Advances in Social Sciences Research Journal – Vol. 11, No. 12
Publication Date: December 25, 2024
DOI:10.14738/assrj.1112.17989.
Cibangu, S. (2024). Reconsideration of Research Methodologies: A Look at Major Trails and Concepts. Advances in Social Sciences Research Journal, 11(12). 305-374.
SERVICES FOR SCIENCE AND EDUCATION

Reconsideration of Research Methodologies: A Look at Major Trails and Concepts

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ABSTRACT

Reconsideration of research methodologies becomes a necessity as academic disciplines and their publications have been proliferating relentlessly in recent decades. While research methodologies determine the pay-off as well as validity of academic research across scholarly fields, research practice tends not to verge on assessing research methodologies. One reason might be that the concept research methodologies and the like usually come in the form of how-to-do section or book, leaving discussions to other sections/books of research. Another reason lies in the fact that research methodologies are seen as mere wordiness or speculation. Yet, research methodologies furnish the tools with which to best practice research. The present paper tracked major trails, concepts, and recurrent misunderstandings of both positivism and interpretivism. The paper did so to allow for sharper methodological toolkits and keener research.

Keywords: Positivism, interpretivism, situational responsivity, objectivity, hermeneutic circle, quantum physics, constructivism, Cartesianism, naturalism, science.

INTRODUCTION

Misunderstandings are not untypical of human existence. For example, people tend to think of the sun as rising at one end of their city and setting at the other, or the moon as hovering above a neighbor's tree. Implementation of research methodologies is not exempt from flawed understandings. Scholarly publications from across disciplines have been receiving prominence more than ever before due to the rise and ease of communication and information technologies. At the same time, one most pressing challenge to modern scholarly publications regards the impact on the world and life therein. Reappraisal or reconsideration of research methodologies has the potential to produce greater impact for the researched and the researcher. One of the first steps toward implementing a proposed inquiry consists in the design and/or choice of methodology conducive to that research. Failure to (re)furbish research tools to yield desired impact leaves researchers with monotonous, unproductive work.

Although research methodologies form an integral part of scholarly publication, they represent one of the least discussed topics in research processes and circles. As Morin, Olsson, and Atikcan (2021) bemoaned,

> *Indeed, methodology proper, the logic of how our philosophical wagers about reality and our concrete research tools link up, is … rarely discussed. Too often,*

> *textbooks and graduate training programmes jump directly to methods, taking for granted a particular methodology and philosophy of science. (pp. 217-218)*

One prominent reason for the dearth of discussions on methodologies among researchers is that researchers tend to center less around methodologies than collected findings and investigated body of literature. Another crucial reason behind the paucity of discussions delving into methodologies is an aversion to the concept theory because theory is taken to mean withdrawal from reality and lack of impact on reality. Theory seen as withdrawal from reality is best exemplified in so-called applied fields, and to a greater degree in technology or industry-related fields. As Hollnagel (2017) put it well,

> *The alternative to starting from a model [i.e., theory] would be to start from practical problems and concentrate on the dominant phenomena that are revealed in this way. Models should in all cases be minimized to avoid that choices become driven by the model rather than by practical problems. (p. 48)*

As noted above, predilection for practice vs theory is an attempt to enable a researcher's closer involvement with the environment/context proper to individuals and/or topic researched. The idea amounts to that of *practice vs theory war*, commonly found to fuel disputes surrounding research process and design. Practice, however deep-situated it might be within a given context, is not as straightforward as believed, either. The good example is with evil or harm done to a community or organization. In other words, a person with greater practice in an organization can cause harm to that community just as much and even more so than anyone with lesser practice in that organization. This fact confirms the necessity of an ongoing rethink of the practice(s) implied/followed. As Hollnagel (2017) warned, "The argument [of preference for practice] unfortunately missed the point that the environments were not given, hence not beyond our control. On the contrary, both physical and social environments are actually produced or created by us—by humans" (p. 49). The physical, technical, or applied context of any field is nothing short of a human creation, not least manipulation or simulation.

