abunya	F	University of Ghana, Legon Department of Linguistics/ House number T7, Vanguard Enclave Titanium Avenue, Amasaman Accra-Ghana Email: leviabu@yahoo.co.uk	Aspects of Kaakye Syntax	Ghana	Linguistics
	Nigel Makosa	M	University of Fort Hare Department of Social work/Social Development Email: nigelmakosa8@gmail.com	The gendered nature of intra-household decision making in the use of social grants and its impact on selected households in Zimbabwe and South Africa	Zimbabwe	Social Work/ Social Development
	Irene Simiyu	F	Kenyatta University Email: irene_wanjala@yahoo.com	Teacher-Led Professional Development: Classroom Practices of Teachers Of English In Bungoma South Sub-County, Kenya	Kenya	English methods
	Grace Waithera Kamau	F	MOI University School of Art and Social Science Email: geganed4@gmail.com	Interviewing Children In Kenyan Courts	Kenya	Linguistics

N°	Name	Gender	Address	Title Of Proposal	Country Of origin	Academic Discipline
				GROUP 4		
	Jafred muyaka	M	University of Eldoret P.O. BOX 1125-30100, Eldoret - Kenya Email: muyakamwira@gmail.com	Internationalization Practices of Education and Their Implications on Quality of Academic Programmes: A Comparative Study of Public and Private Universities in Kenya	Kenya	Comparative Education
	Naomi lanoi leleto	f	Egerton University Institute of Women Gender and Development Studies Email: naomilanoi@gmail.com	Entrepreneurship as a means of reducing violence against rural Maasai women in Kenya. Case study-Ololulunga division, Narok south constituency,Kenya	Kenya	Gender studies
	Naomi muriuki	F	Egerton University/ 14404-20100-Nakuru Email: naomimuriuki@yahoo.com	Effectiveness of Selected Communication Channels on Adoption Process of P Taux de participation : Macky Sall salue notre démocratie majeure et apaisée urdue Improved Crop Storage Technology by Small Scale Maize Farmers in Nakuru County	Kenya	Community studies and Extension
	Prolific s mataruse	M	Rhodes University Department of Political and International Studies Email: mayibuyesimba@gmail.com	Funding Dissent In Africa: The Case of Zimbabwean Political Parties And Civil Society Organizations	Zimbabwe	Political science/ Political Economy

N°	Name	Gender	Title Of Proposal	Country Of rigin	Academic Discipline
	Gerface ojwang' ochieng'	M	Islam and terrorism: myth and reality	Kenya	Philosophy
			GROUP 5		
	Priscillah wanjiku mwirigi	F	Social Construction of Single Parenthood in Kamukunji SubCounty, Nairobi Country, Kenya	Kenya	Sociology & Gender
	Abisola felicia, adesanya	F	Impact of Technology-Based Non-Enculturation Sources on Educated Yoruba Teenage English Stress And Rhythm	Nigeria	English language
	Tapiwa Muzerengi	m	Developing an Implementation Model to Address Food Shortages In Matebeleland South Province, Zimbabwe	Zimbabwe	Community Development
	Samwel kiuguini nduati	M	Transforming Masculinities In The Context of Modern Family Crisis: The Roles of Faith Based Organizations	Kenya	Gender Studies

Address column:

- Gerface ojwang' ochieng': Kenyatta University Email : gerface@gmail.com; ochieng.gerface@ku.ac.ke
- Priscillah wanjiku mwirigi: Egerton University Institute of Women Gender and Development Studies PO Box: 536 Egerton, Njoro, Kenya Email palomamwi@gmail.com
- Abisola felicia, adesanya: University of Ibadan, Faculty of Art Department of English, Faculty of Arts, University of Ibadan, Ibadan, Nigeria Email: abisolafelicia@gmail.com
- Tapiwa Muzerengi: University of Kwazulu Natal School of Built Environment and Development Studies Department of Community Development 6 Shaw Close Sunnyside Bulawayo Zimbabwe Email: muzerengi1985@gmail.com
- Samwel kiuguini nduati: Egerton University/ 536, 20117, Egerton Email: nduatisam1973@gmail.com

Nº	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
	Oluwabun-mi dorcas bakare	F	University of KwaZulu-Natal Department of Information Studies, College of Humanities, School of Social Sciences, University of KwaZulu-Natal, Pieter-maritzburg, South Africa Email: 216019511@stu.ukzn.ac.za	Use of Social Media Technologies (SMTs) in the Provision of Library and Information Services in South-West, Nigeria	Nigeria	Library and Information Science
	Olabode victor akinyemi	M	University of Ibadan Africa Regional Centre for Information Science (AR-CIS) Ibadan, Oyo State Nigeria Email: akibodvic@gmail.com	M-Readiness of Government and Citizens and Mobile Fluency of Nigeria' South-West States to Use Mobile Phones in Delivery of Government E-Services	Nigeria	Information Science
GROUP 6						
	Patrick esiemogie idode	M	7, Royal close off Rock of Ages road, Orunkole Phase II Rock of Ages EstateMowe Ogun State, Nigeria P.O.Box 14089, Ikeja Lagos. Email: patidode@yahoo.com; idode.esiemogie@students.jkuat.ac.ke	Influence of Corporate Governance Practice on Earnings Quality of Quoted Companies on Nigeria Stock Exchange	Nigeria	Accounting
	Hadizat audu salihu	F	University of Ilorin Faculty of Art Department of History and International Studies Kwara State University Malete, Ilorin. PMB 1530. phone number is Email: hadizatsolihu@gmail.com	Inland Waterways and the Socio-Economic Development of The Niger- Benue Confluence Region of Nigeria; A Historical Study	NIGERIA	History

Nº	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
	Chinwe beatrice ezeoke	F	Chukwemeka Odumegwu Ojukwu University/Department of Mass Communication, Anambra State, Nigeria. Email: emesco23001@yahoo.com	Diffusion and Utilization of Cervical Cancer Awareness Campaign among Women in South East Nigeria	Nigeria	Mass Communication
	Tinashe gumbo	M	University of Kwazulu Natal School of Built Environment and Development Studies Department of Community Development 1376/A Murombomunhu Street Dzivaresekwa 3, Harare, Zimbabwe Email: tinashegumbo@gmail.com	Community Based Activism and Local Content Development: The Case of Platinum Mining Communities in Zimbabwe	Zimbabwe	Community Development
	Kingsley daraojimba	M	University of Ibadan Department of Archaeology and Anthropology Email : kingsleyjohnbosco@yahoo.com	Archaeological And Environmental Investigations At Orile-Owu and Motako, Southwestern Nigeria.	Nigeria	Archaeology
GROUP 7						
	Moses ofome asak	M	North West University, Faculty of Humanities and Social, Sciences. Mafikeng Campus, South Africa Email: moses.asak@uniport.edu.ng; mosyxasak@gmail.com	Social media use for audience engagement in radio broadcasting by selected stations in Nigeria and South Africa	Nigeria	Digital Communication

Nº	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
	Faisol Muhammed Olaitan	M	University of Ibadan, Department of Sociology, Faculty of the Social Sciences, University of Ibadan, Ibadan, Nigeria/ 8, Samuel Oduneye Street, Aiyegbami, Sagamu, Ogun State; Email: olaitanfaysal@gmail.com	Victimization Experiences and Coping Strategies of Women With Disability (WWD) in Lagos State	Nigeria	Sociology/ Criminology
	Sylvester Shima Kohol	M	University of Ibadan Department of History Ibadan, Nigeria Email: shimakohol@yahoo.com	A History of The Prisons Service n Southwestern Nigeria, 1872-1960	Nigeria	History
	Azeez Babatunde Adebakin	M	Obafemi Awolowo University Department of Educational Management, Faculty of Education, Obafemi Awolowo University, Ile-Ife,Nigeria. Email : adebakinazeez@yahoo.com	Entrepreneurship training and job expectations of undergraduates in Southwestern Nigeria Public Universities	Nigeria	Education
	Olateju Jumoke Ajanaku	F	University of KwaZulu-Natal Faculty of Humanities School of Social Sciences University of KwaZulu-Natal Pietermaritzburg, South Africa Email tejlad@yahoo.com; 215082275@stu.ukzn.ac.za	Knowledge Management Capability in Nursing-care Performance in Selected Teaching Hospitals in Southwest Nigeria	Nigeria	Library & Information Science

№	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
			GROUP 8			
	Chijioke Francis Onyebukwa	M	North-West University No. 11 Nwosu lane Amakohia Owerri, Imo State, Nigeria; Email: chiokee10@yahoo.com	A Comparative Study Of Conflict Management Approaches In Marikana, South Africa And Ogoni, Nigeria	Nigeria	International Relations
	Oyewole Adekunle Oladapo	M	University of Ibadan, Department of Communication and Language Arts, Faculty of Arts, Ibadan, Oyo State, Nigeria Email: woleoladapo@gmail.com	News Representation as Ideological Control of Citizens'Conception of Nigeria's National Unity Problem	Nigeria	Media & Communication
	Ganiyu Oluwaseyi Quadri	M	University of KwaZulu-Natal Department of Information Studies, College of Humanities, School of Social Science Email: qudriseyi@gmail.com; 216015523@stu.ukzn.ac.za	Influence Of Information And Communication Technology (ICT) Skills On Knowledge Sharing Among Librarians in Federal University Libraries in South-West Nigeria	Nigeria	Information Studies
	Rosemary Oyinlola Popoola	F	Covenant University Department of Political Science and International relations, College of development studies Km 10, Idiroko road, Canaanland, Ota, Ogun State, Nigeria P.M.B 1023. Postal code 1122333 Email: rosemary.popoola@covenantuniversity.edu.ng	Interrogating the Effectiveness of Advocacy of Women's Right In Selected States of South West, Nigeria	Nigeria	Women studies (International relations)

N°	Name	Gender	Address	Title Of Proposal	Country Of rigin	Academic Discipline
GROUP 9						
	Julius Niringiyimana	M	Makerere University Department of Political Science and Public Administration Email: jniringiyimana@gmail.com	Oil Politics and Land Conflicts in the Albertine Region, Uganda	Uganda	Political science and public administration
	Robert Kakuru	M	Makerere University College of Humanities and Social Sciences/ School of Liberal and Performing Arts, Department of Philosophy, P. O. Box 7062, Kampala. Email: kakururobert@gmail.com; robert.kakuru@chuss.mak.ac.ug	Social Protection for Children Living On The Streets In Uganda: A Human Rights Based Approach	Uganda	Human Rights/Philosophy
	Ibilate Waribo-Naye	F	University of Ibadan, 2, Morenikeji Avenue, Orogun, Ibadan, Oyo State, Nigeria Email: obomaibinaye@gmail.com	Nigerian Clerics' Perspectives and Pragmatic strategies In the Media on Boko Haram	Nigeria	Discours analysis
	Judith Irene Nagasha	F	Makerere University College of Veterinary Medicine and Animal Resources Department of Wild Life and Aquatic Resources Uganda Email: judith.nagasha@gmail.com	Gender Based Analysis on Socio-Economic effect of Climate Change on Livelihoods of Communities around Lake Mburo National Park – Mbarara District – Uganda.	Uganda	Gender Studies/ Natural Resources

Appendix B

African Academic Diaspora Support To African Universities Program
Codesria College Of Academic Mentors Institute
Inaugural Session

10-20 April 2017, Nairobi, Kenya

List of Resource Persons

Institutions, Contact Information, Countries of Origin, and Academic
Disciplines

N	Name	Gender	Address	Role And Responsibility	Country Of Origin	Academic Discipline
			Pedagogical Team			
	Prof. Abdul Karim Bangura	M	The American University Email: Akbangura@Gmail.com; Theai@Earthlink.net	Director Of The Institute	USA/Sierra Leone	Mathematics/ Linguistic/Political Science/Development Economics/Computer Science
	Prof. Ishmael Irungu Munene	M	Educational Leadership Department. College Of Education Northern Arizona University P. O. Box 5774 Flagstaff, Az 86011 Email: Ishmael.munene@Nau.edu	Resource Person	USA/ Kenya	Education (Research, Higher Education & Foundations)
	Prof. Chris Shisanya	M	Kenyatta University School Of Humanities And Social Sciences Department Of Geography Email : Shisanya.christopher@Ku.ac.ke	Resource Person	Kenya	Geography
	Prof. Joy A. Obando	F	Kenyata University School Of Humanities And Social Sciences Department Of Geography Email: Obando.joy@Ku.ac.ke	Resource Person	Kenya	Geography
			Keynote Speaker			
	Prof. Tade AINA	M	Executive Director of Partnership for African Social & Governance Research (PASGR) Email: info@pasgr.org	Keynote Speaker	Kenya	Sociology

		LOCAL COORDINATORS			
Mark Obonyo	M	Kenyatta University School of Humanities and Social Sciences Email: markobonyo@gmail.com	Local Coordinator	Kenya	Sociology & Policy
Mark Odhiambo	M	Kenyatta University School of Education and Lifelong Learning Department of Educational Foundations Email: odhiambomk@gmail.com	Local Coordinator	Kenya	Political Science
		CODESRIA STAFF			
Dr. Godwin Murunga	M	Director of the African Leadership Center, Nairobi/Kenya And New Appointed Executive Secretary of Council for the Development of Social Science in Africa (CODESRIA), Avenue Cheikh Anta Diop X Canal IV, Dakar/Sénégal Email: executive.secretary@codesria.org	Representing Dr. Ebrima SALL, Current Executive Secretary of CODESRIA	Kenya	History
Dr. Ibrahim Oanda Ogachi	M	Senior Program Officer Head of CODESRIA Training Grants and Fellowship Programme CODESRIA, Avenue Cheikh Anta Diop Dakar X Canal IV Tel.: +221 33 825 98 21 Ext.214 Email: ibrahim.oanda@codesria.org	CODESRIA	Kenya	Sociology
Mr. Coumba Ndoffène Diouf	M	Programme Manager CODESRIA Training Grants and Fellowships Programme CODESRIA, Avenue Cheikh Anta Diop Dakar X Canal IV Tel: +221 33 825 98 21 Ext.248 ndoffene.diouf@codesria.sn; ndoffene.diouf@codesria.org; ndoffene81@yahoo.fr	CODESRIA	Senegal	Sociology

| Ms. Dominique Tania Sambou-Tchicaya | F | Bilingual Administrative Assistant CODESRIA Training Grants and Fellowship Programme CODESRIA, Avenue Cheikh Anta Diop Dakar X Canal IV Tel.: +221 33 825 98 21 Ext.235 Email: dominique.sambou@codesria.sn; dominique.sambou@codesria.org | CODESRIA | Republic of Congo | Law |

Appendix C

Doctoral Dissertation Institute
Seminar Syllabus
April 10-20, 2017

Facilitators: Ibrahim Oanda, Chris Shisanya, Joy Obando, Ishmael Munene,
Abdul Karim Bangura

Seminar Description

This seminar is meant to augment other efforts by CODESRIA to support doctoral education in the Social Sciences and Humanities in African Universities. The goal of the seminar is to provide participants with various intellectual resources, including reading and commenting on their works and exposing them to academic writing and publishing. It is important to note that the support provided during the seminar will not override the advice participants receive from their primary supervisors. Rather, and as is expected of academic advising, this is a complementary process whereby participants' interests and academic development will be the focus.

Seminar Outcomes

For successful completion of the seminar, the participant should have

1. demonstrated a basic understanding of the tools needed to organize, develop, and complete a top-notch doctoral dissertation;
2. increased his/her knowledge of the diversity of approaches to scholarly research;
3. increased his/her understanding of the epistemological and theoretical issues and challenges in writing a top-notch doctoral dissertation; and

4. enhanced his/her comprehension of the role of research methodology in scholarly research.

Integrative Teaching/Learning Mode

The major teaching/learning mode will be a combination lecture-discussion-application, in-class conference approach. This major strategy will be supplemented by

1. out-of-class assignments;
2. independent reading and writing referrals; and
3. computer exercises

Multicultural Pedagogical, Andragogical, Ergonagical, Heutagogical, Tirbyi and Ubuntugogical Style

Since this is a seminar, lecturing will be kept to a minimum (at least by the mentees). The multicultural pedagogical, andragogical, ergonagical, heutagogical, tirbyi and ubuntugogical style is to let the readings do the lecturing while the class does the doing, thinking, creating, rejecting, building, etc. This means that we will need real-world data in front of us to work on, think about, analyze, organize, etc.

Rational for In-class and Take-home Exercises

Linguists have long realized that in order to effectively evaluate the cognitive, metacognitive and social affective skills that are crucial to the successful learner, a mixture of take-home and in-class exercises is called for. The following presuppositions seem to support their suspicion.

1. In-class exercises are to acquaint those unfamiliar with time limit and written directions with these aspects and take-homes are not timed. Suggestive evaluations, individual notes, and comparing the comments should give a better idea of what is expected.

2. Questions presuppose that the FACTS involved are familiar and so they set a framework for discussion. Many questions have no one solution, and sometimes the 'best' answers are those with no single answer everyone would accept.

3. The lectures presuppose you have studied the texts beforehand and read other sources referred to, just as tests presuppose you have thought about the topics and discussed them with others. It is taken for granted that your initial, sole, and final acquaintance with the matter is not just the lecture.

4. Take-homes are to help, not annoy. They are done at your pace, with any kind of aids you find helpful. Take them as learning opportunities, not just chores. Cooperation is indicated: you will not have to answer every question, but group-members can cover the lot. Hardy workers take on questions where the answer is not obvious, since that is how we learn. COMparing results helps, PREparing for likely questions helps even more.

5. We all have personal ways to study and review, but it is sensible to review what you have spent time on, by keeping, reading, and revising what you have written. If your work is not worth rereading and reworking, it was not worth doing in the first place. Knowledge is cumulative – be your own severest critic. Regarding assignments as something to be forgotten when handed in wastes your time. Rewriting isolates essentials, shows what is peripheral, and which writing habits waste time. Supplementary Reading illuminates what was obscure, provides better examples, and brings up references you could not consult when you first discussed it with others.

6. COOPERATIVE READING can be even more profitable than COOPERATIVE STUDY: we report in minutes what took hours to read, tell others what we think is not worth reading, or what they just must read for themselves. Setting brief but regular times for informal reports about Supplementary Readings multiplies your "reading" – there is only so much one can do alone.

7. To foster that kind of discipline, an obligatory take-home format forces you to make your own work re-identifiable, reliable and worth re-reading. The take-home assignments then constitute a text of your own for final in-class review, future study and updating. Duplicating and exchanging results with others makes them complete.

