Philosophical Bases of Research Methods: An Integrative Narrative Review Part 1

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Abstract

This narrative review examined the philosophical bases of research methods in terms of: (1) ontology; and (2) epistemology. Three search strategies were observed including: (1) data search for published research; (2) public engine and manual search; and (3) stakeholders input. Subthemes under ontologic assumptions are: (1) singular vs plural reality; (2) empirical vs subjective reality; (3) scientific vs sensuous reality; (4) when the singularity and plurality of reality converge; (5) definitive vs subjective truth; (6) continuum vs polarity; (7) what really is real; (8) truth, reality and knowledge; and (9) seeing the truth and reality of an objective/subjective from different perspective. The focus of the lens is guided by philosophical stances. Each paradigm seeks truth, reality and knowledge. Though quantitative claimed objectivity and qualitative claim subjectivity, both unconsciously observe the same processes. The division is a continuum that delights its deficiencies. This is when divergence converges.

Keywords/phrases: quantitative-qualitative divide, philosophical stances, ontology, epistemology

"Mathematical research does not use statistics, but the proofs involved could by no means be described as subjective and less firm for that; even research into mathematical statistics and probability does not make use of statistics to prove and produce useable results."

Nimal Ratnesar, 2005

1.0 Contextual Grounding and Significance

Those who perpetuate the quantitative-qualitative divide fails to appreciate that distinctions for both are necessary. It is desolate to note that some individuals who flop to understand the nature of the other paradigm and those who are totally confused in the application of both paradigms disappoint by not giving time in probing the literature. Although numerous publications on the differences between quantitative and qualitative approaches are available, only few attempt to amalgamate them in one literature. This undertaking is not an attempt to produce a cookbook, but to yield a narrative integration of the available information that will help avoid the confusion and divide. Particularly, this review targeted to narratively integrate existing literature to delineate quantitative and qualitative approaches. This will help: (1) novice researchers to differentiate both research traditions; and (2) advance beginners to experts from a specific-oriented research paradigm understand the nature of the other approach.

2.0 Review Focus

The aim of this review was to examine the philosophical bases of research methods. Specifically it answered the following: (1) What

are the difference between quantitative and qualitative research methods in terms of Ontology and Epistemology; and (2) What are the similarities between quantitative and qualitative research methods?

3.0 Literature Search

This review of the literature used three search methods:

Database search of published research. Electronic academic databases were searched using Ebscohost research database service. The following databases were searched: (1) Academic Search Premier; (2) ERIC; (3) Library, Information Science & Technology Abstracts; (4) Military and Government Collections; and (5) Primary Search.

Public Engine and Manual Search. Google scholar search was also made to circumvent publication bias. Books on research design and methodologies were also utilized.

Stakeholder Input. Electronic mail and mobile phone contact were made with academics, stakeholders and researchers. They identified some supplementary details of evidence appropriate to the research questions.

Search Procedure and Criteria. Manual search was done for books while systematic electronic search was done for databases and public search engines. Boolean operators, phrase search, nesting, mathematical operators and truncation (wildcards) were exploited stratagems. Terms searched were: (1) quantitative; (2) qualitative; (3) quantitative-qualitative debate; (4) quantitative-qualitative divide; (5) ontology; (6) epistemology; (7) axiology; (8) methodology; (9) rhetoric; and (10) philosophy of research. Publications covered the period 1980 to present. Cited sources with date of publication earlier that 1980 were the sources recommended by the experts. Only English language publications were included. The searched publications were then screened to check: (1) relevance to the research questions; and (2) presented empirical, methodologic and philosophical discussions or reviews.

4.0 Data Evaluation and Sampling

Although it engaged selected features of systematic review, not all publications culled have extensive high quality evidence. It did not exclude publications on the basis of quality criteria. Samples were picked based on its logical exposition and relevance to the domain of inquiry. A more narrative approach was suitable to the gamut of research queries. There are 68 articles and 78 books cited in this review

5.0 Data Analysis

I begun the synthesis by keeping the following few things in mind (Mertens, 2010):

Organization. I developed a flexible framework for organization as I find the data. This made it easier for me to approach the synthesis stage. It is flexible because the formulation of my conceptualization added, deleted, and redefined categories as I move along with the review process. I exploited a more thematic organizational approach.