Nonetheless, theory equips researchers with a firmer and clearer grasp of reality and the inquiry thereof. Without theory, humans become robots, objects of given entities, structures, systems, corporates, and ideologies. As Habermas (1968/1987) propounded,

> *The only knowledge that can truly orient action is knowledge that frees itself from mere human interests and is based on ideas – in other words, knowledge that has taken a theoretical attitude. . . Through theoria, that is through looking on, he [i.e., investigator, observer] abandoned himself to the sacred events [of real-world]. (p. 301)*

Theory frees humans from the shackles of mere practical interests and needs. Deprived from theory, scholarly publications become repressive, manipulative, and destructive. Researchers from strands of all disciplines, engineering, social and behavioral, as well as the humanities, employ theory to hone their interactions with and forays into reality. By far interesting here is the fact that the English word theory is transliterated from the Greek noun *θεωρία* [theôria], which denotes the meaning of a looking at, viewing, beholding, a sight, a spectacle, show, contemplation, the being a spectator of games, etc. The Greek verb *θεωρέω* [theôreô] supplies

meanings such as to look at, view, behold, inspect or review soldiers, observe, contemplate, consider, view the public games, etc. (Liddell & Scott, 1843/1996). The primary meaning conveyed by the Greek origins of the word theory is much more practical, reality-engaging than commonly thought.

Reflections on research and related (mis)understandings are paramount to ensure confidence in or readability of that which is researched and suggested outcomes. For ease of discussion, four concepts need preliminary clarification, namely: (1) origins of science in ancient Egypt, (2) the term methodology, (3) research method, and (4) two major methodologies/paradigms.

Origins of Science in Ancient Egypt

The first concept needing preliminary clarification concerns the origins of science in ancient Egypt. One trend of sizeable influence asserts science to be an emanation of Western civilization, nearly tracing back to ancient Greek philosophers in the public place/debate. The belief of this trend consists of "defining science as a post-Copernican, or post-Newtonian, or a post-1800 enterprise" (Shank, 2000, p. 7). The belief means that science is identified as an outcome more or less of ancient Greece or Western civilization that typically emerged at the close of the 19th century, roughly around the Industrial Revolution. Notwithstanding, expansive materials, indeed the earliest recorded documents, evidence science to originate in ancient Egypt (Lichtheim, 2019). Evidently, the earliest recorded materials disprove the popular description of science as being an offshoot of Western civilization. As Shank (2000) maintained,

> *Such a narrow demarcation of 'science' is fundamentally absurd and ahistorical. It is absurd, for it amounts to stating that since ancient science is not modern science, it does not count as science… [Science] encompasses many species, of which some are recent (molecular biology) and some extinct (medieval astrology) while yet others have survived a long history (planetary theory). (p. 7)*

Shank (2000) continued, saying,

> *For example, the 24-hour division of the day; the Babylonian sexagesimal divisions and subdivisions of the hour and the degree; the Byzantine hospital; the Latin university; and the Arabic astronomical observatory continue to function in modern contexts that are foreign to their birthplaces. (pp. 7-8)*

More pertinently, in defiance against widespread conceptions of academically performed science, historian Vrettos (2001) concluded about the ancient school of Alexandria (i.e., Pharaonic Egypt in Antiquity) that

> *This [Alexandria] was a university, consisting of sleeping quarters, refectory, walks along cloisters or colonnaded shelters with seats for rest and contemplation, theaters for lectures on philosophy and science, readings of the classic poets and historians, botanical gardens and animal parks for the study of flora and fauna. (p. 35)*

Academic work was undertaken in ancient Egypt with remarkable results. As Vrettos (2001) clarified,

> *It was in the academic setting of Alexandria that the work of Herophilus reached its highest recognition. He made significant contributions to the study of human anatomy…He also discovered ovaries, which he compared to the male testes… Erasistrus succeeded Herophilus as head of the Alexandrian School of Medicine … in the middle of the third century B.C. (pp. 65-67)*

Quite strikingly for contemporary academic work, Vrettos (2001) added, "free from want and taxes, they [students and scholars in Alexandria] studied, wrote, collated manuscripts, researched, lectured, and theorized in their respective disciplines" (p. 35). Academic work is not a work invented or commenced by Western civilization, much less the 19th century.