Content

It is impossible to cover all the topics listed here in-depth in a two-week seminar. The objective is to provide participants with basic knowledge of the topics which will then help them to engage in further inquiry on those topics that may be relevant to their research. Like in any seminar, some of the topics will receive more attention than others based on participants' research foci and interests.

Dates	Topics
Monday, April 10, 2017	**Revisiting the Basics**: (a) Thriving in a PhD Supervision, (b) Systematic and Other Research Approaches, (c) Ideal Dissertation Structure, (d) Systematic Literature Review – Synchronic/Thematic and Diachronic/Chronological **Building Theoretical Frameworks**: (a) Ad Hoc Classificatory Systems, (b) Taxonomies, (c) Conceptual Frameworks, (d) Theoretical Systems Epistemological Paradigms in Social Research
Tuesday, April 11 and Wednesday, April 12, 2017	Research Integrity and Ethics **Qualitative Research Methods**: (a) Action Research Approaches, (b) Archival Research Approaches, (c) Case Study Approaches, (d) Discourse Analysis Approaches, (e) Ethnomethodological Approaches, (f) Feminist Analysis Approaches, (g) Field Research Approaches, (h) Interpretive Approaches, (i) Interview Approaches, (j) Narrative Approaches, (k) Reflexive Approaches, (l) Symbolism Approaches, (m) Historiographical Approaches, (n) Miscellaneous Approaches
Thursday, April 13 and Friday April 14, 2017	**Quantitative Research Methods**: Achievement Testing Methodology, Agent-Based Models, Bootstrapping, Calculus for the Social Sciences, Chaos and Catastrophe Theories, Content Analysis, Expert Systems, Graph Algebra, Internet Data Collection, Linear Programming, Matrix Algebra, Maximum Likelihood Estimates, Metric Scaling, Multivariate Analysis of Variance, Neural Networks, Q Methodology, Randomized Response, Regression Analysis, Survey Sampling, Test Item Bias, Test of Significance, Time Series Analysis, Unidimensional Scaling Methodology Mixed Methods/Triangulation **Emergent Research Methods**: Applied Multivariate Research, Appreciative Inquiry, Art Practice Research, Cognitive Interviewing, Concept Mapping, Constructing Grounded Theory, Experience Sampling Method, Feminist Research Practice, Fuzzy Set Theory, Geographic Information System, Hypermedia Research, Inside Interviewing, Interactive Qualitative Analysis, Measurement Error and Research Design, Methods of Family Research, Multilevel Modeling, Multiple Imputations for Nonresponse in Surveys, Multiple Time Series Methods, Polytomous Item Response Theory Models, Postmodern Interviewing, Reframing Evaluation through Appreciative Inquiry, Reliability and Risk Models, Research Models for Community Change, Situational Analysis, Spectral Analysis of Time Series Data, Synergic Inquiry

Saturday, April 15, 2017	Field Trip
Sunday, April 16, 2017	Day Off
Monday, April 17, 2017	**Comparative Research Methods**: Case-oriented Comparative Approaches, Variable-oriented Comparative Approach, Comparative Strategies of Emil Durkheim and Max Weber, Causal Inference in Comparative Research, Boolean Approach to Comparative Research, Comparative Systems Research Designs, Comparative Research Design Simulation for Program Evaluation **African-centered Research Methods**: Rekh Methodology, Utch and Uhem Methodology, Be<u>h</u>sâu-Pehsa Methodology, Egyptological Methodology, Archaeoastronomical Methodology, Hermeneutic Methodology, Griot Methodology, Sankofa Methodology, Fenyo Pan-African Methodologies, Multiplex Methodology, Pluridisciplinary Methodology, Ubuntugogy Methodology, Diopian Intercultural Relations Methodology, Diopian Restoration of African Historical Consciousness Methodology, African Mathematization, Complex Methodology, Mo Ibrahim African-centered Indexing Methodology, Africancentric Methodology, Er/Set/Sthenå/S-tut/Tut Methodology, Ujamaa Methodology, Abiodun Oríkì Methodology, and Consciencist Methodology
Tuesday, April 18, 2017	Harnessing the Internet for Free Cutting-Edge Computer Software and Other Tools The Art, Science, and Politics of Publishing in Top Western Journals and by Top Western University and Academic Presses The Importance of Publishing in African and Other non-Western Media and by African and Other non-Western Presses
Wednesday, April 19, 2017	Doctoral Candidates' Presentations and Suggestive Evaluations
Thursday, April 20, 2017	Doctoral Candidates' Presentations and Suggestive Evaluations Wrap-up: Looking Forward

Bibliography

Abadir, Karim M. and Jan R. Magnus, 2005, *Matrix Algebra*, vol. 1, Cambridge, UK: Cambridge University Press.

Abimbola, Wande, 1976, *Ifa Will Mend Our Broken World: Thoughts on Yoruba Religion and Culture in Africa and the Diaspora*, Roxbury, MA: Aim Books.

Abrams, Lisa and James H. McMillan, 2016, 'Chapter 2: Ethical Issues, Principles and Practices', in James H. McMillan, (Ed), *Educational Research: Fundamentals for the Consumer*, 6th ed., Upper Saddle River, NJ: Pearson Educational Inc.

Aceron, Romel M., 2015, 'Coversational Analysis: The Judge and Lawyers' Courtroom Interactions', *Asia Pacific Journal of Multidisplinary*, 3, 5:120-127.

Ackroyd, Stephen and John A. Hughes, 1992, *Data Collection in Context*, New York, NY: Longman.

Adams, Mags and Bruce Neil, 2008, 'Soundwalking as Methodology for Understanding Soundscapes' *Proceedings of the Institute of Acoustics*, 30, 2:552-558.

Adewumi, Aderemi, Jimmy Kagamba and Alex Alochukwu, 2016, 'Application of Chaos Theory in the Prediction of Motorised Traffic Flows on Urban Networks', *Mathematical Problems in Engineering*, 2016:1-15, retrieved on April 15, 2017 from https://www.hindawi.com/journals/mpe/2016/5656734/

Adichie, Chimamanda Ngozi, 2015, *We Should All Be Feminists*, New York, NY: Penguin Random House.

Adler, Patricia A. and Peter Adler, 1987, *Membership Roles in Field Research (Qualitative Research Methods Series 6)*, Thousand Oaks, CA: Sage Publications.

Albert, Mills J. Gabrielle Durepos and Elden Wiebe, eds., 2010, *Encyclopedia of Case Study Research,* Thousand Oaks, CA: Sage Publications.

Aljazeera, 2017, 'Park Geun-hye Fired as Court Upholds Impeachment', *Aljazeera News*, March 10:1, retrieved on April 15, 2017 from http://www.aljazeera.com/news/2017/03/park-geun-hye-impeachment-170310020959193.html

Alshameri, Faleh J., 2006, 'Automated Generation of Metadata for Mining Image and Text Data,' *Doctoral Dissertation*, George Mason University, Fairfax, Virginia.

Alshameri, Faleh and Abdul Karim Bangura, 2013, 'Generating Metadata to Study and Teach about African Issues', *Information Technology and People* 27, 3:341-365.

Alshenqeeti, Hamza, 2014, 'Interviewing as a Data Collection Method: A Critical Review', *English Linguistics Research* 3, 1:2014.

Altbach, Philip, 2007, 'The Imperial Tongue: English as the Dominating Academic Language', *International Higher Education*, 49, 2-4, retrieved on May 22, 2017 from https://ejournals.bc.edu/ojs/index.php/ihe/article/download/7986/7137

Altbach, Philip, 2016, *Global Perspectives on Education*, Baltimore, MD: John Hopkins University Press.

Altheide, David L, 1996, *Qualitative Media Analysis*, Thousand Oaks, CA: Sage Publications.

Alvesson, Mats and Kaj Skoldburg, 2000, *Reflexive Methodology*, London, UK: Sage Publications.

Alzheimer Europe Office, August 21, 2009 'The Four Main Approaches: Types of Research', retrieved on April 27, 2017 from http://www.alzheimer-europe.org/Research/Understanding-dementia-research/Types-of-research/The-four-main-approaches

Anderson, Gary L., 1989, 'Critical Ethnography in Education: Origins, Current Status, and New Directions', *Review of Educational Research*, 59, 3:249-270.

Anderson, Julie and Hervé Franceschi, 2016, *Java Illuminated: An Active Learning Approach* 4th ed., Burlington, MA: Jones & Bartlett Learning.

An-Na'im, Abdullahi A., ed., 2002, *Cultural Transformation and Human Rights in Africa,* London, UK: Zed Books Ltd.

Annells, Merilyn, 1997, 'Grounded Theory Method, Part I: Within the Five Moments of Qualitative Research, *Nursing Inquiry*, 4, 2:120-129.

Antelman Kristin, 2004, *Do Open Access Articles have a Greater Research Impact*, retrieved on May 10, 2017 from http://eprints.relis.org/bitstream/10760/5463/l/do_open_access_CRL.pdf

Arditti, Joyce A., Karen S. Joest, Jennifer Lamber-Shute and Lawrence Walker, 2010, 'The Role of Emotions in Fieldwork: A Self-study of Family Research in a Corrections Setting', *The Qualitative Report*, 15, 6:1387-1414.

Arino, Africa, Curtis LeBaron and Frances J. Milliken, 2016, 'Publishing Qualitative Research in Academy of Management Discoveries', *Academy of Management Discoveries* 2, 2:109–113.

Ariwa, Ezendu and Carsten Martin Syvertsen, 2012, 'Green Digital Enterprise and Chaos Theory in Tourism Development: The Case of Eco-tourism in South Africa', *International and Interdisciplinary Studies in Green Computing*, 232.

Arowosegbe, Jeremiah, 2014, 'African Studies and the Bias of Eurocentrism', *Social Dynamics*, 40, 2:308-321.

Asante, Molefi Kete, 1987, *The Afrocentric Idea*, Philadelphia, PA: Temple University Press.

Assaf, A., 2011, 'A Fresh Look at the Productivity and Efficiency Changes of UK Airlines', *Applied Economics* 43, 17:2165-2175.

Asuquo, Francis Ekaete and Josephine B. Etowa, 2016, 'Participatory Action Research (PAR): A Strategy to Achieve Transformational Change in Nursing Research and

Policy Development in Low and Middle Income Countries (LMICs)', *International Journal of Health Wellness Society*, 6, 5:11–21.

Atkinson, Anthony Paul, Amanda Coffey, Sarah Delamont, John Lofland and Lyn Lofland, eds., 2001, *Handbook of Ethnography*, Los Angeles, CA: Sage Publications.

Atkinson, Paul, Sara Delamont and William Housley, 2007, *Contours of Culture: Complex Ethnography and the Ethnography of Complexity*, Lanham, MD: AltaMira Press.

Awedoba, Albert K., 2010, *An Ethnographic Study of Northern Ghanaian Conflicts: Towards a Sustainable Peace: Key Aspects of Past, Present and Impending Conflicts in Northern Ghana and the Mechanisms for Their Adress*, Accra, Ghana: Sub-Saharan Publishers.

Awoonor, Kofi Nyidevu, 1990, *Ghana: A Political History*, Accra, Ghana: Sedco Publishing Ltd. And Woeli Publishing Services.

Ayoh, Loveline Chick, 2015, 'Rekoumbeng Female Ritual and Socio-cultural Therapy in the Mbu Community of North West Cameroon', Master's Thesis, University of Yaounde, Cameroon.

Babatunde, Emanuel, 2015, 'Ethnographic Adventures in Yoruba Epistemology', paper presented at the conference on "Conceptualizing African Epistemologies: Subaltern and Vernacular Ways of Knowing" convened at the University of Texas at Austin, October 03, 2015. Posted on *H-Net Humanities and Social Sciences Online* by Roy Doron on Saturday, September 26, 2015. Retrieved on October 22, 2015 from https://networks.hnet.org/node/5293/discussions/85191/ann-conceptualizing-african-epistemologies-subaltern-and-vernacular

Bangura, Abdul Karim, in press, *Falolaism: Epistemologies and Methodologies of Africana Knowledge*, Durham, NC: Carolina Academic Press.

Bangura, Abdul Karim, 2017, 'Scientific Research: Revisiting the Basics', lecture given at the CODESRIA College of Mentors Institute, Nairobi, Kenya, April 10-20, 2017.

Bangura, Abdul Karim, 2015, *Toyin Falola and African Epistemologies*, New York, NY: Palgrave Macmillan.

Bangura, Abdul Karim, 2015, 'A Plurisdisciplinary Treatise of the Fractal Complexity in John Mukum Mbaku's *Corrupion in Africa: Causes, Consequences, Challenges and Cleanups', African Social Sciences Review*, .7, 1:1-23.

Bangura, Abdul Karim, 2014 'Domesticating Mathematics in the African Mother Tongue', *The Journal of Pan African Studies*, 6, 7:12-58.

Bangura, Abdul Karim, 2011a, *African-Centered Research Methodologies: From Ancient Times to the Present*, San Diego, CA: Cognella Press.

Bangura, Abdul Karim, 2011b, *African Mathematics: From Bones to Computers*, Lanham, MD: University Press of America/Rowman and Littlefield.

Bangura, Abdul Karim, 2010, Automated Generation of Metadata for Studying and Teaching about Africa from an Africancentric Perspective: Opportunities, Barriers and Signs of Hope', retrieved on April 13, 2017 from https://smartech.gatech.edu/bitstream/handle/1853/35501/1232454893_AB.pdf

Bangura, Abdul Karim, 2010, 'Terrorism and Islam in Africa', in J. Davis, ed., *Terrorism in Africa: The Evolving Front in the War on Terror*, Lanham, MD: Lexington Books/ Rowman and Littlefield Publishers, Inc.

Bangura, Abdul Karim, 2009a, 'A Methodology for the Automated generation of Metadata for Studying and Teaching about Africa', *Documentacion* III, 14:70-81.

Bangura, Abdul Karim, 2009b, 'Africa and the Internet: Barriers and Hopeful Signs', *Documentacion* III, 13:62-69.

Bangura, Abdul Karim, 2005, 'Ubuntugogy: An African Educational Paradigm that Transcends Pedagogy, Andragogy, Ergonagy and Heutagogy, *Journal of Third World Studies*, 22, 2:13-53.

Bangura, Abdul Karim, 2002, *Sojourner-Douglass College's Philosophy in Action: An African-Centered Creed*, San Jose, CA: Writers Club Press.

Bangura, Abdul Karim, ed., 1994, *Research Methodology and African Studies Volume I*, Lanham, MD: University Press of America.

Bangura, Abdul Karim, Alice Thomas and Junior Hopwood, in press, *A Comprehensive Introduction to Research Methods Volume 2: Qualitative Methods*, San Diego, CA: Cognella Press.

Bangura, Abdul Karim and Junior Hopwood, 2014, *A Comprehensive Introduction to Research Methods Volume 1: Quantitative Methods*. San Diego, CA: Cognella Press.

Bangura, Abdul Karim and Erin McCandless, 2007, *Peace Research for Africa: Critical Essays on Methodology*, Geneva, Switzerland: United Nations University for Peace Press.

Barata, Paula, Sandeep Hunjan and Jillian Leggatt, 2005, 'Ivory Tower? Feminist Women's Experiences of Graduate School', *Women's Studies International Forum*, 28:232-246, retrieved on April 13, 2017 from http://www.ensany.ir/storage/ Files/20100609131114-25.pdf

Barlett, Gladwin, 1989, *Ethnographic Decision Tree Modelling*, Thousand Oaks, CA: Sage Publications.

Barrett, Frank J. and Ronald E. Fry, 2005, *Appreciative Inquiry: A Positive Approach to Building Cooperative Capacity*, Chagrin Falls, OH: Taos Institute.

Basiri, Shahab, Esa Ollila and Visa Koivunen, 2017, 'Enhanced Bootstrap Method for Statistical Inference in the ICA Model', *Signal Processing,* 138:53-62.

Baxter, Pamela and Susan Jack, 2012. 'Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers', *The Qualitative Report*, 13, 4:544-559.

Baždarić Ksenija, Martina Mavrinac, Vanja Pupovac, Lidija Bilić-Zulle, Gordana Brumini and Mladen Petrovečki, 2014. *Features and prevalence of plagiarism in biomedical science*. In Proceedings of Conference on Medical Informatics in Europe, January 01, 2014.

Bazeley, Pat, 2007, *Qualitative Data Analysis with NVivo*, Thousand Oaks, CA: Sage Publications.

Beck, Jacob, 2017, 'Can Bootstrapping Explain Concept Learning?', *Cognition,* 158:110-121.

Bee, Marco, Roberto Benedetti and Giuseppe Espa, 2009, *A Note on Maximum Likelihood Estimation of a Pareto Mixture,* 0903.

Bell, Judith, 1987, 'Doing Your Research Project: A Guide for First-time Researchers', *Education and Social Science* 4th ed. Retrieved on April 14, 2017 from

file:///C:/Users/AKBANG~1/AppData/Local/Temp/LIVRO_Judith%20Bell%20-%20 Doing_Your_Research_Project.pdf

Belmont Report, 1979, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*, Superintendent of Documents.

Belt, Pekka, Matti Mottonen, and Janne Harkonen, 2011, 'Tips for Writing Scientific Journal Articles', *Industrial Engineering and Management Working Papers 5.* Oulu, Finland: University of Oulu, retrieved on May 22, 2017 from jultika.oulu.fi/files/isbn9789514293801.pdf

Bem, Daryl, 1987, 'Writing the Empirical Journal Article', in M. Zanna, and J. Darley, eds., *The Complete Academic: A Practical Guide for Beginning Social Scientist,* New York, NY: Random House.

Bem, Daryl, 2003, 'Writing the Empirical Article', retrieved on February 23, 2017 from Daryl Bem's Cornell University Home Page: dbem.ws/WritingArticle.pdf

Bemath, Abdul Samed, 2005, *The Mazruiana Collection Revisited*, Pretoria, South Africa: Africa Institute of South Africa; New Delhi, India: New Dawn Press, an imprint of Sterling Publishers.

Benfield, Jacob A. and William J. Szlemko, 2006, 'Internet-based Data Collection: Promises and Realities', *Journal of Research Practice,* 2, 2:1.

Benjamin, Walter, 1968, 'The Task of the Translator', *Illuminations*, New York, NY: Harcourt Brace Jovanovich.

Bennett, Andrew and Colin Elman, 2010, 'Case Study Methods', in C. Reus-Smit and D. Snidal, eds., *The Oxford Handbook of International Relations*, Oxford, UK: Oxford University Press: Oxford.

Bennett, Andrew and Colin Elman, 2006a, 'Qualitative Research: Recent Developments in Case Study Methods', *Annual Review of Political Science* 9:455-476.

Bennett, Andrew and Colin Elman, 2006b, 'Complex Causal Relations and Case Study Methods: The Example of Path Dependence', *Political Analysis*, 14, 3:250-267.