Narrative Synthesis. The narrative approach to literature synthesis is trailed in this review. I organized the studies in a conceptually logical sequence and afforded adequate element about the literature to support germane critical analysis. The amount of details culled from literature was influenced by the nature of the domain of inquiry:

1. This includes a number of journal article and text books selected on the basis of relevancy, presented in a composed representation, that inaugurated the rationale; and

2. The actual review was extensive and organized into meaningful categories. This

provided a gestalt of the topic and described the methods used to search the literature. I provided an organization of the subtopics and cited literature showed agreement or disagreement.

6.0 Major Classification of Research Methods: Quantitative and Qualitative

The major classifications for research method are quantitative and qualitative research. This segment dissects the distinction of both methods aiming to delineate the differences in process, utility and philosophy. This paper does not aim to promote the quantitative-qualitative divide but to foster understanding that each views reality differently and proceeds in finding truth distinctively – not to promote fraction but to describe reality in dissimilar but equally logical ways.

Berg (2007) claimed that qualitative research denotes to the what, how, when and where of the piece of inquiry: its essence, character and environment expressed in meanings, phenomenon, metaphors, symbols and description. Tewksbury (2009) defined quantitative research as the more scientific approach focusing on specific definitions thru operationalization of terms, concepts and variables – expressed in numeric calculations.

According to Mertens (2010), life is convoluted and the world is not impeccable. Research tries to unfold these by deriving knowledge from scholarly literature, experimentation or community interaction. This is to understand, describe, predict and control. However, a specific form of research paradigm or tradition can never capture the fullness of the phenomenon. Each has its own convolutions and imperfections. Two genres crisscross but take very distinct trails. This article summarized the commonalities and distinctions of both major research traditions.

The discussions in this summary are grounded with philosophical assumptions. Thomas Schwandt (2002) claims that this is necessary and no investigator escapes in this course. Creswell (2007) believes the same thing especially when using qualitative research. However, Michael Patton (2002) thinks otherwise. He argues that philosophical viewpoints are problematic since it hinders scholarship. Personally, I subscribe in the former claim. The theoretical concern (referred as philosophical underpinning by Schwandts) is focused on the ontology and epistemology of knowledge and reality. I however argue that this is not similar to the theoretical framework as understood by many (as expended in quantitative research). This is quite clear in qualitative research wherein the specific research tradition has its own inherent theoretical (philosophical in nature of viewing reality) bases. This framework is not consumed to interpret data based on predetermined concepts, as trailed in quantitative research, but rather on how knowledge and reality is viewed. They should not be seen as the same. Otherwise, the researcher will get confused. Quantitative researchers philosophically trailed in either or a combination of but not limited to positivism and empiricism. In most cases, quantitative researchers are unaware that they are following specific philosophical assumptions. If we follow Patton's claim, it will derail the researcher's frame of mind and end up lost in the journey. Since decisions are not grounded to any philosophical stance, it becomes scrawny and unscholarly.

7.0 Ontological Assumption

Ontology is the study of being (Crotty, 1998). It is concerned on what institutes reality. It answers the question, *what is* (Crossan, 2011; Polit & Beck, 2008). Investigators are required to take a locus *vis-à-vis* their acuities in what way objects (Scotland, 2012): (1)certainly are; and (2) categorically work.

This philosophical stance is required in conducting research to provide grounding on the perceptual perspective of the researcher. This guides the investigator on what to look for and in how to methodologically capture the phenomenon.

The matrix below digests the difference between quantitative or qualitative research designs in terms of the nature of realities being scrutinized.