Indeed, Gaukroger (1991) certified that "the Greeks…freely acknowledged their debt to the Egyptians" (p. 175). On this note, Vrettos (2001) indicated, "Aristarchus [Alexandrian scholar] … is celebrated as the first man to have propounded the heliocentric theory of the universe (eighteen centuries before Copernicus)" (p. 47). Better still, Meltzer (2001) stated that "a number of eminent Greek thinkers and authors, including Pythagoras, Solon, Thales, and Plato, are credited with traveling or even studying in Egypt" (p. 448). In particular, Vrettos (2001) stated that almost all Greek scholars had studied in Egypt. As for Aristotle, a surprising discovery of *The Constitution of Athens* -- work traditionally believed to be authored by Aristotle (384-322 BC) --- "in a tomb at Akhmim in Egypt" (Vrettos, 2001, p. 37) raises lots of questions. Arguments can be made that the tomb in Akhmim, on the east bank of the Nile, Egypt, signifies ownership of, at least familiarity with Aristotle-attributed work, all of which confirms the dependence of ancient Greek scholarship on that of Egypt. A more powerful indication of this dependence is with the materials of ancient Greece published by H.J.M. Milne, the then assistant-keeper in the department of manuscripts at British Museum, in which he (Milne, 1927, p. 84) specifically noted the presence of four highly skilled scribes who meticulously handwrote the manuscript of *The Constitution of Athens*. This papyrus manuscript appears to be the only available, left copy of *The Constitution of Athens*. The manuscript was written by four professional scribes around 78 CE on a roll used for accounts/financial records in a farm located in the city of Hermopolis --- currently known as Al Ashmunin or El Ashmunein, and formerly Akhmim (Hornung, 1999/2001; Vrettos, 2001), or as it was called by ancient Egyptians, Khmun (Lichtheim, 2019, p. 643), or Shmun (Bull, 2018, p. 36) --- in the center of Egypt, roughly 290 km (180 miles) south of Cairo. The four scribes took the blank back pages of the roll to write down the document now known as Aristotle work called *The Constitution of Athens*. With the existence of such a crucial manuscript of Greek literature in the middle of Egypt, the dependence of ancient Greece on or its relation with scholarly ancient Egypt proves to be most likely. This is also confirmed by the prevailing and multi-faceted role of scribes in ancient Egypt (Allon & Navratilova, 2017). The place of ancient Egypt for modern Greek civilization cannot be underestimated nor simply ignored. As James (2003) poignantly remarked, "extraordinarily modern ideas… would be transmitted from Egypt into Greece, to form the foundations of Western civilization" (p. 88). Such an approach is beneficial to scholarly research because it enables more than one (traditional) perspective (details below).

It is helpful to note that the term science i.e. systematic knowledge seen as scientific, assured knowledge is an antique practice of research stretching back to ancient Egypt. In ancient Egypt systematic knowledge was represented by a god called Thoth, renowned for balance, science, measurement, order, writing, mathematics, magic, impartiality, certainty, etc. (Lichtheim, 2019). Accurate, systematic, and orderly knowledge was the knowledge bestowed by Thoth. Exceptionally revealing here is that Thoth was also the deity of effects/impacts in nature, hence Thoth was thought and translated as a god of magic, medicine (see Lichtheim, 2019, p. 301). The task of scientific knowledge attributed to Thoth is quite an inspiration to modern day scientists/researchers. Equally exceptional is the Greek word for scientific knowledge or science, namely: *ἐπιστήμη* [epistêmê], from which comes the English term epistemology, and which derives from the Greek verb *ἐπίσταμαι* [epistamai], meaning to be assured, to feel sure, to be versed in, to know as a fact, to know for certain (Liddell & Scott, 1843/1996). Certainty as well as impact were definitely part of systematic knowledge in ancient society (details below). The verb *ἐπίσταμαι* results from a combination of the Greek prefix *ἐπι* [epi] conveying the meaning of on, upon, over, after, according to, behind, in the presence of, toward, etc., and the Greek noun *στάσις, εως, ἡ,* meaning placing, standing, condition, posture, stature, etc. The noun *στάσις* comes from the Greek verb *ἵστημι* [histêmi], meaning to make to stand, to stand, to set up, set, place of things or persons, to establish, institute, to bring about, to cause, to place in the balance, weigh, etc. (Liddell & Scott, 1843/1996). Thus, the noun *ἐπιστήμη* [epistêmê] carries the idea that one sets one's knowledge/mind upon something. The primary meaning indicates knowledge or attitude being weighed or erected upon something.