Benzies, Karen M. and Allen N. Mitch, 2001, 'Symbolic Interactionism as a Theoretical Perspective for Multiple Method Research', *Journal of Advanced Nursing*, 33, 4:541-547.

Berelson, Bernard, 1952, *Content Analysis in Communications Research*, Glencoe, IL: Free Press.

Berg, Bruce, L., 2007, *Qualitative Research Methods for the Social Sciences,* London, UK: Pearson.

Berkenkotter, Carol, 1993, 'A "Rhetoric for Naturalistic Inquiry" and the Question of Genre', *Research in the Teaching of English*, 27, 3:293-304.

Berlin Declaration on Open Access to Knowledge in the Science and Humanities, 2003, retrieved on May 18, 2017 from http://www.zim.mpg.de/openaccess-berlin/berlin_declaration.pdf

Bernard, Russel H., 2002, *Research Methods in Anthropology: Qualitative and Quantitative Approaches 3rd ed.*, Walnut Creek, CA: AltaMira Press.

Bewley, Raymond J., 1999. 'The Use of Multimedia and Hypermedia Presentation for Instruction of Juvenile Offender', *Journal of Correctional Education*, 50, 4:130-139 retrieved on April 13, 2017 from http://www.jstor.org/stable/23292247

Biagini, Francesca and Bernt Øksendal, 2005, 'A General Stochastic Calculus Approach to Insider Trading', *Applied Mathematics & Optimization* 52, 2:167-181.

Bikson, Francis T. K., 1988, *Managing Digital Documents: Technology Challenges and Institutional Responses,* Stockholm, Sweden: International Council on Archives.

Birău, Ramona, 2013, 'The Implications of Catastrophe Theory for Stock Market Forecasting', *ARPN Journal of Science and Technology,* 2, 5:360-363.

Bjork, Bo-Christer and Ziga Turk, 2006, 'The Electronic Journal of Information Technology in Construction (ITcon): An Open Access Journal Using Unpaid, Volunteer-based Organization', *Information Research* 11, 3:26-37.

Blaikie, Norman W. H., 2000, *Designing Social Research: The Logic of Anticipation*, Cambridge, UK: Polity Press.

Blair, Graeme, Kosuke Imai and Yang-Yang Zhou, 2015, 'Design and Analysis of the Randomized Response Technique', *Journal of the American Statistical Association,* 110, 511:1304-1319.

Bland, J. Martin and D. G. Bland, 1994, 'Statistics Notes: One and Two Sided Tests of Significance', *British Medical Journal,* 309, 6949:248.

Bleicher, Josef, 1980, *Contemporary Hermeneutics: Hermeneutics as Method, Philosophy and Critique*, London, UK: Routledge and Kegan Paul.

Bloomfield, P., 1976, *Fourier Analysis of Time Series: An Introduction*. New York, NY: Wiley.

Blumer, Herbert, 1969, *Symbolic Interactionnism: Perspectice and Method*, Englewood Cliffs, NJ: Prentice-Hall.

Blumer, Herbert, 1954, 'What is Wrong with Social Theory?', *American Sociological Review*, 18, 5:3–10.

Blumer, Herbert, 1931, 'Science without Concepts', *American Journal of Sociology*, 36, 4:515-533.

Bradley, Jana, 1993, 'Methodological Issues and Practices in Qualitative Research', *Library Quarterly,* 63, 4:431-449.

Boje, David M., 2001, *Narrative Methods for Organizational and Communication Research*, Thousand Oaks, CA: Sage Publications.

Bolger, Niall, Alan Davis and Rafaeli Eschkol, 2003, 'Dairy Methods: Capturing Life as It Is Lived, *Annual Review of Psychology*, 6, 2:579-616.

Bolton, Ralph, 1995, 'Tricks, Friends, and Lovers: Erotic Encounters in the Field', in D. Kulick and M. Wilson, eds., *Taboo-Sex Identity and Erotic Subjectivity in Anthropological Fieldwork*, London, UK: Routledge.

Bonabeau, Eric, 2002, 'Agent-based Modeling: Methods and Techniques for Simulating Human Systems', *Proceedings of the National Academy of Sciences,* 99, 3:7280-7287.

Bowen, Glenn A., 2006, 'Grounded Theory and Sensitizing Concepts', *International Journal of Qualitative Methods*, 5, 3:12-23.

Boyer, Carl B., 1991, *A History of Mathematics*, New York, NY: Wiley.

Bradbury, Hillary, 2013, 'Action Research: The Journal's Purpose, Vision and Mission', *Action Research* 11:3–7.

Brainard, Jeffrey, Stephen Burd, and Ben Gose, 2000, 'The Clinton Legacy in Higher Education', *Chronicle of Higher Education* 47, 16:A31.

Breckner, Roswitha, 2007, 'Case-oriented Comparative Approaches: The Biographical Perspective as Opportunity and Challenge in Migration Research', *Concepts and Methods in Migration Research: Conference Reader*, 113-152, retrieved on April 13, 2017 from https://www.academia.edu/2528100/Case-oriented_comparative_approaches_the_biographical_perspective_as_opportunity_and_challenge_in_migration_research

Brennan, Robert L., 1983, *Elements of Generalizability Theory*, Iowa City, IA: The American College Testing Program.

Briggs, Charles L. 2003, 'Interviewing: Power, Knowledge and Social Inequality. In J. A. Holstein and J. F. Gubrium, eds., *Inside Interviewing: New Lenses, New Concerns*. Thousand Oaks, CA: Sage Publications.

Bronfenbrenner, Urie, 1995, 'Developmental Ecology through Space and Time: A Future Perspective', in P. Moen, G. H. Elder, K. Luscher, & U. Bronfenbrenner, eds., *Examining Lives in Context: Perspectives on the Ecology of Human* Development, Washington, DC: American Psychological Association Press.

Bronfenbrenner, Urie, ed., 2005, *Making Human Beings Human: Biocultural Perspectives on Human Development*. Thousand Oaks, CA: Sage Publications.

Brown, Courtney, 2008, *Graph Algebra: Mathematical Modeling with a Systems Approach*, Thousand Oaks, CA: Sage Publications.

Bryman, Allan, 2008, *Social Research Methods 4th ed.*, Oxford, UK: Oxford University Press.

Bucchi, Massimiano, 2004, *An Introduction to Social Studies of Science*, 1st ed., London, UK: Routledge.

Budapest Open Access Initiative, 2002, retrieved on May 20, 2017 from http://www.soros.org/openaccess

Budge, E. A. Wallace, 1978, *An Egyptian Hieroglyphic Dictionary*, 2 vols., Mineola, NY: Dover Publications.

Bullinaria, John A, 2005, 'IAI: Expert Systems', retrieved on April 15, 2017 from http://www.cs.bham.ac.uk/~jxb/IAI/w9.pdf

Burau, Viola, 2007, 'Comparative Health Research', in M. Saks and J. Allsop, eds., *Researching Health: Qualitative, Quantitative and Mixed Methods*, London, UK: Sage Publications.

Bureau, Viola and Heidi Houlberg Salomonsen, 2012, 'Comparing Comparative Research Designs', *Working Papers from the Department of Political Science*, Aalborg University, Denmark, retrieved on May 41, 2017 from http://vbn.aau.dk/files/73680818/2012_1_Heidi_Salomonsen.pdf

Burns, Robert Bruce, 2000, *Introduction to Research Methods*, Thousand Oaks, CA: Sage Publications.

Burt, Ben, 1998, 'What Is Ethnography?', *Journal of Museum Ethnography,* 10:10-14.

Butt, Rizwan, 2010, *Introduction to Numerical Analysis Using MATLAB*, Sudbury, MA: Jones and Bartlett Publishers.

Cacace, Mirella, Stefanie Ettelt, Nicholas Mays, and Ellen Nolte, 2013, 'Assessing Quality in Cross-Country Comparisons of Health Systems and Policies: Towards a Set of Generic Quality Criteria', *Health Policy,* 112: 156-162.

Campbell, Rona et al., 1967, 'Evaluating Meta-ethnography: A Synthesis of Qualitative Research on Lay Experiences of Diabetes and Diabetes Care', *Social Science and Medicine*, 2003, 56:671-684.

Campbell, Norman R., 1920, *Physics: The Elements*, Cambridge, UK: Cambridge University Press.

Cappellen, Victoria, n.d. 'Writing Tips for Peer-Reviewed Journal Articles', retrieved on May 23, 2017 from School of Earth and Atmospheric Sciences, Georgia Tech: shadow. eas.gatech.edu/~jean/paleo/Writing_tips.pdf

Carrier, Carol A. and Sales C. Gregory, 1987, 'Pair Versus Individual Work on the Acquisition Concepts in a Computer-based Instructional Lesson', *Journal of Computer-Based Instruction*, 14, 1:11-17.

Carter, Michael J. and Celene Fuller, 2016, 'Symbols, Meaning, and Action: The Past, Present, and Future of Symbolic Interactionism', *Current Sociology*, 64, 6:931-961.

Carter, Michael J. and Celene Fuller, 2015, 'Symbolic Interactionism', *Sociopediaisa*, 1, 2:10-17.

Cerqueti, Roy, Paolo Falbo and Cristian Pelizzari, 2013, 'Relevant States and Memory in Markov Chain Bootstrapping and Simulation', EconPapers, retrieved on April 15, 2017 from http://econpapers.repec.org/paper/pramprapa/46250.htm

Çetin, Yakup et al., 2016, 'Effects of Violent Media on Verbal Task Performance in Gifted and General Cohort Children', *Gifted Child Quarterly*, 60, 4:279-286.

Cetto, Ana Maria, 2001, 'The Contribution of Electronic Communication to Science— Has it Lived Up to its Promise?', Proceedings of the Second ICSU/UNESCO International Conference on Electronic Publishing in Science, Paris: 20-23 February 2001.

Chaitip, Prasert, Chukiat Chaiboonsri and Fawikorn Inluang, 2014, 'The Production of Thailand's Sugarcane: Using Panel Data Envelopment Analysis (Panel DEA) Based Decision on Bootstrapping Method', *Procedia Economics and Finance,* 14:120-127.

Chang, Kuo-En, Tao-Ting Sung and Ine-Dai Chen, 2002, 'The Effect of Concept Mapping to Enhance Text Comprehension and Summarization', *The Journal of Experimental Education*, 71, 1:5-23.

Chao, Min-Te and Shaw-Hwa Lo, 1985, 'A Bootstrap Method for Finite Population', *Sankhyā: The Indian Journal of Statistics, Series A*:399-405.

Charmaz, Kathy, 2006, *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis.* Thousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 2001, 'Qualitative Interviewing and Grounded Theory Analysi', in J. Gubrium and J. Holstein, eds., *Handbook of Interview Research*, Thousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 2000, *Grounded Theory: Objectivist and Construstivist methods.* Thousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 1995, 'Grounded Theory: Rethinking Methods in Psychology', in J. A. Smith et al., eds., TRhousand Oaks, CA: Sage Publications.

Charmaz, Kathy, 1990, 'Discovering' of Chronic Illness: Using Grounded Theory', *Sociology of Health and Illness.*, 30:1161-1172.

Charmaz, Kathy and Richard G. Mitchell Jr.,'The Myth of Silent Authorship: Self, Substance, and Stlye in the Ethnographic Writing, *Symbolic Interaction*, 19, 4:285-302.

Cheema, Zulfiqar Ali., Sheikh Tariq Mahmood, Azhar Mahmood, and Makhdoom Ali Shah, A. 2011, 'Conceptual awareness of research scholars about plagiarism at higher education level: Intellectual Property Right and Patent,' *International Journal of Academic Research*, 3, 1:665-670.

Chew, Phyllis, 2013, *Emergent Lingua Francas and World Orders: The Politics and Place of English a World Language*, New York, NY: Routledge.

Chilisa, Bagele and Julia Preece, 2005, *Research Methods for Adult Educators in Africa*, Cape Town, South Africa: Pearson South Africa.

Chronicle, 2017. 'Gone With the Floods! Bridge on Major Highway Swept Away', *The Chronicle*, 28:4.

Clandinin, Jean D. and Michael F. Connelly, 2000, *Narrative Inquiry: Experience and Story in Qualitative Research*, San Francisco, CA: Jossey-Bass Publishers.

Clarke, Adele E., 2007, 'Grounded Theory: Conflicts, Debates and Situational Analysis', in W. Outhwaite and S. P. Turner, eds., *Handbook of Social Science Methodology*, Thousand Oaks, CA: Sage Publications.

Clarke, Adele E., 2006, 'Feminisms, Grounded Theory and Situational Analysis', in S. Hesse-Biber, ed., *Handbook of Feminist Research: Theory and Praxis*, Thousand Oaks, CA: Sage Publications.

Clarke, Adele E., 2005, *Situational Analysis: Grounded Theory after the Postmodern Turn*. Thousand Oaks, CA: Sage Publications.

Clerke, Teena, and Nick Hopwood, 2014, *Doing Ethnography in Teams: A Case Study of Asymmetries in Collaborative Research*, London, UK: Springer.

Cliggett, Lisa, 2012*, Strategies of Data Archiving for Cultural Anthropology, Using Gwembe Tonga Research Project Data,* Lusaka, Zambia: National Science Foundation, BCS-1157418.

Cohen, Bernard P. and Elizabeth G. Cohen, 1991, 'From Group Work among Children to R & D Teams: Interdependence, Interaction and Productivity', in E. J. Lawler, et al., eds., *Advances in Group Processes*, Greenwich, CN: JAI.

Cohen, Elizabeth G., 1994, 'Restructuring the Classroom: Conditions for Productive Small Groups', *Review of Educational Research*, 64, 1:1-15.

Cohen, Elizabeth G., 1991, 'Teaching in Multiculturally Heterogeneous Classrooms: Findings from a Model Program', *McGill Journal of Education*, 26, 5:7-23.

Cohen, Elizabeth G., Michael R. Lotan and Leechor C. Hyesook, 1989, 'Can Classrooms Learn? *Sociology of Education*, 62, 2:75-94.

Cohen, Elizabeth G., Michael R. Lotan and Micelle L. Catbzarite, 1988, 'Can Expectations for Competence be Treated in the Classroom?', in M. Webster, Jr. and M. Foschi, eds., *Status Generalization: New Theory and Research*, Stanford, CA: Stanford University Press.

Cohen, Louis, Lawrence Manion and Keith Morrison Keith, 2007. *Research Methods in Education* 6th ed., London, UK: Routledge.

Cooley, William W. and Paul R. Lohnes, 1971, *Multivariate Data Analysis*, New York, NY: John Wiley.

Cooperider, David L. and Diana Whitney, 2007, 'Appreciative Inquiry: A Positve Revolution in Change', in P. Holmer, T. Devane and S. Cady, eds., *The change Handbook*, Oakland, CA: Berrett-Koehler Publishers.

Corbet-Owen, Carina and Lou-Marie Kruger, 2001, 'The Health System and Emotional Care: Validating the Many Meanings of Spontaneous Pregnancy Loss', *Families, Systems and Health*, 19, 4:411-427.

Cortazzi, Martin, 2001, 'Narrative Analysis in Ethnography', in P. Atkinson et al., *Handbook of Ethnography*, London, UK: Sage Publications.

Coser, Lewis A., 1977, *Masters of Sociological Thought: Ideas in Historical and Social Context*, New York, NY: Harcourt Brace Jovanovich, Inc.

Creswell, John William, 2009, *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*, 4th ed., Thousand Oaks, CA: Sage Publications.

Creswell, John William, 2008, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* 3rd ed., Thousand Oaks, CA: Sage Publications.

Creswell, John William, 2003, *Research Design: Quantitative, Qualitative and Mixed Approaches*, Thousand Oaks, CA: Sage Publications.

Creswell, John William, 1999, 'Mixed-method Research: Introduction and Application', *Handbook of Educational Policy*, 455-472.

Creswell, John William, 1998, *Qualitative Inquiry and Research Design: Choosing among Five Traditions,* Thousand Oaks, CA: Sage Publications.

Creswell, John William, 1994, *Research Design: Qualitative and Quantitative Approaches*, Thousand Oaks, CA: Sage Publications.

Crotty, Michael, 1998, *The Foundations of Social Research: Meaning and Perspective in the Research Process*, London, UK: Sage Publications.

Crouch, Mira and Heather McKenzie, 2006, 'The Logic of Small Samples in Interview-based Qualitative Research, *Social Science Information*, 45, 4:483-499.

Cytowic, Richard, April 24, 2010, 'Our Hidden Superpowers', *New Scientist*, 2010:46.

Czarniawska, Barbara, 1997, 'A Narrative Approach to Organisational Studies', *Qualitative Research Method*, 43, 2:2-10.

Czepiel, Scott A., 2002, 'Maximum Likelihood Estimation of Logistic Regression Models: Theory and Implementation', retrieved on April 13, 2017from http://www.czep.net/contact.html

DAAD 2004, *Violation of Social and Scientific research ethics and the way forward*, Proceedings of Workshop on Research Ethics, Maseno University, Kenya.

Dal Forno, Arianna and Ugo Merlone, 2013, 'Replicating Human Interaction in Braess Paradox', *Proceedings of the 2013 Winter Simulation Conference: Simulation: Making Decisions in a Complex World*, 1754-1765, IEEE Press.

D'Andrade, Roy G. and Claudia Strauss, 1992, *Human Motives and Cultural Models*. Cambridge, UK: Cambridge University Press.

Dandridge, Thomas C., Ian Mitroff and Joyce F. William, 1980, 'Organizational Symbolism: A Topic to Expand Organizational Analysis', *Academy of Management Review*, 5, 1:77-82.

Darnell, Regna, 2001, *Invisible Genealogies: A History of Americanist Anthropology*, Lincoln, NE: University of Nebraska Press.

Dartmouth University, 2015, 'Marginal Positioning: Writing African Women: Conceptualizations at the Intersection of African and Feminist Epistemologies', *Conceptualizing African Epistemologies: Subaltern and Vernacular Ways of Knowing*, retrieved on April 13, 2017 from https://networks.h-net.org/node/73374/announcements/84900/conference-announcement-conceptualizing-african-epistemologies

Daston, Lorraine, ed., 2000, *Biographies of Scientific Objects*, Chicago, IL: The University of Chicago Press.

Daston, Lorraine and Peter Galison, 1992, 'The Image of Objectivity', *Representations*, 40:81-128.