Table 1.The Nature of Reality

Quantitative	Qualitative
Reality exist and it can be determined	Reality is multiple and relative
There is only one reality	Multiplicity of reality
Scientific description and explanation of reality	Sensuous reality
Realistic ontology (objective reality)	Relativistic ontology (subjective reality)
Talks about the properties of and relations of things	Talks about the multiple experiential realities and its diversity
Quality and descriptions are quantified (reduced into numbers/numerical assignment)	Narrative account of multiple properties
Determines definitive truth and denounces subjective truth by measuring it objectively via numerical translation.	Recognizes that there is no definitive truth only subjective truth.
It provides a sedimented and limited view of concerns but highly measurable and computable.	It provides an in-depth understanding of concerns that is not conceivable by means of statistically-based examinations.
It provides reduced, decidedly controlled but predictive understanding of concerns.	It centralizes and places primary value on comprehensive and holistic understandings, and in what way actors comprehend, experience and maneuver within environments that are dynamic and collective in their groundwork and construction.
Seeks to determine and explain reality	
Continuum of determining the different aspects of reality (quantitative in one side and qualitative in another)	
Alternatively, seen as a divide. The polarity between causes the quantitative and qualitative debate.	

Singular vs Plural Reality. Pure positivist, as classical quantitative researchers posit, believed that there is only one reality that exist (Guba & Lincoln, 1994). This existent reality can be determined. Polit and Beck (2008) claimed that a phenomenon is not haphazard, random or erratic occurrences but have antecedent origins (causality, but sometimes considers association instead of causality). Commencing from an axiom (assumption), a basic principle that is believed to be true without proof or verification, it trailed a deterministic nature (Rubin & Babbie, 1993). This is not the same with naturalism (Bird, 2004; Norton, 2007; Steel, 2005), the paradigm used in qualitative research. Naturalists acknowledged the multiplicity of reality (Creswell, 2007) with an existing core pattern or theme. It is naturally constructed (Mertens, 2010). All constructions observe the philosophy of interpretivism (Altheide & Johnson, 1994; Kuzel & Like, 1991). In fact, all meanings are interpretative in nature (Heidegger, 1971, 1962). This tells us that investigators must attempt to understand from the viewpoint of those who lived the phenomenon. Acknowledging the strength of the latter, postpositivist (contemporary form of quantitative research) acknowledged that things cannot be known perfectly (Maxwell, 2004) and thus recognized alternative forms of explanation (Borman, Slavin, Cheung, Chamberlain, Madden, & Chambers, 2007). It is believed that objective reality is inexistent since there are manifold social constructions of meaning and knowledge. Schwandt (2000) believed that the mind is operating in the production of knowledge and no thinker thinks totally the same although at times similar.

Obtaining multiple perspectives (from different informants amalgamated with the researchers own perspective), in qualitative research, yield better interpretation of meaning (Clegg & Slife, 2009). The concept of objectivity is then replaced with confirmability (Guba & Lincoln, 1981; Le Compte & Goertz, 1982). This can be derived thru multiple data sources: triangulation technique (Campbell, 1956; Campbell & Fiske, 1959; Denzin, 1989, 1970; Polit & Hungler, 1999) or verifiability with participants (Burnard, 2008). Appreciating the latter argument, contemporary quantitative researchers recognized that *a priori* of the investigator could influence what is observed (Reichardt & Rallis, 1994). This means that investigators can never be totally objective (Paley, 1997). However, guided with the principle that one should remain neutral (Mertens, 2010), it can be controlled (Beck, 1994). In addition, the participants in qualitative research are also the called co-researchers (Burnard, 2008). They have an important role in sharing the data, and in analyzing and interpreting them (Mertens, 2010).

Empirical vs Subjective Reality. Quantitative researchers are highly realistic, demonstrated as empirical or positivistic (Leach, 1990; Duffy, 1985; Schlick, 1959; Friedman, 1991; Werkmeiser, 1937a,b), while qualitative researchers are relativistic, capturing subjective reality (Swandt, 2000). When a quantitative researcher views an object, it needs to be observed by the senses (Polanyi, 1962). Then one claim that it really occurred or it is positive – referring to an observation by the senses. Qualitative researcher looks at it differently. When phenomenon is experienced, the perceptual interpretation of that certain involvement is highly relative contingent to how and in what perspective the individual is gazing at.