A quick look into the linguistic genesis of science is most helpful here. The English word science derives from the Latin noun "*scientia*, *ae*… [which stands for] *A knowing* or *being skilled in* any thing, *knowledge*, *science*, *skill*, *expertness*" (Andrews, 1851, p. 1368). It appears that the English word science is a transformation of the Latin verb "*scire*, *scio*, *ivi* or *ii*, *itum*… [which means] *To know*, in the widest signification of the word; *to understand, perceive*; *to have knowledge of* or *skill in any thing*, etc." (Andrews, 1851, p. 1369). It follows that the word science comes directly from the participle present active of the Latin verb *scire*, which reads as "*Sciens*, *scientis*… i.e. *knowingly*, *wittingly*, *purposely*, *intentionally*, etc. … *knowing*, *understanding*, *acquainted with*, *skilled*, *versed*, or *expert in* any thing" (Andrews, 1851, p. 1370). Another meaning akin to the Latin verb *scire* is the Latin verb "*scisco*, *scivi*, *scitum*… *To seek to know*; *to search*, *inquire*… *To accept, approve*, *assent to* something proposed" (Andrews, 1851, p. 1370, or "*To approve*, *assent to*, *vote for* any thing… *To learn*, *ascertain*, *know*" (Andrews, 1851, p. 1371). As can be seen, the idea objectivity as proclaimed by positivism (details below) is hardly insinuated/present in the Latin understandings of the word *scientia*. Another English word closer to and more revealing for the word science is conscience, composed of two particles: the Latin prefix *con* (meaning along with, or with) and the Latin noun *scientia*, all of which not indicative of the popular connotation of science. Still, Greek, Latin, and ancient Egyptian origins of the word science strongly imply the endeavor to shape/build an attitude toward or skill about a given topic. The idea balance and justice assigned to the term systematic knowledge or science as exemplified by the god Thoth in ancient Egypt presents a distinct advantage.

The Term Methodology

The second concept requiring preliminary clarification is the term methodology. Taken to their broadest extent, methodologies are underlying perspectives or foundational beliefs that have received a variety of appellations such as "fundamental frames of reference" (Babbie, 2021, p.

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30), "paradigms" (Denzin, Lincoln, Giardina, & Cannella, 2024a, pp. 22-24, also Erickson, 2024, p. 53; Kuhn, 1962/1996, pp. 10-11), or "worldviews or beliefs" (J.W. Creswell & J.D. Creswell, 2018, p. 5). These underlying perspectives or worldviews are ones with which researchers interpret the world and the inquiry of it. Worldviews form the background or rationale in light of which researchers look at the world, devise a research question, design research, and pick a set of methods to achieve scholarly work. Thus, methodologies are designated to implement a research's objectives and questions of interest. As J.W. Creswell and J.D. Creswell (2018) explained, "We use worldviews as a general philosophical orientation about the world and the nature of research that a researcher brings to a study" (p. 5). Worldviews or paradigms help differentiate one research from another. This is largely because, "Although philosophical ideas remain largely hidden in research… they still influence the practice of research and need to be identified" (J.W. Creswell & J.D. Creswell, 2018, p. 5). Researchers would benefit immensely from discussions on worldviews lingering underneath their research and that of others.

Researchers cannot make progress by ignoring the worldviews underpinning and often in time interfering with scholarly work. As Kuhn (1962/1996), an author who has produced stellar research about paradigms, posited, "Acquisition of a paradigm and of the more esoteric type of research it permits is a sign of maturity in the development of any given scientific field" (p. 11). Worldviews or paradigms govern a field's status at a specific point in time and for a specific scholarly community. Relative to characteristics of worldviews underlying perspectives, or paradigms are, among others, contribution(s), identity, and fundamentals of that discipline. Exceptionally noteworthy is that the word paradigm stems from the Greek noun *παράδειγμα* [paradeigma], meaning: pattern, model, exemplar, precedent, sample, lessen [i.e., learned], argument, proof from example, etc., which in turn is a derivative of the Greek verb *παραδέχομαι* [paradekhomai], standing for: receive from another, of children; receive from inheritance, receive by way of tradition; of pupils, receive lessons from a master, etc. (Liddell & Scott, 1843/1996). Worldviews are something of a tradition or pattern received from and/or transmitted to others. Because research worldviews enable researchers to make contributions to their field and craft the principles or fundamentals thereof, they tend to remain hidden and undisputed. Any research done in a given field betrays the fundamental beliefs or worldviews out of which it has arisen and developed. For simplicity and focus purposes, methodologies and worldviews are considered interchangeable in this paper.