David, Arlette, 2007, 'Ancient Egyptian Forensic Metaphors and Categories', *Zeitschrift für Ägyptische Sprache*, 134, 1:1-14.

de Leeuw, Jan, 2005, 'Multidimensional Unfolding', *Encyclopedia of Statistics in Behavioral Science*, retrieved on April 15, 2017 from

http://onlinelibrary.wiley.com/doi/10.1002/0470013192.bsa416/abstract;jsessionid=31BE649320438E05BBA1EB2909C3787F.f01t03

de Lubicz, René Adolphe Schwaller, 1977, *The Temple In Man*, Rochester, VT: Inner Traditions International.

Dekker, Rianne and Peter Scholten, 2017, 'Framing the Immigration Policy Agenda: A Qualitative Comparative Analysis of Media Effects on Dutch Immigration Policies', *The International Journal of Press/Politics*, 22, 2:202-222.

del Mar Rueda, Maria, Antonio Arcos, and Beatriz Cobo, 2015, 'Use of Randomized Response Techniques When Data are Obtained from Two Frames', *Applied Mathematics* 9, 2L:389-399.

Della Porta, D., 2008, 'Comparative Analysis: Case-oriented Versus Variable-oriented Research', in D. Della Porta and M. Keating, eds., *Approaches and Methodologies in the Social Sciences: A Pluralist Perspective*, New York, NY: Cambridge University Press.

Denzin, Norman K., 2012, *Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples, and Issues,* Thousand Oaks, CA: Sage Publications.

Denzin, Norman K. and Lincoln S. Yvonne, eds, 2011, *The Sage Handbook of Qualitative Research*, 3rd ed. Thousand Oaks, CA: Sage Publications.

Denzin, Norman K. and Yvonna S. Lincoln, 1994, 'Introduction: Entering the Field of Qualitative Research', in N. K. Denzin and Y. S. Lincoln, eds. *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage Publications.

Department of Health, Education, and Welfare, 1979, 'Ethical Principles and Guidelines for the Protection of Human Subjects of Research', The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, United States of America.

DeWalt, Kathleen Musante, R. Billier DeWalt and Carol B. Wayland, 1998, 'Participant Observation', in H. R. Bernard, ed., *Handbook of Methods in Cultural Anthropology*, Walnut Creek, CA: AltaMira Press.

Dewey John, 2008 (original work published in 1941), 'Propositions, Warranted Assertibility and Truth', in J. Boydston, ed., *The Later Works of John Dewey, 1925-1953*, Carbondale, IL: Southern Illinois University Press.

Diane Stopyra's Research Blog, February 21, 2010, 'Interviewing…It's All about Balance', retrieved on April 13, 2017 from https://dianestopyra.wordpress.com/tag/postmodern-interviewing/

Dingle, Herbert, 1950, 'A Theory of Measurement', *British Journal for the Philosophy of Science*, 1:1-25.

Diop, Cheikh Anta, 1981/trans. 1991, *Civilization or Barbarism: An Authentic Anthropology*, Brooklyn, NY: Lawrence Hill Books.

Diop, Cheikh Anta, 1974, *Black Africa: The Economic Basis for a Federated State*, Chicago, IL: Lawrence Hill (Africa World Press edition).

Dodson, Lisa Jillian Dickert, 2004, 'Girls' Family Labor in Low-income Households: A Decade of Qualitative Research, *Journal of Marriage and Family*, 66, 2:318-332.

Dogan, Mattei and Dominique Pelassy, 1984, *How to Compare Nations: Strategies in Comparative Politics*, Chatham, NJ: Chatham House Publishers, Inc.

Dohan, Daniel, Laura Schmidt and Stuart Henderson, 2005, 'From Enabling to Bootstrapping: Welfare Workers' Views of Substance Abuse and Welfare Reform', *Contemporary Drug Problems* 32, 3:429-455.

Domino, George and Marla L. Domino, 2006, *Psychological Testing: An Introduction,* Cambridge, UK: Cambridge University Press.

Dörnyei, Zoltan, 2007, *Research Methods in Applied Linguistics: Quantitative, Qualitative, and Mixed Methodologies*, Oxford, UK: Oxford University Press.

Dos Reis, Anthony J. and Laura L. Dos Reis, 2012, *An Introduction to Programming Using Java*, Sudbury, MA: Jones & Bartlett Learning.

Douglas, Ann, Karen Scopa and Carole Gray, 2000, 'Research through Practice: Positioning the Practitioner as Researcher', *Working Papers in Art and Design*, retrieved

on April 13, 2017 from https://www.herts.ac.uk/__data/assets/pdf_file/0018/12285/WPIAAD_vol1_douglas_scopa_gray.pdf

Downey, Greg, 2007, 'Seeing with a "Sideways Glance": Visuomotor "Knowing" and the Plasticity of Perception', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning*, Oxford, UK: Berghahn Books.

Dunteman, George Henry, 1984, *Introduction to Multivariate Analysis*, London, UK: Sage Publications.

Durkheim, Emile, 1964, *The Rules of Sociological Method*, translated from the French by S. S. Solovay and J. H. Mueller and edited by G. E. G. Catlin, New York, NY: the Free Press.

Durkheim, Emile, 1949, *Division of Labor in Society*, translated from the French by George Simpson, Glencoe, IL: The Free Press.

Durkheim, Emile, 1895, 'The Rules of Sociological Method', S. Lukes, 1982, *Library of Congress Cataloguing in Publication Data*, New York, NY: The Free Press.

Earthy, Sarah. And Ann Cronin, 2008, 'Narrative Analysis', in N. Gilbert, ed., *Researching Social Life,* 3rd ed., London, UK: Sage Publications.

Eastwood, Susan, Pamela Derish, Evangeline Leash, and Stephen Ordway, 1996, 'Ethical Issues in Biomedical Research: Perceptions and Practices of Postdoctoral Research Fellows Responding to a Survey', *Science and Engineering Ethics* 2, 1:89-114.

Eckstein, Harry, 2000, 'Case Study and Theory in Political Science', in R. Gomm, M. Hammersley and P. Foster, eds., *Case Study Method*, London, UK Sage Publications.

Eckstein, Harry, 1975, 'Case Study and Theory in Political Science', in F. Greenstein and N. Polsby, eds., *Handbook of Political Science*, Reading, MA: Addison-Wesley.

Edozie, Rita Kiki, 2009, *Reconstructing the Third Wave of Democracy: Comparative African Democratic Politics*, Lanham, MD: University Press of America.

Edwan, Daniel H., 2009, *Symbolic Interpretation of the Lines of Effort through the Theory of Strategic Ambiguity*, Army Command and General Staff College, Fort Leavenworth, Kansas School of Advanced Military Studies.

Edwards, Rosalind and Melanie Mauthner, 2002, 'Ethics and Feminist Research: Theory and Practice', in T. Miller et al., eds., *Ethnics and Feminist Research*, London, UK: Sage Publications.

Efron, Bradley, 1979, 'Bootstrap Methods: Another Look at the Jackknife', *Annals of Statistics*, 7, 1:1-26.

Ehrenreich, Barbara and Arlie R. Hochschild, 2004, *Global Woman: Nannies, Maids, and Sex Workers in the New Economy*, London, UK: Macmillan.

Elwood, Sarah and Meghan Cope, 2009, 'Introduction: Qualitative GIS: Forging Mixed Methods through Representations, Analytical Innovations, and Conceptual Engagements', in S. Elwood and M. Cope, eds., *Qualitative GIS: A Mixed-methods Approach*, Los Angeles, CA: Sage Publications.

Emeagwali, Gloria and Edward Shizha, eds., 2016, *African Indigenous Knowledge and the Sciences*, Rotterdam, The Netherlands: Sense Publishers, retrieved on April 13, 2017

from https://www.sensepublishers.com/media/2759-african-indigenous-knowledge-and-the-sciences.pdf

Emerson, Robert M., Rachel I. Fretz and Linda L. Shaw, 1995, *Writing Ethnographic Fieldnotes*, Chicago, IL: The University of Chicago Press.

Emory University, August 2015, 'Building Successful Mentoring Relationships: Student Guide', Laney Graduate School, retrieved on May 04, 2017 from www.gs.emory.edu/uploads/professional.../Mentoring%20Guide_Student_final.pdf

Erickson, Ken C. and Donald D. Stull, 1998, *Doing Team Ethnography: Warnings and Advice*, Thousand Oaks, CA: Sage Publications.

Eriksson, Paivi and Anne Kovalainen 2008, *Qualitative Methods in Business Research 2nd ed.*, Helsinki, Finland: Sage Publications.

Ernest, Paul, 1994, 'Social Constructivism and the Psychology of Mathematics Education', in E. Ernest, ed., *Constructing Mathematical Knowledge: Epistemology and Mathematics Education*, London, UK: Falmer Press.

Ezzy, Douglas, 2002, *Qualitative Analysis: Practice and Innovation*, London, UK: Routledge.

Falola, Toyin, 2014, *Counting the Tiger's Teeth: An African Teenager's Story*, Ann Arbor, MI: The University of Michigan Press.

Falola, Toyin, 2013, *The African Diaspora: Slavery, Modernity, and Globalization*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 2012, *Ibadan: Foundation, Growth and Change 1830-1960*, Ibadan, Nigeria: Bookcraft.

Falola, Toyin, 2005, *A Mouth Sweeter than Salt: An African Memoir*, Ann Arbor, MI: The University of Michigan Press.

Falola, Toyin, 2001, *Nationalism and African Intellectuals*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 2001, *Nationalism and African Intellectuals*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 1999, *Yoruba Gurus: Indigenous Production of Knowledge in Africa*, Trenton, NJ: Africa World Press, Inc.

Falola, Toyin, 1998, *Violence in Nigeria: The Crisis of Religious Politics and Secular Ideologies*, Rochester, NY: University of Rochester Press.

Falola, Toyin, 1996, *Development Planning and Decolonization in Nigeria*, Gainesville, FL: University Press of Florida.

Farral, Stephen and Gordon Weller, 2012, 'Calendar and Time Diary Methods in Life Course Research', *International Journal of Social Research Methodology*, 15, 3:255-258.

Fatunmbi, Awo Fa'lokun, 2002, 'Odu and the Ifa Concept of History', retrieved on April 14, 2017 from http://docshare.tips/awo-study-center-odu-and-the-ifa-concept-of-history-part-i_57867efdb6d87f222e8b4781.html

Faure, Andrew Murray, 1994, 'Some Methodological Problems in Comparative Politics', *Journal of Theoretical Politics*, 6, 3:307-322.

Fenyo, Mario D., 2011, 'Pan-African Methodologies', in A. K. Bangura, *African-Centered Research Methodologies: From Ancient Times to the Present*. San Diego, CA: Cognella.

Ferguson, Ann, 2008, 'Feminist Perspectives on Class and Work', retrieved on June 18, 2017 from https://plato.stanford.edu/entries/feminism-class/

Field, Andy, Jeremy Miles and Zoë Field, 2012, *Discovering Statistics Using R*, Thousand Oaks, CA: Sage Publications.

Fischer, Frank, Gerald J. Miller and Sidney S. Mara, eds,, 2007, *Handbook of Public Policy Analysis: Theory, Politics and Methods*, Boca Raton, FL: CRS Press.

Fisher, Jill A. and Kalbaugh A. Corey, 2012, 'United States Private-sector Physicians and Pharmaceutical Contract Research: A Qualitative Study', *Public Library of Science (PLoS) Medicine* 9, 7:1-7, e100127, retrieved on June 18, 2017 from https://doi.org/10.1371/journal.pmed.1001271.

Fisher, Imogen and Jenny Zivian, 2004, 'Explanatory Case Studies: Implications and Applications for Clinical Research', *Australian Occupational Therapy Journal*, 51, 4:185-191.

Flick, Uwe, Ernst V. Kardorff and Ines Steinke, 2004, 'What is Qualitative Research? An Introduction to the Field', in U. Flick, E. V. Kardorff and I. Steinke, eds., *A Companion to Qualitative Research*, London, UK: Sage Publications.

Fontana, Andrea and James H. Frey, 1994, 'Interviewing: The Art of Science', in N. K. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage Publications.

Fontana, Andrea, 2002, 'Postmodern Trends in Interviewing', in J. Gubrium and J. Holstein, eds., *Handbook of Interview Research: Context and Method*, Thousand Oaks, CA: Sage Publications.

Fossey, Ellie, Carol Harvey, Fiona McDermott, and Larry Davidson, 2002, 'Understanding and Evaluating Qualitative Research, *Journal of Psychiatry*, 36, 6:717-732.

Foucault, Michael, 1972, *The Archaeology of Knowledge*, New York, NY, Pantheon Books, Tavistock Publications Limited.

Fowler Jr., Floyd J., 2013, *Survey Research Methods*, Thousand Oaks, CA: Sage Publications.

Fox, John and Sanford Weisberg, 2011, *An R Companion to Applied Regression* 2nd ed., Thousand Oaks, CA: Sage Publications.

Frankfort-Nachmias, Chava, David Nachmias and Jack DeWaard, 2014, *Research Methods in the Social Sciences* 7th ed., New York, NY: Worth Publishers/Palgrave Macmillan.

Franklin, Carl and Susan K. Kinnell, 1990, *Hypertext and Hypermedia in Schools*, Santa Barbara, CA: ABC-CLIO, Inc.

Franzosi, Roberto, 2012, 'Quantitative Narrative Analysis', retrieved on April 14, 2017 from https://www.bgss.hu-berlin.de/de/bgss/events/newsandevents_/workshop-fran-zosi.

Freeman, Richard, n.d., 'Social and Public Policy, Frequently Asked Questions', retrieved on April 11, 2017 from http://www.richardfreeman.info/answer.php?id=18

Friese, Susanne, 2012, *Qualitative Data Analysis with ATLAS.ti*, Thousand Oaks, CA: Sage Publications.

Frohmann, Bernd, 1992, 'The Power of Images: A Discourse Analysis of the Cognitive Viewpoint', *Journal of Documentation*, 48, 4:365-386.

Gage, Nathaniel Lees, 1989, 'The Paradigm Wars and Their Aftermath: A 'Historical' Sketch of Research on Teaching Since 1989', *Educational Researcher* 18, 7:4-10.

Gallo, Amy, 2015, 'A Refresher on Regression Analysis', *Harvard Business Review*, retrieved on April 13, 2017 from https://hbr.org/2015/11/a-refresher-on-regression-analysis

Ganyi, Francis Mowang and Jayne Ise Owan, 2016, 'Impact of Transculturalism and Globalisation on the Concepts of Oral Literature and "Ubuntugogy" as Educational Paradigms for African Liberation and Development in 21st Century', *English Language, Literature and Culture* (Science Publishing Group), 1, 3:30-39, retrieved on April 13, 2017 from http://article.sciencepublishinggroup.com/pdf/10.11648.j.ellc.20160103.13.pdf

Gardner, John W., 1990, *On Leadership*, New York, NY: The Free Press.

Garfinkel, Harold, 1967, *Studies in Ethnomethodology,* Los Angeles, CA: John Wiley.

Garwe, Evelyn Chitevo, 2015, 'The Status Quo of Doctoral Education in Universities in Zimbabwe', *Journal of Studies in Education*, 5, 3:23-37.

Garzotto Franca, Luca Mainetti and Paolo Paolini, 1995, 'Hypermedia Design Analysis', *Communications of the ACM,* 8, 38:74-86.

Garzotto Franca, Paolo Paolini and Daniel Schwabe, 1993, 'HDM: A Model-based Approach to Hypertext Application Design', *ACM Transactions of Information Systems,* 11, 1:1-26.

Gearity, Brian T. and Norma Mertz, 2012, 'From "Bitch" to "Mentor": A Doctoral Student's Story of Self-Change and Mentoring', *The Qualitative Report*, 17, 59:1- 27, retrieved on May 04, 2017 from http://www.nova.edu/ssss/QR/QR17/gearity.pdf

Gelman, Andrew, 2006, 'Multilevel (Hierarchical) Modeling: What It Can and Cannot Do', *American Statistical Association and the American Society for Quality Technometrics,* 48, 3:433-435.

Gilbert, Nigel, ed., 2008, *Researching Social Life*, 3rd ed., London, UK: Sage Publications.

Gilbert, Nigel, 2007, 'Computational Social Science: Agent-based Social Simulation', *Semantic Scholar*, retrieved on April 15, 2017 from https://www.researchgate.net/publication/30930358_Computational_social_science_Agent-based_social_simulation

Germano, William, 200, 'From Dissertation to Book', retrieved on May 25, 2017 from University of Chicago Press: http://www.press.uchicago.edu/Misc/Chicago/288463.html

Gerring, John, 2004, 'What Is a Case Study and What Is It Good for?', *American Political Science Review,* 98, 2: 341-354, retrieved on May 31, 2017 from https://fekmekci.files.wordpress.com/2014/11/gerring-case-study.pdf

Gilgun, Jane F., 2002, 'Some Notes on the Analysis of Qualitative Data', retrieved on April 12, 2017 from http://ssw.che.umn.edu/img/assets/5661/Data%20analysis%2010-02.pdf

Gill, Jatinder, n.d., 'Feminist Research Methods', *Feminist Perspective on Media and Technology*, York University, Toronto, Ontario, Canada, retrieved on April 13, 2017 from http://www.yorku.ca/mlc/sosc3990A/projects/femresearch/femresearch.html

Glaser, Barney G., 1978, *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory,* Mill Valley, CA: Sociology Press.

Glaser, Barney G. 1967, *Theoritical Sensitivity Advances in the Methodology of Grounded Theory*, Mill Valley, CA: Sociology Press.

Glaser, Barney G. and Anselm L. Strauss, 1967, *The Discovery of Grounded Theory: Startegies for Qualitative Research*, Chicago, IL: Aldine Publishing Company.

Grasseni, Cristina, 2007, 'Communities of Practice and Forms of Life: Towards a Rehabilitation of Vision', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning,* Oxford, UK: Berghahn Books.

Grbich, Carol, 2010, *Qualitative Data Analysis: An Introduction*, London, UK: Sage Publications.

Grbich Carol, 2006, *Qualitative Data Analysis: An Introduction*, London, UK: Sage Publications.

Green, Judith and Nicki Thorogood, 2009, *Qualitative Methods for Health Research*, 2nd ed., Thousand Oaks, CA: Sage Publications.

Green, Shakira, 2011, 'Time Series Analysis of Stock Prices Using the Box-Jenkins Approach', doctoral dissertation, Georgian Southern University, retrieved on April 15, 2017 from http://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1668&context=etd

Greener, Sue, 2008, *Business Research Methods*, Frederiksberg, Denmark: Ventus Publishing ApS

Griffiths, Howard, T., 2016, 'Application of Summative Content Analysis to a Postal Questionnaire', *Nurse Researcher*, 23, 3:30-36.

Grix, Jonathan, 2004, *The Foundations of Research*, London, UK: Palgrave Macmillan.