Scientific vs Sensuous Reality. Quantitative research captures scientific reality while qualitative research captures sensuous reality (Borgdorff, 2009). Both paradigms capture reality. However, it must be understood that they are looking at reality differently (Rubin & Babbie, 2001). Quantitative researchers view qualitative research as nonscientific because it: (1) is insider knowledge (Howe, 1988, Howe & Eisenhart, 1990); and (2) do not

engage in the etymology of frequentist or classical statistics (Small, 2008). Howe and Eisenhart (1990) however argued that quantitative research must not use its positivistic framework in evaluating qualitative researches. Gerring and Thomas (2011) contended that quantifiable observations deduce the population that is enthusiastically measured, counted, andhence compared (monothetic). In contrast, naturalistic observations, posit an empirical field where substantiation are not numerically measured thus cannot be directly compared to one another (idiographic). This will be explained more in the methodological assumption.

When the Singularity and Plurality of Reality Converge. Going back to the discussion of singularity and plurality of reality. It is facetious to note that if you dissect the core of both, they are actually similar. Quantitative research claims singularity of reality but at the same time recognizes the differences in terms of demographics. In qualitative research, it recognizes the plurality of reality but at the same time acknowledge a principal pattern, in most cases singular in nature. Both are talking different things, but they are in actuality doing the same things. The initiators of the divide failed to acknowledge the convergence of both. The distinction relies on the differences of perspective. Each focused their lenses from different location or origin with different concentration of which side of the object. Both attempt to capture what is real and truthful. But we must also put in mind that we are looking at the same thing. Though superficially divergent, it actually converges in a metacognitive level.

Definitive vs Subjective Truth. Both methods capture truth. However, they interpret and see truth differently. Quantitative researcher claims definitive truth (Mertens, 2010). This is highly concomitant with the previous empirical, scientific and positivistic claim. However, qualitative researchers say it does not exist (Koch & Harrington, 1998; Payne, Seymour &Ingleton, 2003; Racher & Robinson, 2002). There is truth but not definitive, only subjective (Berger & Luckmann, 1966; Smith, 1983).

> *"… the scientific method … : everything is open to question. That means in our quest to understand things, we should strive to keep an open mind about everything we think we know or that we want to believe. In other words, we should consider the things we call 'knowledge' to be provisional and subject to refutation. This feature has no exemption…"*
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> *Allen Rubin & Earl Babbie, 2001*

Continuum vs Polarity. Quantitative and qualitative seeks to determine and explain reality (Kuhn, 1962, 1970a,b,c; Polit & Beck, 2008; Creswell, 2007). The polarity between both approaches causes the quantitative and qualitative debate (Fritzgerald & Howcroft, 1998). While others view it as a divide, alternatively, it can be observed as a continuum of determining the different aspects of reality (Holden & Lynch, 2004; Morgan & Smircich, 1980): quantitative in one side and qualitative in another.

The polarity can be traced from the Khunian framework (1962). However, one can view a specific research practice as a research tradition rather than a specific paradigm (Clark, 1998). Laudanian framework (1977) believed that all paradigms could co-exist. There are multiple origins with multiple trails to track (Cook, 1985). Therefore, Laudanian framework views it as a continuum rather than mere bipolarity.

What Really is Real? Rubin and Babbie (2001) dissected reality. Firstly, they differentiated agreement reality from experimental reality. Agreement reality is when it is believed to be real because everybody thinks it is real while experiential reality is the actual direct experience

itself. They further categorize reality as premodern, modern and postmodern. The premodern view of reality assumed that things are seen as they were though they are. It is collectively uninominal (beliefs of our ancestors). It was believed because it was culturally agreed. Recognition of diversity came after interracial connectedness; the modern view thinks reality as binomially relative and more binomially opinionated (I think it is or not; I think it exist or not). This means that each respects each other's view of reality. However, postmodern view of reality offers different multiple ways of viewing things. A little bit similar to the former, it emphasized the different manifold perspectives. The modern view accentuates the unavoidability of subjectivity while the postmodern view insinuates the absence of definitive objectivity, only relativity.