Research Method

The third concept calling for preliminary clarification has to do with method more precisely research method, which tends to be conflated with the term methodology. Most useful here is the fact that the notion method is formed from the Greek word *μέθοδος* [methodos], which is comprised of two particles, namely the preposition *μετά* [meta] and the noun *ὁδός* [hodos] (Liddell & Scott, 1843/1996). On the one hand, the Greek preposition *μετά* [meta] carries the meaning of in the midst of, among, between, in common, along with, by aid of, after, behind, thereupon, according to, thereafter, etc. On the other hand, the Greek noun *ὁδός* [hodos] holds the meaning of way, road, course, channel of a river, journey, manner, etc. The underlying notion of *ὁδός* [hodos] is that of direction, path, course of action, stream, trend, etc. An essential piece of clarification is that the word methodology, analyzed earlier, implies *μέθοδος* [methodos] with the notion *λόγος* [logos] affixed to it. The Greek noun *λόγος* [logos] is one of the most polysemic terms, embodying meanings such as those of word, language, talk, discourse, conversation, account, consideration, esteem, regard, opinion, etc. It stands to reason

that one of the primary meanings assigned to *λόγος* [logos], of note here, is that of reason, ground, expectation, consideration, opinion, etc. taken about a topic. Another no less than essential piece of clarification is that the word *λόγος* [logos] comes from the Greek verb *λέγω* [legô], which denotes not only the following primary meaning: to count, say, tell, recount, etc., but also to pick up, to choose for oneself, pick out, etc. (Liddell & Scott, 1843/1996). It thus becomes unequivocal that while the terms methodology and method can fully understandably be regarded as synonyms, a nuance between them can be beneficial, at least for the purpose of this paper. Some materials describe method and methodology as interchangeable (see Babbie, 2021), others as different, and still others as somewhat loose; using both synonymous and different connotations (see Cibangu, 2012, p. 97). For clarity sake, the present paper considered the two terms method and methodology as distinct.

As Birks (2014) asserted, "Methodology is founded on a particular philosophy of thought that influences the type of methods used and how they are applied in the conduct of a research study" (p. 27). Methodology indicates the worldview, fundamental belief under which research unfolds whereas method is the selected type, trail, stream, or direction pursued within a given worldview. To elicit further, Mills (2014) alleged, "Methodology determines how the researcher thinks about and positions themselves in relation to a study. Research methods are the strategies that are employed in the conduct of a study" (p. 44). A method comprises a strategy/path/direction employed to implement or adopt a specific underlying worldview, declared or undeclared.

Two Major Methodologies/Paradigms

The fourth and last concept warranting preliminary clarification is the identification of two major paradigms. The present paper distinguishes two major paradigms or fundamental worldviews, on account of which scholarly inquiry tends to be conducted: positivism also called logical positivism which undertakes principally quantitative research and interpretivism which focuses chiefly on qualitative research. The identification of two paradigms is more distinctive than normative/judgmental. One of the best ways of regarding the two stated paradigms is with the image largely known as Rubin Vase (see Figure 1) – brought forth, in 1915, at the University of Copenhagen, Denmark, by Danish psychologist Edgar Rubin in his dissertation under the title *Synsoplevede Figurer* [Visual Figures] (see Rubin, 1915, pp. 30-31).