Groenen, Patrick, 2005, 'Multidimensional Scaling', in B. S. Everitt and D. C. Howell, eds., *Encyclopedia of Statistics in Behavioral Science,* New York, NY: John Wiley and Sons Ltd.

Guba, G. Egon and Yvonna S. Lincoln, 1994, 'Competing Paradigms in Qualitative Research', in N. K. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research,* Thousand Oaks, CA: Sage Publications.

Gubrium, Jaber F. and James A. Holstein, 2009, *Analyzing Narrative Reality,* Thousand Oaks, CA: Sage Publications.

Gubrium, Jaber F. and James A. Holstein, eds., 2002, *Handbook of Interview Research: Context and Method*, Thousand Oaks, CA: Sage Publications.

Gustafsson, Ewa, Lotta Dellve, Maria Edlund and Mats Hagberg, 2003, 'The Use of Information Technology among Young Adults: Experience, Attitudes and Health Beliefs', *Applied Ergonomics* 34, 6:565-570.

Hahn, Tomie, 2007, *Sensational Knowledge – Embodying Culture through Japanese Dance,* Middletown, CT: Wesleyan University Press.

Hall, Jonathan, 2013,'Pragmatism, Evidence and Mixed Methods Evaluation' (Special Issue: Mixed Methods and Credibility of Evidence in Evaluation), *New Directions for Evaluation*, 138:15-26.

Hambleton, Ronald K. and Jane Rodgers, 1995, 'Item Bias Review', *Practical Assessment, Research and Evaluation*, 4. 6:1-3, retrieved on April 15, 2017 from http://pareonline.net/getvn.asp?v=4&n=6

Hamel Jacques, 2005, 'Knowledge for Sustainable Development in Africa Towards New Policy Initiatives', *World Review of Science, Technology and Sustainable Development* 2, 3:217-229.

Hand, David J., 1996, 'Statistics and the Theory of Measurement', *Journal of the Royal Statistical Society*, A 159, 3:445-492.

Hannerz, Ulf, 2003, 'Being There... and there... and There! Reflections on Multi-site Ethnography', *Ethnography*, 4, 2:201-216.

Hantrais, Linda, 2009, *International Comparative Research: Theory, Methods and Practice*, Basingstoke, UK: Palgrave Macmillan.

Hantrais, Linda, 1995, 'Comparative Research Methods', *Social Research Update* 13, retrieved on April 13, 2017 from http://sru.soc.surrey.ac.uk/SRU13.html

Hankivsky, Olena, 1999, 'Quantitative and Qualitative Methodologies', Center for Research on Violence against Women and Children, pp. 1-2, retrieved on April 13, 2017 from http://www.learningtoendabuse.ca/sites/default/files/pub_gabdois1999.pdf

Harnad, Stevan, Tim Brody Francois Vallieres, Less Carr, Steve Hitchcock Steve, Yves Gingras, Charles Oppenheim and Chawki Hajjem, 2004, 'The Access/Impact Problem and the Green and Gold Roads to Open Access', *Serials Review* 30, 4:301-314.

Harris, Howard, 2001, 'Content Analysis of Secondary Data: A Study of Courage in Managerial Decision Making', *Journal of Business Ethics*, 34, 3/4:191–208.

Harris, Mark, 2007, 'Introduction: Ways of Knowing', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning*, New York, NY: Berghahn Books.

Harris, William A. 2001, 'Temporal Coordinates: The Genes that Fix Cell Fate with Birth Order', *Developmental Cell* 1, 3:313--314.

Harville, David A., 1997, *Matrix Algebra from a Statistician's Perspective,* vol. 1. New York, NY: Springer.

Headland, Thomas, N., 1990, 'Introduction: A dialogue between Kenneth Pike and Marvin Harris on Emics and Etics', *Frontiers of Anthropology* 7:13-27.

Hedlund, Stephan and Mats Lundahl, 1989, 'Ideology as a Determinant of Economic Systems: Nyerere and Ujamaa in Tanzania', Uppsala, Sweden: Scandinavian Institute of African Studies.

Hedstrom, Margaret, 1991, 'Understanding Electronic Incunabula: A Framework for Research on Electronic Records', *American Archivist*, 54, 3:334–54.

Helfrich, Hede, 1999, 'Human Reliability from a Social-Psychological Perspective', *International Journal of Human-Computer Studies,* 50:193-212.

Hernandez, Laurie L., 1996, 'In Search of a Dissertation Committee: Using a Qualitative Research to Study a Lived Experience', *The Qualitative Report*, retrieved on May 04, 2017 from http://www.nova.edu/ssss/QR/QR2-4/hernandez.html

Hesse-Biber, Sharlene Nagy, ed., 2013, *Feminist Researcher Practice: A Primer* 2ⁿᵈ ed., Thousand Oaks, CA: Sage Publication.

Hicks, Alexander M. and Thomas Janoski, 1994, *The Comparative Political Economy of the Welfare State*, Cambridge UK: Cambridge University Press.

Hillier, Frederick S. and Gerald J. Lieberman, 2001, *Introduction to Operations Research*, New York, NY: McGraw-Hill.

Hirschheim, Rudy, Heinz K. Klein and Kalle Lyytinnen, 1995, *Information Systems Development and Data Modeling: Conceptual and Philosophical Foundations*, Cambridge, UK: Cambridge University Press.

Hodge, Robert, Gunter R. Kress, 1988, *Social Semiotics*, Ithaca, NY: Cornell University Press.

Hoey, Elliot M. and Kobian H. Kendrick, 2015, 'Conversation Analysis', in A. M. B. De Groot and P. Hagoort, eds., *Research Methods in Psycholinguistics: A Practical Guide*, Chichester, UK: Wiley-Blackwell and Sons.

Holland, Janet, 2007, 'Emotions and Research', *International Journal of Social Research Methodology*, 10, 3:195-210.

Holstein, James A. and Jaber F. Gubrium, 2004, 'The Active Interview', *Qualitative Research: Theory, Method and Practice*, 2:140-161.

Holstein, James and Jaber F. Gubrium, 2003, *Inside Interviewing: New Lenses, New Concerns*, Thousand Oaks, CA: Sage Publications.

Holsti, Ole R., 1969, *Content Analysis for the Social Sciences and Humanities,* New York, NY: Addison-Wesley Publishing Company.

Holsti, Ole, R., 1968, 'Content Analysis', in G. Lindsey and E. Aronson, eds., *The Handbook of Social Psychology*, 2nd ed., New Delhi, India: Amerind Publishing Co.

Howes, David, 2005, 'Introduction: Empire of the Senses', in D. Howes, ed., *Empire of the Senses: A Sensual Culture Reader*, Oxford, UK: Berg Publishers.

Howell, Jennifer, 2014, *Teaching & Learning: Building Effective Pedagogies*, London, UK: Oxford University Press.

Hsieh, Hsiu-Fang and Sarah E. Shannon, 2005, 'Three Approaches to Qualitative Content Analysis', *Qualitative Health Research* 15, 9:1277-1288.

Hubbard, Phil et al., eds., 2010, 'Walking, across Disciplines: From Ethnography to Arts Practice', *Visual Studies*, 25, 1:1-7.

Hughes-Hallett, Deborah, Patti Frazer Lock and Andre Gleason, 2010, *Applied Calculus, Concept Tests*, New York, NY: John Wiley and Sons.

Humpert, Brandon and Jeremy L. Martin, 2011, 'The Incidence Hopf Algebra of Graphs', in *23rd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2011)*, 2011:517-526, Discrete Mathematics and Theoretical Computer Science.

Hunt, James C., 1989, *Psychoanalytic Aspects of Fieldwork*, London, UK: Sage Publications.

Hunwick, John, 2008, 'The Arabic Literature of Africa Project', in S. Jeppie and S. B. Diagne, eds., *The Meanings of Timbuktu*, Cape Town, South Africa: Human Sciences Research Council in association with CODESRIA, Dakar, Senegal.

Hurlin, Christophe, 2013, 'Chapter 2: Maximum Likelihood Estimation', *Advanced Econometrics,* Lausanne: University of Orleans, retrieved on April 15, 2017 from http://www.univ-orleans.fr/deg/masters/ESA/CH/Chapter2_MLE.pdf

Hutchison, Dougal, 2008, 'On the Conceptualisation of Measurement Error', *Oxford Review of Education*, 34, 4:443-461.

Hymes, Dell H., 1977, 'What is Ethnography?' retrieved on June 14, 2017 from https://eric.ed.gov/?id=ED159234

Igorevich, Arnold Vladimir, 1992, *Catastrophe Theory*, 3rd ed. Berlin, Germany: Springer-Verlag.

Imdadullah, Muhammad, 2014, 'Time Series Analysis and Forecasting,' retrieved on April 13, 2017 from http://itfeature.com/tag/time-series-analysis

Ingold, Tim, 2000, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, London, UK: Routledge.

Irele, Bipo, 2010, 'Epistemology and Theory of Knowledge', *The Oxford Encyclopedia of African Thought,* Volume 1:340-343, Oxford, UK: Oxford University Press.

Israel, Mark, 2014, *Research Ethics and Integrity for Social Scientists: Beyond Regulatory Compliance*, Thousand Oaks, CA: Sage Publications.

Jackson, Peter, 1999, *Introduction to Expert Systems*, Boston, MA: Addison-Wesley.

Jalongo, Mary Renck, 2007, 'Working with Your Committee: A Behind-the-scenes Look at Sources of Conflict', *Survival Guide*, retrieved on May 04, 2017 from http://www.abdsurvivalguide.com/archives/apr708.htm#feature

Jick, Todd D., 1979, 'Mixing Qualitative and Quantitative Methods: Triangulation in Action', *Administrative Science Quarterly* 24, 4:602-611.

Johnson, David W. and Rodger T. Johnson, 1996, ;Cooperation and the Use of Technology', in D. H. Jonassen, ed., *Handbook of Research for Educational Communications and Technology*, New York, NY: Simon and Schuster Macmillan.

Johnson, David W. and Francis Johnson, 1994,. *Joining Together: Group Theory and Group Skills*, 5th ed., Englewood Cliffs, NJ: Prentice-Hall.

Johnson, David W. and Rodger T. Johnson, 1989, *Cooperation and Competition: Theory and Research*, Edina, MN: Interaction Book Company.

Johnson, Samuel, 1921, *The History of the Yorubas from the Earliest Times to the Beginning of the British Protectorate*, Lagos, Nigeria: CMS.

Jones, Michael O., 1996, *Studying Organizational Symbolism: What, How, Why?*, Thousand Oaks, CA: Sage Publications.

Jones, Susan R., 2002, '(Re)writing the Word: Methodological Strategies and Issues in Qualitative Research', *Journal of College Student Development*, 43, 4:461-473.[2]

Jones, Susan R. and Kathleen E. Hill, 2003, 'Understanding Patterns of Commitment: Student Motivation for Community Service, *Journal of Higher Education*, 74, 5:516-539.

Kaki, Mohammed Nokhas Murad, 2012, 'Mathematical Catastrophe with Applications', *General Mathematics Notes*, 11, 2:35-46, retrieved on April 15, 2017 from http://www.geman.in/yahoo_site_admin/assets/docs/4_GMN-2252-V11N2.290182607.pdf

Kaminski, Marek M., 2010, *Games Prisoners Play: The Tragicomic Worlds of Polish Prison*, Princeton, NJ: Princeton University Press.

Kanakulya, Dickson, 2015, 'Governance and Development of the East African Community: The Ethical Sustainability Framework', Doctor of Philosophy Thesis, Makerere University, Kampala, Uganda.

Kandiko, Camille and Ian M. Kinchin, 2012, 'Challenges in Cross-Cultural PhD Supervision: Mapping to Facilitate Dialogue', Fifth International Conference on Concept Mapping, Valletta, Malta, 2012, retrieved on May 04, 2017 from http://cmc.ihmc.us/cmc2012papers/cmc2012-p73.pdf

Kanu, Ikechukwu Anthony, 2015, 'Suffering in Igbo-African Ontology', *Research on Humanities and Social Sciences*, retrieved on April 14, 2017 from http://www.iiste.org/Journals/index.php/RHSS/article/view/11427

Karenga, Maulana, 1990, *The Book Of The Coming Forth By Day*, Los Angeles, CA: University of Sankore Press.

Karlberg, Stephen, 1994. *Max Weber's Comparative Historical Sociology*, Chicago, IL: The University of Chicago Press.

Karwa, Vishesh, Aleksandra B. Slavkovi and Eric T. Donnell, 2011, 'Causal Inference in Transportation Safety Studies: Comparison of the Potential Outcomes and Causal Diagrams ('Bayesian Networks'—in original submission)', *The Annals of Applied Statistics*, 5, 28:1428-1455, retrieved on April 13, 2017 from https://arxiv.org/pdf/1107.4855.pdf

Kenkel, Norm C. and Laszlo Orlóci, 1986, 'Applying Metric and Nonmetric Multidimensional Scaling to Ecological Studies: Some New Results', *Ecology,* 67, 4:919-928.

Kenya Law Reports. 2010, 'Anne Nang'unda Kukali v Mary A. Ogola & another', *Kenya Law Reports*, retrieved on April 11, 2017 from http://kenyalaw.org/newsletter/20110325.html

Kenyatta Uuniversity, 2010, Kenyatta University Intellectual Property Rights Policy, Nairobi, Kenya.

Khodabocus, Fareeda, 2016, 'Challenges to Doctoral Education in Africa', *International Higher Education*, 38:25-27.

Keough, Leyla J., 2016, *Worker-Mothers on the Margins of Europe: Gender and Migration between Moldova and Istanbul*, Bloomington, IN: Indiana University Press.

Kerlinger, Fred. N., 1986, *Foundations of Behavioral Research*, Orlando: Florida, Holt, Rinehart and Winston.

Khandkar, Shahedul H., 2017, 'Open Coding', retrieved on May 27, 2017 from http://www.ssnpstudents.com/wp/wp-content/uploads/2015/02/open-coding.pdf

Kiel, L. Douglas and Euel W. Elliott, eds., 1996, *Chaos Theory in the Social Sciences: Foundations and Applications*, Ann Arbor, Michigan: University of Michigan Press.

Kim, Gerard Jounghyun, 2005, 'A SWOT Analysis of the Field of Virtual Reality Rehabilitation and Therapy Presence', *Teleoperators and Virtual Environments*, 14, 2:119-146.

King, Garry, Robert O. Keohane and Sidney Verba, 1994, *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton, NJ: Princeton University Press.

Kleinman, Sherryl, 2007, *Feminist Fieldwork Analysis* (Qualitative Research Methods Series 51), Thousand Oaks, CA: Sage Publications.

Kleinman, Sherryl and Martha A. Copp, 1993, *Emotions and Fieldworks: Qualitative Research Methods,* Newbury Park, CA: Sage.

Knight, Andrew and Les Ruddock, eds., 2009, *Advanced Research Methods in the Built Environment*, Chichester, PA: John Wiley and Sons.

Knollová, Michaela, 2011, Vybrané principy dobré správy ve starov kém Egypt . [Res: Selected principles of good governance in ancient Egypt]. *Právo, ekonomika, management*, roč.2, č. 1, KEY Publishing s.r.o., Ostrava-P ívoz 2011, ISSN 1804-3550, s. 84-88.

Koch, Nora, 1999, 'Comparative Study of Methods for Hypermedia Development'. *Technical Report 9905.* Ludwig-Maximilians-University Munchen, retrieved on April 13, 2017 from http://www.pst.informatik.uni-muenchen.de/~kochn/techrep/hypdev.pdf

Kogan, Steven M., 1998, 'The Politics of Making Meaning: Discourse Analysis of a 'Postmodern' Interview', *Journal of Family Therapy*, 20, 3:229-251.

Koo, Malcolm and Harvey Skinner, 2005, 'Challenges of Internet Recruitment: A Case Study with Disappointing Results', *Journal of Medical Internet Research* 7, 1:e6.

Koshy, Valsa, 2009, *Action Research for Improving Educational Practice: A step-By-Step Guide*, London, UK: Sage Publications.

Kothari, Chakravanti Rajagopalachari, 2004, *Research Methodology: Methods and Techniques*, New Delhi, India: New Age International Limited Publishers.

Kotze, Theuns, 2007, 'Guidelines on Writing a First Quantitative Academic Article', retrieved on May 23, 2017 from University of Pretoria: www.btsau.kiev.ua/sites/.../Супер%20-%20writing_an_academic_journal_article.pdf

Kozma, Robert B., 1991, 'Learning with Media', *Review of Educational Research*, 61, 2:179-211.

Krippendorff, Klaus, 2004, *Content Analysis: An Introduction to its Methodology*, Los Angeles, CA: Sage Publications.

Kubota, Ryuko, 1999, 'Japanese Culture Constructed by Discourses: Implications for Applied Linguistics Research and ELT', *TESOL Quarterly*, 33, 1:9-35.

Kuhn, Thomas S., 1962, *The Structure of Scientific Revolution*, Chicago, IL: The University of Chicago Press.

Kuumba, Bahati M. and Ajanaku Ferni, 1998, 'Dreadlocks: The Hair Aesthetics of Cultural Resistance and Collective Identity Formation', *Mobilization: An International Quarterly*, 3, 2:227-243.

Kvale, Steinar, 1996, *Interviews: An Introduction to Qualitative Research Interviewing.* Thousand Oaks, CA: Sage Publications.

Lacoste, Yves, 1984, *Ibn Khaldun: The Birth of History and The Past of the Third World*, London, UK: Verso.

Lancaster, Thomas and Robert Clarke, 2014, *Using Turnitin as a Tool for Attribution in Cases of Contract Cheating*, retrieved on June 1, 2017 from https://www.heacademy.ac.uk/knowledge-hub/using-turnitin-tool-attribution-cases-contract-cheating

Lancaster, Wifred F., 1986, *Vocabulary Control for Information Retrieval*, Arlington, VA: Information Resources Press.

Lane, David M. and William P. Dunlap, 19878, 'Estimating Effect Size: Bias resulting from the Significance Criterion in Editorial Decisions', *British Journal of Mathematical and Statistical Psychology* 31, 2:107-112.

Larson, Reed and Mihaly Csikszentmihalyi, 1993, 'The Experience Sampling Method', in H. T. Reis, ed., *New Directions for Methodology of Social and Behavioral Sciences*, San Francisco, CA: Jossey-Bass.

Lather, Patti, 1991, *Getting Smart Feminist Research and Pedagogy with/in the Post-Modern*, New York, NY: Routledge Publishing.