What is real need not be all the time: (1) empirical and positive – observed by the senses; (2) instrumental – measurable and operational; (3) reductionist – reducible to numeric form; (4) material – always have matter. Sometimes what is truthful and real are experienced naturally, perceived relatively to each other, and conceived constructively by our mind and emotion. These things can never be objective, empirical, positive, instrumental, reducible and material. We can forcefully measure them in these ways, but it can never capture the fullness of truth. This is best explained by the coherence theory of truth wherein to understand it there must be consistencies, conceivability or systematic coherence (Joachim, 1906; Young, 2013) regardless of empirical and material evidence.

The significant whole constitutes the elements of the ideas constructed and intuited by the mind (Joachim, 1906; Bradley, 1914). This idealistic philosophy has a metaphysical position that the aggregate of beliefs is reality. This belief is truthful to the degree that it coheres with other beliefs (Bradley, 1914; Walker, 1989; Young, 2013).

The positivist portion of the Khunian framework (1962, 1970 a,b,c) has its roots based from the positive philosophy of August Comte (1848). Comte categorized three fundamental laws of development, which explains truth and reality. The theological/fictitious state is the intellectual reasoning of reality. It deals with absolute knowledge, which is considered to be the reasoning of the first and final cause. This is the explanation of the inner nature of being (spiritual/supernatural). The metaphysical/abstract state is the reasoning based on abstraction. This is a transitional state towards positive philosophy. Reasoning is based on non-tangible abstraction that is linked to conceivable real or personified entities. The last state is the scientific/positive state. This fixed and definitive form of reasoning is based from empirical observation. Comte believed that the human mind can never obtain absolute truth (omnipotent truth: usually referred to as the Supreme Being) thus gives up the search of the origin of the universe and final cause of all phenomena. With this stance, phenomenon is reduced to any empirically conceivable form because this is the only measurable form of reality.

8.0 Truth, Reality and Knowledge

Bird (2004) recognized that there is a relationship between truth, reality and knowledge. He further claimed that truth depends on the way the world is: it is a matter of structural correspondence between that world and propositions. Kuhn (1962, 1970a,b,c), the proponent of the research paradigm differentiating quantitative and qualitative, believed that the truth couldn't be recognized. Khun realized that apart from objectivity and empiricism, science could be naturalistic and relativistic. This only suggests that the knowledge derived from research is only a certain kind of recognition of the claimed well-established truth. The weakness of this claim is

the strength of naturalist. Naturalistic paradigm recognized that the only perceptible truth is the truth relative to the observer's lens which is distinct from each other: multiple perspective. In some respect, some positivists are naturalist (Prestone, 2004) and this is also true otherwise.

Seeing the Truth and Reality of an Object/ Subject from Different Perspectives. I will be presenting different parables, allegories or school of thoughts that will help confirm the multiple ways of seeing truth and reality. This will help us understand that each perspective is valid representation:

The Parable of the Table. When one is asked to describe the reality of a table, the description of the table is referent to the location of the person describing it. In essence, they will have similar description. However, specific variations will be noticed depending upon which side of the table the describer is looking at. All descriptions are equally acceptable. The diversity of the description is based on the describer's lens (relative to which side of the object is being viewed at).

The Id, Ego and Superego. The topography of our personality talks about the psychoanalytic provinces of the mind (Freud 1923/1961). The id functions in the primary process where drives are satisfied by forming mental images. This is the intellectual part of the self. The ego functions in the secondary process thru reality testing. The secondary process locates the mental image formed by the primary process into the empirical reality. The superego functions as the social part of the self and sees things as a normative reality. In relation to research, the id and the superego is the province of the mind among qualitative researchers, which captures emotions, behavior, perceptions, artistry and morality. The ego is the province of the mind among quantitative researchers, which captures the measurable empirical objects.