Learnhigher, January 09, 2012, 'How to Structure Your Writing', *Academic Writing*', retrieved on April 28, 2017 from http://www.learnhigher.ac.uk/writing-for-university/academic-writing/how-to-structure-your-writing/

Lee, Der-Tsai F., John Woo and Ellison A. Mackenzie, 2002, 'The Cultural Context of Adjusting to Nursing Home Life: Chinese Elders' Perspectives', *The Gerontologist*, 42, 5:667-675.

Lee, Jo Vergunst and Tim Ingold, 2006, 'Fieldwork on Foot: Perceiving, Routing, Socializing', in S. Coleman and P. Collins, eds., *Locating the Field. Space, Place and Context in Anthropology*, Oxford, UK: Berg Book Company.

Leech, Nancy, L., 2005, 'The Role of Sampling in Qualitative Research', *Academic Exchange Quarterly*, 9, 3:280-288.

Leedy, Paul D. and Jeannie Ellis Omrod, 2005, *A Handbook for Teacher Research from Design to Implementation*, Upper Saddle River, NJ: Pearson Education.

Leo Anglin W. et al., 1992, 'Metamorphrn Computer Support for Qualitative Research', paper presented at the Annual Conference of the American Educational Research Association, San Francisco, CA, April 20-24, 1992.

Lett, James, 1990, 'Emics and Etics: Notes on the Epistemology of Anthropology', in T. N. Headland et al., eds. *The Insider/Outsider Debate*, Newbury Park, CA: Sage Publications.

Levy, Jack, S., 2008, 'Case Studies: Types, Designs, and Logics of Inference', *Conflict Management and Peace Science*, 25:1-18.

Levy, Jack S., 2001, 'Explaining Events and Developing Theories: History, Political Science, and the Analysis of International Relations', in C. Elman and M. Elman, eds., *Bridges and Boundaries: Historians, Political Scientists, and the Study of International Relations*. Cambridge, MA: MIT Press.

Liberman, Evan S., 2005, 'Nested Analysis as a Mixed-Method Strategy for Comparative Research', *American Political Science Review,* 99, 3:435-452, retrieved on May 31, 2017 from http://www.rochelleterman.com/ComparativeExam/sites/default/files/Bibliography%20and%20Summaries/Lieberman%202005.pdf

Lijphart, Arend, 1971, 'Comparative Politics and the Comparative Method', *American Political Science Review*, 65, 3:691-693.

Lin, Yu-Hsiang et al., 2017, 'New Gratifications for Social Word-of-Mouth Spread via Mobile SNSs: Uses and Gratifications Approach with a Perspective of Media Technology', *Telematics and Informatics*, 34, 4:382-397.

Lincoln, Yvonna S. and Egon G. Guba, 1985, *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.

Lindner, James R., Tim H. Murphy and Gary E. Briers, 2001, 'Handling Nonresponse in Social Science Research', *Journal of Agricultural Education*, 42, 4:43-53.

Lorenz, Edward N., 1963, 'Deterministic Nonperiodic Flow', *Journal of the Atmospheric Sciences* 20, 2:130-141.

Lorenz, Edward N. and K. Haman, 1996, 'The Essence of Chaos', *Pure and Applied Geophysics* 147, 3:598-599.

Lund, Katrina Anna, 2008, 'Listen to the Sound of Time: Walking with Saints in an Andalusian Village', in T. Ingold and J. Lee Vergunst, eds., *Ways of Walking: Ethnography and Practice on Foot*, Aldershot, UK: Ashgate Publishing.

Lund, Katrina Anna, 2005, 'Seeing in Motion and the Touching Eye: Walking over Scotland's mountains', *Etnofoor*, 18, 1:27-42.

Mack, Lindsay, 2010, 'The Philosophical Underpinnings of Educational Research', *Polyglossia* 19:5-11.

Macquarie Dictionary (3rd edition), n.d., North Ryde, Australia: Macquarie Library, retrieved on May 24, 2017 from https://www.macquariedictionary.com.au/

Madill, Anna, Abbie Jordan and Caroline Shirley, 2000, 'Objectivity and Reliability in Qualitative Analysis: Realist, Contextualist and Radical Constructionist Epistemologies, *British Psychological Society*, 91, 1:1-20.

Mahlomaholo, Sechaba, 2015, 'Creating Effective Postgraduate Learning Environments: Analysis of an Intervention from Realist Social Theory', *Journal of Higher Education in Africa*, 13, 1 & 2:229-243.

Maiers, J. and Y. S. Sherif, 1985, 'Applications of Fuzzy Set Theory', *IEEE Transactions on Systems, Man, and Cybernetics*, 1:175-189.

Mallon, Bride and Brian Webb, 2006, 'Walking with Games', *Simulation and Gaming*, 37, 2:209-225.

Manheim, B. Jarold, 1981, *Empirical Political Analysis: Research Methods in Political Science*, Englewood Cliffs, NJ: Prentice-Hall.

Mansur, A. Ghani, 2015, 'An Exploratory Qualitative Assessment of Self-reported Treatment Outcomes and Satisfaction among Patients Accessing an Innovative Voluntary Drug Treatment Centre in Malaysia', *International Journal of Drug Policy*, 26, 2:175-182.

Marchand, Trevor, 2007, 'Crafting Knowledge: The Role of Parsing and Production in the Communication of Skill-based Knowledge among Masons', in M. Harris, ed., *Ways of Knowing: New Approaches in the Anthropology of Experience and Knowledge*, New York. NY: Berghahn Books.

Markwardt, Frederick C., 1989, *Peabody Individual Achievement Test-revised, PIAT-R*. Circle Pines: American Guidance Service.

Maoz, Zeev, 2002, 'Case Study Methodology in International Studies: From Storytelling to Hypothesis Testing', in F. Harvey and M. Brecher, eds., *Evaluating Methodology in International Studies*, Ann Arbor, MI: Michigan University Press.

Marcus, George E. and Michael M. J. Fischer, 1986, *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences*, Chicago, IL: The University of Chicago Press.

Margolin, Victor, 2000, 'Building a Design Research Community', in S. Pizzocaro, A. Arruda and D. De Moraes, eds., *Design Plus Research: Proceedings of the Politecnico di Milano Conference*, Politecnico di Milano, Milan, May 18-20, 2000.

Marsh, David and Gerry Stocker, eds., 2010, *Theory and Methods in Political Science*, London, UK: Palgrave Macmillan.

Masino, Serena and Miguel Niño-Zarazúa, 2016, 'What Works to Improve the Quality of Student Learning in Developing Countries?', *International Journal of Educational Development,* 48:53-65.

Mason, Mark, 2010, 'Sample Size and Saturation in PhD Studies Using Qualitative Interviews' [63 paragraphs]. Forum Qualitative Sozialforschung / Forum: *Qualitative Social Research*, 11, 3, 8. Retrieved on April 15, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/1428/3027

Mastekaasa, Arne and Stein Kaasa, 1989, 'Measurement Error and Research Design: A Note on the Utility of Panel Data in Quality of Life Research', *Social Indicators Research*, 21, 3:315-335.

Matt, Wallace, 2013, 'High School Teachers and African American Parents: A (Not So) Collaborative Effort to Increase Student Success', *The High School Journal*, 96, 3:195-208.

May, Tim, 2011, *Social Research: Issues, Methods and Process*, Maidenhead, UK: Open University Press.

Mayring, Philipp, 2014, *Qualitative Content Analysis: Theoretical Foundation, Basic Procedures and Software Solution*, Klagenfurt, Austria: Psych Open Publishing.

Mazeland, Harrie, 2006. *Conversation Analysis*, Groningen The Netherlands: University of Groningen and Elsevier Ltd.

Mazman, Ibrahim, 2005. 'Max Weber and Emile Durkheim: A comparative Analysis on the Theory of Social Order and the Methodological Approach to Understanding Society', *Sosyal Billimler Dergisi*, 67-83, retrieved on April 13, 2017 from http://asosindex.com/cache/articles/article-1423867208.pdf

Mazrui Ali A., 2006, 'Strangers in Our Midst in Search of Seven Pillars of Wisdom', in Kate E. Tunstall, ed., *Displacement, Asylum, Migration: The Oxford Amnesty Lectures 2004*, Oxford, UK: Oxford University Press.

Mazrui, Ali Al'Amin, 1986, *The Africans: A Triple Heritage*, New York, NY: Little Brown and Company.

McCann, Teremce V. and Eileen Clark, 2003, 'Grounded Theory in Nursing Research: Part 2—Critique', *Nurse Researcher,* 11, 2:19-28.

McCracken, Grant D., 1988, *The Long Interview*, Newbury Park, CA: Sage Publications.

McKeone, Dermot H., 1995, '*Measuring your Media Profile*', Aldershot, UK: Gower Publishing, Ltd.

Mcleod, Saul. 2010, 'Simply Psychology', retrieved on April 13, 2017 from https://www.simplypsychology.org/saul-mcleod.html

Mckee, Ann Marie, 2011, 'A Story of High School Inclusion: An Ethnographic Case Study', Unpublished PhD Dissertation, The University of Iowa, Iowa City, Iowa, retrieved on April 15, 2017 from http://ir.uiowa.edu/cgi/viewcontent.cgi?article=2631&context=etd

Mcmanners, Peter, 2016, 'The Action Research Case Study Approach: A Methodology for Complex Challenges such as Sustainability in Aviation, *Action Research*, 14, 2:201-216.

McMillan, James H., 2012, *Educational Research: Fundamentals for the Consumer*, 6th ed., Upper Saddle River, NJ: Pearson Educational Inc.

McNaughton, Glenda, Sgarne A. Rolf and Iram Siraj-Blatchford, 2001, *Doing Early Childhood Research: International Perspectives on Theory and Practice*, Canberra, Australia: Allen & Unwin.

Merriam, Sharan, B., 2009, *Qualitative Research: A Guide to Design and Implementation*, 3rd ed., Hoboken, NJ: Jossey-Bass.

Mertens, Donna M., 2007, 'Transformative Paradigm: Mixed Methods and Social Justice', *Journal of Mixed Methods Research* 1, 3:212-225.

Mertens, Donna, 2005, *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative and Mixed Methods* 2nd ed., Boston, MA: Sage Publications.

Meyerowitz, Eva L., 1995,. 'The Archaeology and Oral Traditions of Bono', *Transactions of the Historical Society of Ghana*, 16, 2:289-292.

Meyerowitz, Eva J., 1972, 'The Chronology of Bono-Manso', *Journal of African History*, 13, 2:348-350.

Meyerowitz, Eva L., 1951, *The Sacred State of the Akan,* London, UK: Faber and Faber.

Meyers, Lawrence S., Glenn C. Gamst and Anthony J. Guarino, 2006, *Applied Multivariate Research: Design and Interpretation*. Thousand Oaks, CA: Sage Publications.

Michelson, Avra and Jeff Rothenberg, 1992, 'Scholarly Communication and Information Technology: Exploring the Impact of Changes in the Research Process on Archives', *American Archivist*, 55, 2:18- 44.

Miller, David M and Gregory J. Pine, 1990, 'Advancing Professional Inquiry for Educational Improvement through Action Research', *Journal of Staff Development*, 11, 3:56–61.

Mills, Melinda, Gerhard G. van de Bunt and Jeanne de Bruijn, 2006, 'Comparative Research. Persistent Problems and Promising Solutions', *International Sociology*,

21, 5:619-631, retrieved on April 21, 2017 from http://euroac.ffri.hr/wp-content/uploads/2012/10/Comparative-Research_Problems-and-Solution.pdf

Mkandawire Thandika, 1995, 'Fiscal Structure, State Contraction and Political Responses in Africa', in M. Thandika and A. Olukoshi, eds., *Between Liberalisation and Oppression: The Politics of Structural Adjustment in Africa*, Dakar, Senegal: CODESRIA.

Mkandawire, Thandika, 1997, 'The Social Sciences in Africa: Breaking Local Barriers and Negotiating International Presence', *African Studies Review* 40, 2:15-36.

Mo Ibrahim Foundation (MIF), 2016. *The Ibrahim Index: 2016 Ibrahim Index of African Governance*. Retrieved on August 15, 2016 from http://mo.ibrahim.foundation/iiag/

Mohanty, Chandra Talpade, 2003, *Feminism without Borders: Decolonizing Theory, Practicing Solidarity,* Durham, NC: Duke University Press.

Molla, Tebeje and Denise Cuthbert, 2016, 'In Pursuit of the African PhD: A Critical Survey of Emergent Policy Issues in Select Sub-Saharan African Nations, Ethiopia, Ghana and South Africa', *Policy Futures in Education*, 14, 6:635-654.

Moore, Francesca P. L., 2010, 'Tales from the Archive: Methodological and Ethical Issues in Historical Research', *Area*, 42, 3:262-270.

Morgan, David L., 2014, 'Pragmatism as a Paradigm for Social Research', *Qualitative Inquiry* 20, 8:1045-1053.

Morris, Michael W. et al., 1999, 'Views from Inside and Outside: Integrating Emic and Etic Insights about Culture and Justice Judgment', *Academy of Management Review* 24, 4:781-796.

Morrison, Donald F., 1967, *Multivariate Statistical Methods*, New York, NY: McGraw-Hill.

Morse, Janice M., 2000, 'Determining Sample Size', *Qualitative Health Research*, 10, 1:3-5.

Mosseleson Jacqueline, 2010, 'Subjectivity and Reflexivity: Locating the Self in Research on Dislocation', *International Journal of Qualitative Studies in Education*, 23, 4:479-494.

Mouton, Johann, 2016, 'Ethics and Research Integrity in Doctoral Education', Presentation at Seminar on *Quality Doctoral Education – A Prerequisite for Strong Universities in Africa*, IUCEA and DAAD, Nairobi September 26-28, 2016.

Mselleb, Mwalea 2017. 'Exploring Barriers to the Utilization of Mental Health Services in Malawi', *Mental Health and Prevention*, 4:52-62.

Mugenda, Abel Gitau, 2008, 'Social Science Research: Theory and Practice', *Applied Research and Training Services*, Nairobi, Kenya.

Mukhtar, Gamal, 1990, *Ancient Civilizations of Africa,* Berkeley, CA: University of California Press.

Münch, Richard, 1988, *Understanding Modernity: Toward a New Perspective Going beyond Durkheim and Weber*, New York, NY: Routledge.

Muwanga-Zake, Johnnie W. F., 2010, 'Narrative research across cultures: Epistemological concerns in Africa', *Current Narratives* 2: 68-83.

Nabudere, Dani Wadada, 2003, 'Towards the Establishedment of a Pan-African University A Strategic Concept Paper, *African Journal of Political Sciencw* , 8, 1:1-30, retrieved on April 13, 2017 from http://pdfproc.lib.msu.edu/?file=/DMC/African%20Journals/pdfs/political%20science/volume8n1/ajps008001002.pdf

Nabudere, Dani Wadada, 2002, 'The Epistemological and Methodological Foundations for an All Inclusive Paradigm in the Search for Global Knowledge' Occasional Paper Series, Volume 6, Number 1, published by the African Association of Political Science, Pretoria, South Africa.

Nadkarni, Abhijit et al., 2013, 'The Explanatory Models and Coping Strategies for Alcohol Use Disorders: A Qualitative Exploratory Study from India;, *Asian Journal of Psychiatry*, 6, 6:521-527.

Naples, Nancy A., 2007, 'Feminist Methodology', in G. Ritzer, ed., *Blackwell Encyclopedia of Sociology*, retrieved on May 20, 2017 from

http://www.blackwellreference.com/public/tocnode?id=g9781405124331_chunk_g978140512433112_ss1-42#citation

National Academy of Sciences, NAS, 2017, National Academy of Engineering, & Institute of Medicine. (1995). *On Being a Scientist: Responsible Conduct in Research,* retrieved on April 11, 2017 from http://www.nap.edu/readingroom/books/obas

National Science Advisory Board for Biosecurity, 2007. *Proposed Framework for the Oversight of Dual Use Life Sciences Research: Strategies for Minimizing the Potential Misuse of Research Information*, retrieved on April 11, 2017 from

http://oba.od.nih.gov/biosecurity/pdf/Framework%20for%20transmittal%200807_Sept07.pdf

Nehmzow, Ulrich and Keith Walker, 2005, 'Quantitative Description of Robot–environment Interaction using Chaos Theory', *Robotics and Autonomous Systems,* 53, 3:177-193.

Neuendorf, Kimberly A., 2002, *The Content Analysis Guidebook*. Thousand Oaks, CA: Sage Publications.

Ngobeni, Solani, 2012, *Scholarly Publishing: The Challenges Facing the African University Press*, ASC Working Paper 100/2012 African Studies Centre, Leiden: The Netherlands.

Nicol, Davidson, 1965, 'Politics, Nationalism, and Universities in Africa,' in L. G. Cowan et al., eds., *Education and Nation-Building in Africa*, New York, NY: Praeger.

Nizoloman, Odual Nabhel, 2013, 'Relationship between Mathematical Ability and Achievement in Mathematics among Female Secondary School Students in Bayelsa State Nigeria', *Procedia-Social and Behavioral Sciences,* 106:2230-2240.

Nkrumah, Kwame, 1964, *Consciencism: Philosophy and Ideology for Decolonization*, London, UK: Heinemann.

Noblit, George W., 1988, *Meta-ethnography: Synthesizing Qualitative Studies*, Newbury Park, CA, Sage Publications.

Norton, Liz, 1999, 'The Philosophical Bases of Grounded Theory and Their Implications for Research Practice', *Nurse Researcher*, 7, 1:31-43.

Norton, Scott, 2004, 'Turn Your Dissertation Rightside Out', In B. Luey, ed., *Revising Your Dissertation: Advice from Leading Editors*, Berkeley and Los Angeles, CA: University of California Press.

NSO Report, 2006, 'Report of the Head of NSOs of East Asian Countries', retrieved on April 13, 2017 from http://www.stat.go.jp/english/info/meetings/eastasia/pdf/2kpaper.pdf.

Nuremberg Code, 1949, *Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law*10, 2:181-182, Washington, D.C.: U.S. Government Printing Office.

Nyerere, Julius K., 1995, 'Ujamaa – The basis of African Socialism', in F. L. Hord (Mzee Lasana Okpara) and J. S. Lee, eds., *I Am Because We Are: Readings in Black Philosophy*, Amherst, MA: University of Massachusetts Press.

O'Brien, Marion, 2005, 'Studying Individual and Family Development: Linking Theory and Research', *Journal of Marriage and Family*, 67, 4:880-890.

Okoye Monuchukwu and Anwagwu Ejikeme, 2011, 'Open Access, Institutional Repositories and Scholarly Publishing: The Role of Librarians in South East Nigeria', *Library Philosophy and Practice* 4, 2:25-34.

Okunna, S. Chinyere, 1996, 'Portrayal of Women in Nigerian Home Video Films: Empowerment or Subjugation?', *Africa Media Review*, 10:21-36

Olive, James L., 2014, 'Reflecting on the Tensions between Emic and Etic Perspectives in Life History Research: Lessons Learned,' *Qualitative Social Research*, 15, 2, 6, retrieved on April 15, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/2072/3656

Olupona, Jacob K. Rolwland O. Abiodun, eds., 2016, *Ifa Divination, Knowledge, Power, and Performance.* Bloomington, IN: Indiana University Press.

Omero, Gonekani M. and Lillian T. Mselle, 2017, 'Exploring Barriers to Utilization of Mental Health Services in Malawi, *Mental Health and Prevention* 5:52-62.

O'Reilly, Karen, 2005, *Ethnographic Methods*, London, UK: Routledge.

Orloff, Jeremy and Jonathan Bloom, 2014, 'Maximum Likelihood Estimates', retrieved on April 13, 2017 from https://ocw.mit.edu/courses/mathematics/18-05-introduction-to-probability-and-statistics-spring-2014/readings/MIT18_05S14_Reading10b.pdf

Ornstein, Suzyn, 1986, 'Organizational Symbols: A Study of Their Meanings and Influences on Perceived Psychological Climate', *Organizational Behavior and Human Decision Processes*, 38, 2:207-229.

Oxford University, 2009, *Glossary of Key Terms*, Oxford, UK: Oxford University Press.

Padgett, Deborah K., 2004, 'Coming of Age: Theoretical Thinking, Social Responsibility, and a Global Perspective in Qualitative Research', in D. K. Padgett, ed., *The Qualitative Research Experience*, Belmont CA: Wadsworth/Thomson Learning.

Pan, M. Ling, 2004, *Preparing Literature Reviews* 2nd ed., Glendale, CA: Pryczak Publishing.

Pearl, Judea, 2009, 'Causal Inference in Statistics: An Overview, *Statistics Surveys* 3:96–146, retrieved on April 13, 2017 from http://ftp.cs.ucla.edu/pub/stat_ser/r350.pdf

Pearl, Judea, 2000, *Causality: Models, Reasoning and Inference*, New York, NY: Cambridge University Press.

Peirce, Bonny N., 1995, 'The Theory of Methodology in Qualitative Research', *TESOL Quarterly*, 29, 3:569-576.

Penfield, Randall David, 2014, 'An NCME Instruction Module on Ploytomous Item Response Theory Models', *Educational Measurement: Issues and Practice,* 33, 1:36-48.

Perrone, Michael, 2006, 'Differential Item Functioning and Item Bias: Critical Considerations in Test Fairness', *Applied Linguistics,* 6, 2:1-3.

Phillips, Nelson and Cynthia Hardy, 2002, *Understanding Discourse Analysis*, Thousand Oaks, CA: Sage Publications.

Philosophy of Science Online, n.d., 'Causal Inference in Comparative Research', retrieved on April 13, 2017 from http://poli.haifa.ac.il/~levi/inference.html

Piccini, Angela, 2002, 'An Historiographic Perspective on Practice as Research', *PARIP*, retrieved on April 13, 2017 from http://www.bris.ac.uk/parip/t_ap.htm

Pickard, Alison Jane, 2007, *Research Methods in Information,* London, UK: Facet Publishing.

Piedra, José, 1985, 'From Monkey Tales to Cuban Songs: On Signification', *MLN* 100, 2:361-390.

Pike, Keneth L., 1967*, Language in Relation to a Unified Theory of the Structures of Human Behavior,* 2nd ed., The Hague, The Netherlands: Mouton Publishers.

Pink, Sarah, 2009, *Doing Sensory Ethnography*, London, UK: Sage Publications.

Pink, Sarah, 2008, 'An Urban Tour', *Ethnography*, 9, 2:175-196.

Pink, Sarah, 2007, 'Walking with Video', *Visual Studies*, 22, 3:240-252.

Pino, G. Aranda, Enrique Pardo, and M. Siles Molina, 2006, 'Exchange Leavitt Path Algebras and Stable Rank', *Journal of Algebra,* 305, 2:912-936.

Pinsonneault, Alain and Kenneth Kraemer, 1993, 'Survey Research Methodology in Management Information Systems: An Assessment', *Journal of Management Information Systems* 10, 2:75-105.

Plakhotnik, Maria S.et al., 2005. 'An Examination of Qualitative Empirical Studies at the AHRD from 1999–2003: Data collection', in *ERIC*, retrieved on April 13, 2017 from http://files.eric.ed.gov/fulltext/ED492742.pdf

Platt, Jennifer, 1976, *Realities of Social Research: An Empirical Study of British Sociologists*, London, UK: Sussex University Press.

Pollock III, Philip H. 2014, *An R Companion to Political Analysis*, Thousand Oaks, CA: Sage Publications and Congressional Quarterly Press.

Pollock III, Philip H. 2012, *An SPSS Companion to Political Analysis* 4th ed., Thousand Oaks, CA: Sage Publications and Congressional Quarterly Press.

Pollock III, Philip H. 2011, *A STATA Companion to Political Analysis* 2nd ed., Thousand Oaks, CA: Sage Publications and Congressional Quarterly Press.

Popper, Karl, 1959, *The Logic of Scientific Discovery*, London, UK and New York, NY: Routledge.

Powdermaker, Hall, 1966, *Stranger and Friend: The Way of an Anthropologist* (No. 410). New York, NY: W. W. Norton and Company.

Pratt, Geraldine, 2004, *Working Feminism*, Philadelphia, PA: Temple University Press.

Preskill, Hallie and Tessie Tzavaras Cabsambas, 2006, *Reframing Evaluation through Appreciative Inquiry*, Thousand Oaks, CA: Sage Publications.

Priest, Susanna Horning, 2009, *Doing Media Research: An Introduction*, Thousand Oaks, CA: Sage Publications

Proctor, Bob, 2009, *It's Not About Money*, Scarborough, Canada: Burman Books Inc.

Punch, Maurice, 1986, *The Politics and Ethics of Fieldwork*, Newbury Park, CA: Sage Publications.

Rabinowitz, Phil, 2016, 'Gathering and Interpretating Ethnogrphic Information', retrieved on April 13, 2017 from http://ctb.ku.edu/

Ragin, Charles C., 2006, 'How to Lure Analytical Social Science Out of the Doldrums: Some Lessons from Comparative Research', *International Sociology*, 21, 6: 633-646.

Ragin, Charles C., 2000, *Fuzzy-Set Social Science*, Chicago, IL: The University of Chicago Press.

Ragin, Charles C., 1999, 'The Distinctiveness of Case-oriented Research', *Journal of Health Services Research*, 34, 5:1137-1151.

Ragin, Charles C., 1997, 'Turning the Tables: How Case-oriented Methods Challenge Variable-oriented Methods, *Comparative Social Research* 16:27-42, retrieved on April 13, 2017.

Ragin, Charles C., 1994, *Constructing Social Research: The Unity and Diversity of Method*, Thousand Oaks, CA: Pine Forge Press/Sage Publications.

Ragin, Charles C., 1989, *The Comparative Method*, Berkeley, CA: University of California Press.

Ragin, Charles C. and David Zaret, 1983, 'Theory and Method in Comparative Research', *Social Forces*, 61:731-754.

Ranjit, Kumar., 2011, *Research Methodology: A Step-by-Step Guide for Beginners*, 3rd ed., Los Angeles, CA: Sage Publications.

Raspa, Melissa, Kathleen Hebbeler and Don Bailey, 2009, *A Guide to Analyzing Data from the Family Outcomes Survey*, Menlo Park, CA: Early Childhood Outcomes Center.

Reason, Pater and Hilary Bradbury, eds., 2001, *Handbook of Action Research: Participative Inquiry and Practice*, London, UK: Sage Publications.

Reflections on Qualitative Social Research, 13, 2, retrieved on April 11, 2017 from www.qualitative-research.net/index.php/fqs.article/view/1847

Reindorf, Carl Christian, 1895, *History of the Gold Coast and Asante*, Basel, Switzerland: Basel Mission.

Resnik, David B. and Adil E. Shamoo, 2011, 'The Singapore Statement on Research Integrity', *Accountability in Research*, 18, 2:71-75.

Rice, Nigel and Alastair Leyland, 1996, 'Multiple Models: Application to Health Data', *Journal of Health Services Research and Policy,* 1, 3:154-164.

Riessman, C. K., 2008, *Narrative Methods for the Human Sciences*, Los Angeles, CA: Sage Publications.

Rihoux, Benoît, 2006, 'Qualitative Comparative Analysis (QCA) and Related Systematic Comparative Methods: Recent Advances and Remaining Challenges for Social Science Research', *International Sociology*, 21, 5:679-706.

Ritchie, Jane, Jane Lewis and Gilian Elam, 2003, 'Designing and Selecting Samples', in J. Ritchie and Jane Lewis, eds., *Qualitative Research Practice: A guide for Social Science Students and Researchers*, Thousand Oaks, CA: Sage Publications.

Robert, Atkinson, 1998, *The Life Story Interview, Qualitative Research Methods*, Thousand Oaks, CA: Sage Publications.

Roberts, Celia, 1993, 'Cultural Studies and Student Exchange: Living the Ethnographic Life', *Language, Culture and Curriculum*, 6,1:11-17.

Roberts, David, 1994, 'Defining Electronic Records: Documents and Data', *Archives and Manuscripts*, 22, 2:14–26.

Rocco, Tonette S. 2004, 'Forum: Impacting the Future: Writing Up the Method on Qualitative Studies', *Human Resource Development Quarterly,* 14, 3:343–349.

Rosa, Milton and Daniel C. Orey, 2012, 'The Field of Research in Ethnomodeling: Emic, Etic and Dialectical Approaches', *Educação Pesquisa*, 38, 4:865-879, Universidade Federal de Ouro Preto, São Paulo, Brazil.

Rose, Dan, 1990, *Living the Ethnographic Life,* Thousand Oaks, PA: Sage Publications.

Rose, Susan, Nigel S. Spinks and Ana Isabel Canhoto, 2015, *Management Research: Applying the Principles*, London, UK: Routledge.

Rosenblatt, Paul C., 2012, 'One Interviewer versus Several: Modernist and Postmodernist Perspectives in Qualitative Family Interviewing', *Journal of Family Theory & Review*, 4, 2:96-104.

Rosnow, Ralph L. and Robert Rosenthal, 2005, *Beginning Behavioral Research: A Conceptual Primer*, Englewood Cliffs, NJ: Prentice-Hall, Inc.

Ross, Andrew, ed., 1996, *Science Wars*. Durham, North Carolina: Duke University Press.

Rubin, Donald B., 2004, *Multiple Imputations in Nonresponse in Surveys*, Hoboken, NJ: John Wiley and Sons.

Ruggles, Cline L. N., 2011, 'Pushing Back the Frontiers or Still Running around the Same Circles? 'Interpretative Archaeoastronomy' Thirty Years on', *International Symposium on Archaeoastronomy Proceedings IAU Symposium*, 2, S278, retrieved on April 13, 2017 from https://www.cambridge.org/core/journals/proceedings-of-the-international-astronomical-union/article/pushing-back-the-frontiers-or-still-running-around-the-same-circles-interpretative-archaeoastronomy-thirty-years-on/75CF1CC7D6956A22A5F269FA2A357EFC

Ruscio, John, Ayelet Meron Ruscio and Mati Meron, 2007, 'Applying the Bootstrap to Taxometric Analysis: Generating Empirical Sampling Distributions to help Interpret Results', *Multivariate Behavioral Research* 42, 2:49-386.

Russell, William Moy Stratton, Rex Leonard Burch, and Charles Westley Hume, 1959, *The Principles of Humane Experimental Technique*, retrieved on April 11, 2017 from http://altweb.jhsph.edu/pubs/books/humane_exp/het-toc

Ryan, Thomas A., Brian L. Joiner and Barbara F. Ryan, 1978, *Minitab Student Handbook*, North Scituate, MA: Duxbury Press.

Saikaly, Fatina, 2004, 'Approaches to Design Research: Towards the Designerly Way', Paper presented at the Design Research Society International Conference, Monash University, November 17-21, 2004, retrieved on April 13, 2017 from http://ead.verhaag.net/fullpapers/ead06_id187_2.pdf

Saint-Germain, Michelle A., 2010, *Ppa 696 Research Methods*, retrieved on April 13, 2017 from http://www.csulb.edu/~msaintg/ppa696/696regs.htm

Salancik, Gerald R. and James R. Meindl, 1984, 'Corporate Attributions as Strategic Illusions of Management Control, *Administrative Science Quarterly*, 29, 7:238-254.

Salant, Priscilla, I. Dillman and A. Don, 1994, *How to Conduct your own Survey*, New York, NY: Wiley.

Salkind, Neil J, 2013, *Excel Statistics: A Quick Guide* 2nd ed., Thousand Oaks, CA: Sage Publications.

Sall, Ebrima, 2015, 'Trends and Issues in the Social Sciences and Humanities in Africa', Keynote Lecture delivered at the National Dissertations Workshop organised by the National Institute of Humanities and Social Sciences (NIHSS) of South Africa. Johannesburg, 29-30 July 2015.

Salomon, Gavriel and Tamar Globerson, 1989, 'When Teams Do Not Function the Way They Ought To', *International Journal of Educational Research*, 13, 1:89-99.

Salzman, Carl Phillip, 2001, *Understanding Culture: An Introduction to Anthropological Theory*, Long Grove, IL: Waveland Press.

Schel, Charles, 1992, *The Value of the Case Study as a Research Strategy*, Manchester, UK: Manchester Business School.

Schlesinger, Philip, Melanie Selfe and Ealasaid Munro, 2015, 'Inside a Cultural Agency: Team Ethnography and Knowledge Exchange, *Journal of Arts Management, Law, and Society*, 45, 2:66-83.

Schnettler, Bernt and Jurgen Raab, 2008, 'Interpretive Visual Analysis Developments, State of the Art and Pending Problem', *Forum Qualitative Social Research*, 9, 3:1-28.

Schram, Thomas Heinz, 2006, *Conceptualizing and Proposing Qualitative Research* 2nd ed., Upper Saddle River, NJ: Pearson Education.

Schuman, Rebecca, August 01, 2014, 'ABD Company: What's Worse than Getting a PhD in Today's Job Market? Not Finishing One', *Slate*, retrieved on May 04, 2017 from http://www.slate.com/articles/life/education/2014/08/abds_all_but_dissertation_ph_d_candidates_who_can_t_quite_finish.html

Schwartz, Morris S. and Charlotte Green Schwartz, 1955, 'Problems in Participant Observation', retrieved on April 17, 2017 from http://www.jstor.org/stable/2772027

Searle, Shayle R., 1982, *Matrix Algebra Useful for Statistics,* Hoboken, NJ: Wiley-InterScience.

Seawright, Jason and John Gerring, 2008, 'Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options', *Political Research Quarterly*, 61, 2:294-308.

Selener, Daniel, 1997, *Participatory Action Research and Social Change*, Ithaca, NY: Cornell University Participatory Action Research Network.

Shahnazarian, Armen, 2016, 'Critically Conscious Learning: Using Participatory Action Research Methods to Engage Students, Penn GSE Prospect,' *Urban Education*, 13, 8:1–5.

Shanks, Graeme G. and Peta Darke, 1998, 'Understanding Data Quality and Data Warehousing: A Semiotic Approach', retrieved on June 12, 2017 from http://ssm-vm030.mit.edu/ICIQ/Documents/IQ%20Conference%201998/Papers/UnderstandDQinDataWarehouseSemioticAppr.pdf

Shenhav, Yehouda, 1999, *Manufacturing Rationality*: *The Engineering Foundations of the Managerial Revolution*, Oxford, UK: Oxford University Press.

Shirzoi, Wallied Jean, 2004, 'Ibn Khaldun', in A. K. Bangura, ed., *Islamic Sources of Peace*, Boston, MA: Pearson Publishing.

Shrock, Richelle D., 2013, 'The Methodological Imperatives of Feminist Ethnography', *Journal of Feminist Scholarship,* 5:48-60.

Shumway, Robert H., 1988, *Applied Statistical Time Series Analysis*, Englewood Cliffs, NJ: Prentice Hall.

Smith, Douglas K., David W. Johnson and Rodger T. Johnson, 1981, 'Can Conflict Be Constructive? Controversy versus Concurrence Seeking in Learning Groups', *Journal of Educational Psychology*, 73, 3:651-663.

Snow, Charles P, 1959, *The Two Cultures and the Scientific Revolution*, New York, NY: Cambridge University Press.

Somekh, Bridget, 2006, *Action Research: A Methodology for Change and Development*, London, UK McGraw-Hill Education and Open University Press.

Somekh, Bridget and Cathy Lewin, 2005, *Research Methods in Social Sciences*, London, UK: Sage Publications.

Soyini, Madison D., 2005, 'Critical Ethnography: Method, Ethics, and Performance', retrieved on April 13, 2017 from http://www.sagepub.com/upm-data/4957_Madison_I_Proof_Chapter_1.pdf

Spradley, James P., 1979, *The Ethnographic Interview*, New York, NY: Holt, Rinehart and Winston.

Spradley, James P., 1970, *You Owe Yourself a Drunk: An Ethnography of Urban Nomads.* Boston, MA: Waveland Press.

Sravani, 2017, *In-depth Interview: Advantages and Disadvantages,* retrieved on May 24, 2017 from https://content.wisestep.com/depth-interview-advantages-disadvantages/

Stacy, Judith, 1988, 'Can There Be a Feminist Ethnography?' *Women Studies International Forum*, 2, 1:21-27.

Stafford, Frank P., 2009, 'Timeline Data Collection and Analysis: Time Diary and Event History Calendar Methods', in R. F. Belli, F. P. Stafford and D. F. Alwin, eds., *History Calendar Methods*, Los Angeles, CA: Sage Publications.

Stephen, Lynn, 2007, *Trans-border Lives: Indigenous Oaxacans in Mexico, California, and Oregon*, Durham, NC: Duke University Press.

Stephenson, William, 1993, 'Introduction to Q-methodology', *Operant Subjectivity,* 17, 1:1-13.

Stergiou, Christos and Dimitrios Siganos, 2014, 'Neural Networks', retrieved on April 13, 2017 from http://www.doc.ic.ac.uk/~ nd/surprise_96/journal/vol4/cs11/report.html

Sternberg, David, 1981, *How to Complete and Survive A Doctoral Dissertation*, New York, NY: St. Martin's Press.