Gestalt Psychology. The human mind tends to (Wagemans, Elder, Kubory, Palmer, Peterson & Singh, 2012): (1) group visual objects using the principle of proximity, similarity, common fate, good continuation, closure, symmetry, parallelism, synchrony, common region, element and uniform connectedness; (2) integrate and complete contours; (3) organize figure-ground; and (4) assign border ownership. The neural mechanism of the visual field is so dynamic and complex that neurophysiological evidence converges on the idea that the response of cortical neurons depends on the properties of the overall configuration of the senses and the parameters of the stimulus. Illusory processes may happen even in highly empirical observation or experience. Interpretation is not atomistic but holistic. Thus, the whole is not equal to the sum of its parts. Context-sensitivity is emphasized here. In application to research, it demonstrates the supremacy of subjectivity over empirical procedures. The reductionist, materialistic and atomistic principle in quantitative or positive research is conquered by the context-laden nature of the mind. It interprets in a holistic manner and less atomistic. This is the strength of the naturalistic paradigm.

The Müller-Lyerlllussions**(Franz Müller-Lyer, 1889).** Observe the figure below:

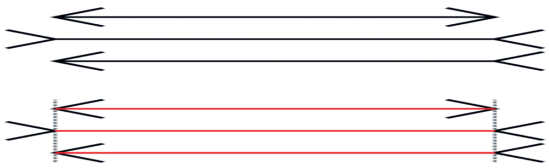

Figure 1. The Müller-Lyerlllussions

The lines in the figure have equally the same length. However, our mind processes things differently. In relation to research, our description of reality is dependent on how our brain process the information as perceived by the senses.

The Allegory of the Cave **(Plato, 360 BCE/1941).** This is the platonic representation of

an extended metaphor that is to juxtapose the system in which we perceive and believe reality. The thesis and basic tenet is that we imperfectly perceive the ultimate forms: the representation of truth and reality. The allegory talks about a prisoner in the cave who has not seen the outside world and perceives that the reality is portrayed by the shadow. When the prisoner was released to the real world, he cannot identify what is real and was confused. This allegory is similar to the story of a young blind man who never had a chance to see the real world since young. After a successful operation, this blind man cannot differentiate real apples from pictures. In relation to research, our perception of reality is dependent on how we interpret our experience relative to our previous conception or exposure. There is no blueprint interpretation. Each interpretation of reality is unique.

9.0 Epistemological Assumption

The matrix below digests the difference between quantitative or qualitative research designs in terms of the relationship of the inquirer to the object/subject of inquiry.

Independent vs Dependent. If we try to dissect its similarity, both have an inquirer and object/subject of inquiry. However, the difference lies between the relationships of both. Quantitative researchers, especially pure positivist, are dualistic in terms of inquirer-object relationship in research. This individualistic philosophy is needed to maintain objectivity. This means that both do not influence each other (Lincoln & Guba, 2000) thus independent. Qualitative researchers believed the contrary (Guba & Lincoln, 1994). It is grounded on the assumption that the inquirer and object are interlocked in an interactive process (Tewksbury, 2009; Mertens, 2010), dependent from each other (Baruch, 1981; Woodhoude & Livingood, 1991; Polit & Beck, 2008). They are constantly influencing respectively in the exploration of data. Lincoln and Guba (2000) believed that research could only be conducted in an interactive process – hermeneutic, dialectical or any interpretative process.

10.0 Conclusion

Both paradigms seek to define truth, reality and knowledge. In its quest for discovery, it is both objective and subjective – unintentionally intertwined in the process. Each way is inherently subjective and both attempts to be idyllically objective. What knowledge is, and the ways of discovering it, are highly relative. This is founded from their personal philosophical stances.

Both paradigm shave its identifiable modes of accomplishing its objectives. By grounding oneself in philosophical stances, the researcher is guided on how reality, truth and knowledge are seen. No single choice is perfect. It is only an attempt to capture its partiality. The divide is a continuum that treats its imperfection. Not as an attempt to

Table 2. Relationship of Inquirer and Object/Subject of Inquiry: Epistemological Assumption

Quantitative	Qualitative
Dualistic epistemology	Monistic epistemology
Inquirer is independent from the object of inquiry	Inquirer and the one being inquired is dependent to each other
Requires and inquirer and object of inquiry	

arrive in its ultimate form but, at least, to articulate as much coverage. The divergence as claimed by some may converge as viewed by others. The distinction between claims is equivalently logical.

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