Stevens, Stanley Smith, 1946, 'On the Theory of Scales of Measurement', *Science*, New Series, 103, 2684:677-680, retrieved on April 13, 2017 from https://marces.org/EDMS623/Stevens%20SS%20(1946)%20On%20the%20 Theory%20of%20Scales%20of%20Measurement.pdf

Stewart, James, 2011, *Calculus*, Boston, MA: Cengage Learning.

Stratton, Peter, 1997, 'Attributional Coding of Interview Data: Meeting the Needs of Long-haul Passengers', in I. N. Hayes, ed., *Doing Qualitative Analysis in Psychology*, Hove, UK: Psychology Press.

Strauss, Anslem and Juliet Corbin, 1990, *Basics of Qualitative Research Techniques and Procedures for Developing Grounded Theory* 2nd ed., Thousand Oaks, CA: Sage Publications.

Strickland, Jeffrey, 2015 *Predictive Analytics Using R*, Lulu.com.

Suber, Peter, 2004, 'A Very Brief Introduction to Open Access', retrieved on May 26, 2017 from http://www.earlham.edu/peters/fos/brief.htm

Sullivan, Graeme, 2005, *Art Practice as Research: Inquiry in the Visual Arts*, Thousand Oaks, CA: Sage Publications.

Tabachnick, Barbara G. and Linda S. Fidell, 1996, *Using Multivariate Statistics*, New York, NY: Harper Collins College Publishers.

Tashakkori, Abbas and Charles Teddlie Charles, eds., 2003, *Handbook of Mixed Methods in Social & Behavioral Research*, Thousand Oaks, CA: Sage Publications.

Tavistock, Mills S., 1997, *Discourse*, London, UK: Routledge.

Taylor, Kelly D. et al., 2012, 'Explanatory Models of Hypertension among Nigerian Patients at a University Teaching Hospital', *Ethnicity and Health*, 17, 6:615-625.

Tejado, Inés, Duarte Valério and Nuno Valério, 2015, 'Fractional Calculus in Economic Growth Modelling: The Spanish Case', in *CONTROLO'2014–Proceedings of the 11th Portuguese Conference on Automatic Control*, pp. 449-458, Springer, Cham.

TerreBlanche, John Martin and Kevin Durrheim, 1999, *Research in Practice: Applied Methods for the Social Sciences*, Capetown, South Africa: University of Capetown Press.

The Psychological Corporation, 1992, *Wechsler Individual Achievement Test*, San Antonio, TX: The Psychological Corporation Publications.

Thom, René, 1989, *Structural Stability and Morphogenesis: An Outline of a General Theory of Models*, Reading, MA: Addison-Wesley.

Thomas, David R., 2003, 'A General Inductive Approach for Qualitative Data Analysis', Uackland, New Zealand: University of Auckland, retrieved on May 24, 2017 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.5445&rep=rep1&type=pdf

Thomas, Jim, 1993, *Doing Critical Ethnography*, Newbury Park, CA: Sage Publications.

Tiberondwa, Ado K., 1978, *Missionary Teachers as Agents of Colonialism*, Lusaka, Zambia: Kenneth Kaunda Foundation.

Tobin, Ruthanne, 2012, *Encyclopedia of Case Study Research.* Thousand Oaks, CA: Sage Publications.

Todinov, Michael T., 2005, *Reliability and Risk Models*, Indianapolis, IN: John Wiley.

Toro, Paul, A., et at., 1999, 'Obtaining Representative Samples of Homeless Persons: A Two-City Study, *Journal of Community Psychology*, 27, 2:157–177.

Trice, Harrison M. and Janice M. Beyer, 1984, 'Studying Organizational Cultures through Rites and Ceremonials', *Academy of Management Review*, 9, 4:653-669.

Trochim, William M. 1989. 'An Introduction to Concept Mapping for Planning and Evaluation', *Evaluation and Program Planning*, 12, 1:1-16.

Trochim, William M. K and James E. Davis, 1986, 'Computer Simulations for Program Evaluation, *Evaluation Review*, 10, 5:609-634, retrieved on April 13, 2017 from http://www.socialresearchmethods.net/research/Computer%20Simulation%20for%20Program%20Evaluation.pdf

Trung, Nguyen Hieu et al. 2006, 'Application of GIS in Land-use Planning: A Case Study in the Coastal Mekong Delta of Vietnam', *International Symposium on Geoinformatics for Spatial Infrastructure Development in Earth and Apllied Sciences* retrieved on April 13, 2017 from http://wgrass.media.osaka-cu.ac.jp/gisideas06/viewpaper.php?id=147

Turnitin White Paper, 2017, 'The Plagiarism Spectrum', retrieved on May 12, 2017 from http://*www.ed.ac.uk/files/atoms/files/10-types-of-plagiarism.pdf*

Uganda National Council for Science and Technology, 2014, 'National Guidelines for Research involving Humans as Research Participants', Kampala, Uganda.

Ujeh, Chareenaet al., 2016, 'Bootstrapping with R to Determine Variances of Mixture Model Estimates in Predicting Confidence Intervals for Population Sizes', *Procedia Computer Science,* 86:16-219.

Ulmer, Gregory L., 1989, *Teletheory: Grammatology in the Age of Video*, London, UK: Routledge, Chapman and Hall Incorporated.

United Nations Office of the High Commissioner for Human Rights, 2006, *Frequently Asked Questions on A Human Rights-Based Approach to Development Cooperation*, New York, NY and Geneva, Switzerland: United Nations Publication.

University of Southern California (USC) Libraries, April 21, 2017, 'Literature Review,' *Research Guides*, retrieved on April 29, 2017 from http://libguides.usc.edu/writingguide/literaturereview

University of Southern California (USC) Libraries, April 21, 2017, 'Theoretical Framework', *Research Guides*, retrieved on April 29, 2017 from http://libguides.usc.edu/writingguide/theoreticalframework

University of Southern California (USC), 2017, 'Organizing Your Social Sciences Research Paper: Glossary of Research Terms', retrieved on May 24, 2017 from

http://libguides.usc.edu/writingguide/researchglossary

Vaismoradi. Mojtaba' Hannele Turenen and Terese Bondas, 2013, 'Content Analysis and thematic Analysis: Implications for Conducting a Qualitative Descriptive Study', *Nursing and Health Sciences*. 15, 3:398-405.

Vannini, Phillip, 2007, 'Social Semiotics and Fieldwork: Method and Analytics', *Qualitative Inquiry*, 13, 1:113-140.

Vego, Milan N., 2006, 'The Problem of Common Terminology', Washington, DC: National Defense University's Institute for National Strategic Studies.

Ventresca Marc J. and John W. Mohr, in press, 'Archival Research Methods, Companion to Organizations' (forthcoming from Blackwell Publishers), retrieved on April 17, 2017 from http://www.soc.ucsb.edu/faculty/mohr/classes/soc4/summer_08/pages/Resources/Readings/Ventresca%20&%20Mohr.pdf

Verd, Joan Miquel and Sergio Porcel, 2012, 'An Application of Qualitative Geographic Information Systems (GIS) in the Field of Urban Sociology using ATLAS.ti: Uses and Reflection', *FORUM: Qualitative Social Research*, 13, 2:Art 14, retrieved on April 13, 2017 from http://www.qualitative-research.net/index.php/fqs/article/view/1847/3373

Verhagen, Simone J. W., Laila Hasmi, Marjan Drukker, J. van Os and Philippe A. E. G. Delespaul, 2016, 'Use of the Experience Sampling Method in the Context of Clinical Trials', *Evidence-Based Mental Health*, 19, 3:86-90.

Vidich, Arthur, J. and Stanford, M. Lyman, 2000, 'Qualitative Methods: Their History in Sociology and Anthropology', in N. Denzin and Y. S. Lincoln, eds., *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage Publications, 2:23-44, retrieved on May 24, 2017 from http://jan.ucc.nau.edu/~pms/cj355/readings/vidich&lyman.pdf

Von Eye, Alexander, G. Ann Bogat and Jean E. Rodes, 2006, 'Variable-oriented and Person-oriented Perspective of Analysis: The Example of Alcohol Consumption in Adolescence', *Journal of Adolescence,* 61:981-1004, retrieved on April 13, 2017 from http://rhodeslab.org/files/Voneye.pdf

Vondeling, Johanna, 2004, 'Making a Difference: Professional Publishing', in B. Luey, ed., *Revising Your Dissertation: Advice from Leading Editors*, Berkeley and Los Angeles, CA: University of California Press.

Vula, Eda and Blerim Saqipi, 2015, 'Developing Action Research for Developing Teachers in Kosovo', *Turkish Online Journal of Qualitative Inquiry*, 6, 4:1–21.

Walter, Magiie, 2006, *Social Science Methods: An Australian Perspective*, Oxford, UK and New York, NY: Oxford University Press.

Wagenaar, Hendrik, 2015, *Meaning in Action, Interpretation and Dialogue in Policy Analysis*, London, UK: Routledge.

Wagner, Neal et al., 2011, 'Intelligent Techniques for Forecasting Multiple Time Series in Real-world Systems', *International Journal of Intelligent Computing and Cybernetics*, 4, 3:284-310.

Walters, Joel, 1979, 'What is Ethnograhy?', retrieved on May 15, 2017 from http://files. eric.ed.gov/fulltext/ED206983.pdf#page=31

Wand, Yair and Ron Webern, 1993, 'On the Ontological Expressiveness of Information Systems Analysis and Design Grammars', *Information Systems*, 3, 4: 217-237.

Warner, Rebecca M., 1998, *Spectral Analysis of Time-Series Data*, New York, NY: The Guilford Press.

Waters, Janet, 2016, 'Phenomenological Research Guidelines', retrieved on July 19, 2017 from www.capilanou.ca/psychology/student-resources/research-guidelines/ Phenomenological-Research-Guidelines/

Webb, Noreen M., 1992, 'Testing a Theoretical Model of Student Interaction and Learning in Small Groups', in R. Hertz-Lazarowitz and N. Miller, eds., *Interaction in Cooperative Groups: The Theoretical Anatomy of Group Learning*, New York, NY: Cambridge University Press.

Webb, Noreen M., 1991, 'Task-related Verbal Interaction and Mathematics Learning in Small Groups', *Journal of Research in Mathematics Education*, 22, 4:366-389.

Weber, Max, 1958, *The Protestant Ethic and the Spirit of Capitalism*, translated by Talcott Parsons, New York, NY: Scribner.

Weber, Max, 1968, *Economy and Society: an Outline of Interpretative Sociology*, edited by G. Roth and C. Wittick, translated by E. Fischoff et al., New York, NY: Bedminster Press.

Weber, Robert P., 1985, *Basic Content Analysis*, New Delhi, India: Sage Publications.

Webster Dictionary, 1913, 'Hermeneutics', retrieved on April 14, 2017 from http:// machaut.uchicago.edu/cg-bin/WEBSTER.page.sh?page=688

Wechsler, David, 2005, *Wechsler Individual Achievement Test,* 2nd ed., London, UK: The Psychological Corporation.

Wegman, Edward J., 2003, 'Visual Data Mining', *Statistics in Medicine* 22:1383-1387 plus ten color plates.

Wegman, Edward J., 1997, 'A Guide to Statistical Software', available at http://www. galaxy.gmu.edu/papers/astr1.html

Weinstein, Yana, *Flash programming for the Social & Behavioral Sciences*, Thousand Oaks, CA: Sage Publications.

Weisner, Thomas S., 1996, 'Why Ethnography Should Be the Most Important Method in the Study of Human Development', in R. Jessor, A. Colby, and R. Shweder, eds., *Ethnography and Human Development. Context and Meaning in Social Inquiry*, Chicago, IL: The University of Chicago Press.

Weisner, Thomas S., 2014, 'Why Qualitative and Ethnographic Methods Are Essential for Understanding Family Life', in S. M. McHale, P. Amato and A. Booth, eds., *Emerging Methods in Family Research*. Cham, Switzerland: Springer International Publishing.

Wenger, Etienne, 1998, *Communities of Practice: Learning, Meaning, and Identity*, Cambridge, UK: Cambridge University Press.

Westby, David L., 1991, *The Growth of Sociological Theory: Human Nature, Knowledge, and Social Change*, Upper Saddle River, NJ: Prentice-Hall Inc.

Wilks, Isaac, 1976, *Asante in the Nineteenth Century: The Structure and Evolution of a Political Order*, New York, NY: Cambridge University Press.

Wilks, Ivor, 1993, *Forests of Gold: Essays on the Akan and the Kingdom of Asante*, Athens, OH: Ohio University Press.

Williams, Carrie, 2011, 'Research Methods', *Journal of Business & Economics Research*, 5, 3:2-9.

Williams, Kristin et al., 2010, 'Reflections on Gender-based Field Research', retrieved on June 15, 2017 from

http://fletcher.tufts.edu/Praxis/Archives/~/media/96DAD657251B449CA83BF6BCC88 DAEAA.pdf

Willis, Ben, 2014, 'The Advantages and Limitations of Single Case Study Analysis', *E-Interntional Relations Students*, retrieved on May 24, 2017 from http://www.e-ir. info/2014/07/05/the-advantages-and-limitations-of-single-case-study-analysis/

Willis, Jerry, W., 2007, *Foundations of Qualitative Research: Interpretive and Critical Approaches*. Thousand Oaks, CA: Sage Publications.

Wimmer, Rodger G. and Joseph R. Dominick, 2013, 'Organizational Symbols: A Study of Their Meanings and Influences on Perceived Psychological Climate', retrieved on April 12, 2017 from https://www.researchgate.net/publication/4813143_ Organizational_Symbols_a_Study_of_Their_Meanings_and_Influences_on_ Perceived_Psychological_Climate

Winters, Clyde Ahmad, 1998), 'The Afrocentric Historical and Linguistic Methods, *The Western Journal of Black Studies* , 22, 2:73-83.

World Medical Association (WMA), 2017, *Declaration of Helsinki, Ethical Principles for Medical Research Involving Human Subjects*, retrieved June 1, 2017 from https://www. wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical- research-involving-human-subjects/

Wright, Benjamin D. and Mark H. Stone, 1979, *Best Test Design*, Chicago, IL, Mesa-Press.

Wright Patrick, M., 2016, 'Ensuring Research Integrity: An Editor's Perspective', *Journal of Management*, 42, 5:1037-1043.

Wrong, Dennis Hume, ed., 1970, *Max Weber (Makers of Modern Social Science)*, Upper Saddle River, NJ: Prentice-Hall Inc.

Yacob-Haliso. Olajumoke, 2010, 'The Illusion of Home and the Elusion of Peace: Framing the "Return" of Liberian Refugee Women', paper submitted for the CODESRIA 2010 Gender Symposium.

Yadav, Sankalp, Gautam Rawal, and Mudit Baxi, 2016, 'Plagiarism—A Serious Scientific Misconduct', *International Journal of Health Sciences Research* 6, 2:364-366.

Yanow, Dvora, 2000, *Conducting Interpretive Policy Analysis*, Thousand Oaks, CA: Sage Publications.

Yesko, Jill, July 25, 2014, 'An Alternative to ABD', *Inside Higher Education*, retrieved on May 04, 2017 from https://www.insidehighered.com/advice/2014/07/25/higher-ed-should-create-alternative-abd-status-essay

Yin, Robert K., 2014, *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage Publications.

Yin, Robert K., 2010, *Qualitative Research from Start to Finish*. New York, NY: The Guilford Press.

Yin, Robert, K., 2009, *Case Study Research: Design and Methods*, London, UK: Sage Publications.

Yin, Robert, K., 1994, *Case Study: Design and Methods*, Thousand Oaks, CA. Sage Publications.

Yin, Robert, K., 1984, *Case Study Research: Design and Methods*, Newbury Park Ca, Sage Publications, also in C. Schel, 1992, *The Value of the Case Study as a Research Strategy*, Manchester, UK: Manchester Business School.

Yongming, Tang and Charles Joiner, 2006. *Synergic Inquiry: A Collaborative Action Methodology*. London, UK: Sage Publication.

Yoshikawa, Hirokazu, Thomas S. Weisner, Ariel Kalil and Niobe Way, 2008, 'Mixing Qualitative and Quantitative Research in Developmental Science: Use and Methodological Choices', *Developmental Psychology,* 44, 2:344–354.

Zadeh, Lotfi A., 1965, 'Fuzzy Sets', *Information and Control*, 8:338–353.

Zeeman, Erik Christopher, 1977, *Catastrophe Theory: Selected Papers, 1972–1977*, Boston, MA: Addison-Wesley Publishing Company.

Zeh, Reimar., 2005, 'A Practical Introduction into Quantitative Content Analysis', retrieved on April 15, 2017 from http://iksz.fsv.cuni.cz/IKSZ-16-version1-CA.pdf

Zeleza, Paul Tiyambe, 2004, 'The African Academic Diaspora in the United States and Africa: The Challenges of Productive Engagement', *Comparative Studies of South Asia, Africa and the Middle East* 24, 1:265-278.

Zimmermann, Hand Jürgen, 2011, *Fuzzy Set Theory and Its Applications*, Berlin, Germany: Springer Science & Business Media.

World Wide Web Sites

https://ccl.northwestern.edu/netlogo/
http://cimss.ssec.wisc.edu/wxwise/class/aos340/spr00/whatismatlab.htm
https://www.mathworks.com/products/matlab.html
https://www.mathworks.com/programs/trials/trial_request.html
http://www.adobe.com/software/flash/about/
http://atlasti.com/)
http://atlasti.com/free-trial-version/)
http://www.techrepublic.com/blog/10-things/10-tips-for-smarter-more-efficient-internet-searching/
https://www.java.com/en/

https://www.sitepoint.com/10-tips-for-conducting-a-more-effective-google-search/

https://www.utm.edu/staff/jimnance/webaccess/tips_to_effective_internet_searc.htm

https://www.lifewire.com/web-search-tricks-to-know-4046148

https://products.office.com/en-us/excel?legRedir=true&CorrelationId=6dad3896-ba69-4828-80fc-95557eb6d0b1

https://us.sagepub.com/en-us/nam/author/lyn-richards

http://www.qsrinternational.com/

https://www.ibm.com/us-en/marketplace/spss-statistics

https://www.ibm.com/analytics/us/en/technology/spss/spss-trials.html

https://www.r-project.org/about.html

https://www.stata.com/

https://www.webpagefx.com/blog /internet/11-free-online-survey-tools-compared/

https://www.clickz.com/10-research-tools-for-social-media-strategies/52694/

https://phd.moodle.aau.dk/course/info.php?id=15

http://methods.sagepub.com/base/download/ReferenceEntry/encyc-of-case-study-research/n321.xml

http://www.digitalmethods.net/MoM/QuantContentAnalysis

http://www.sciencing.com/metric-scale-6514055.html

http://www.reference.com/science/metric-scale-b684fa0371fd3092