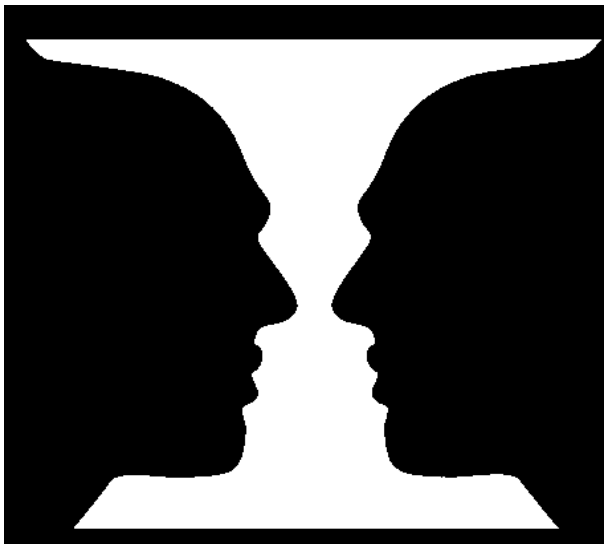

Figure 1: Rubin Vase: Two faces or A cup

Interpretation of the above picture is a function of the view held by researchers. On the one hand, the proposed picture might come across as two persons facing one another, and on the other, the picture reflects a cup or vase. The whole point here is that views held on the picture cannot be homed in on at the same time because they are not reciprocal, even as the researcher might be aware of either view. Similarly, the view does not vary due to the fact of two faces being placed one alongside or in front of another. Thus, a stand-alone object can very well entail differing views for different individuals, of which the best illustration might be found with the duck-rabbit picture (see Figure 2) popularized by Austrian philosopher Ludwig Wittgenstein (1889-1951) (see *Welche Thiere gleichen*, 1892, p. 147; see also Wittgenstein, 1953/1958, p. 194; Jastrow, 1901, pp. 283-295).

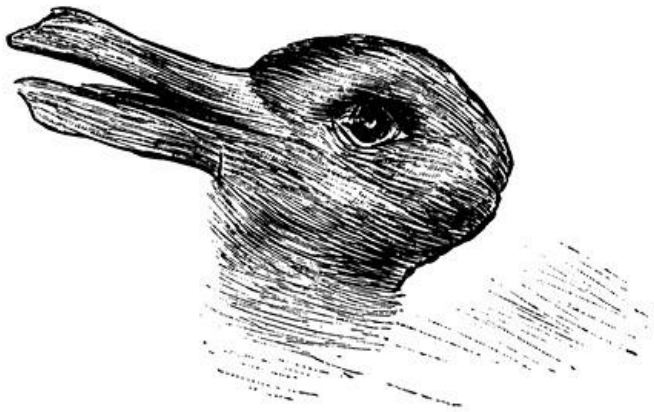

Figure 2: Duck-rabbit picture

While the figure displayed above indicates one identifiable object, it imparts two separate entities, according to the view espoused by a researcher. Hence, the figure can be focused on as either a duck or a rabbit, not both at the same time. In other words, both objects cannot be zoomed in simultaneously. It follows that research views, worldviews, or paradigms cannot be

homed in on at the same time. The key is for researchers to be alert to the views taken about a specific topic or research.

METHOD

Since research methodologies are barely discussed in publication outlets, this paper sought to probe historical materials arising from influential authors of research methodologies to ascertain overarching trails and concepts needed or employed across academic fields. The focus was placed on the two fundamental worldviews of scholarly work, namely positivism and interpretivism. The objective was to allow for better equipped toolkits of research methodologies in interested disciplines.

POSITIVISM

Positivism holds the view that knowledge results from scientific method by way of observation and experiment, without being affected by people's opinions, contexts, values, feelings, etc. Habermas (1968/1987) presented one of the most informative and detailed descriptions of positivism, although the English translation of Habermas work does not always convey the fullest vigor of the original German terms employed and of the worlds behind them. Thus, whenever relevant, original German words used by Habermas (1968/1981) will be translated afresh. Positivism excludes metaphysical, theoretical, and personal ideas as hindrances to objectivity of science and activity thereof. This is largely because "*Der Positivismus bezeichnet das Ende der Erkenntnistheorie* [positivism signals the end of self-reflexivity about knowledge produced]" (Habermas, 1968/1981, p. 88). Positivism aims to guarantee objectivity by purging research practice of all metaphysical, personal ideas.

The term positivism came to fame with the work of French sociologist Auguste Comte (1798-1857) published in 1848 (Comte, 1824a, 1848) about the topic positivism. The English adjective positive is a synonym of that which is certain and without any doubt (https://dictionary.cambridge.org/). The notion certainty and undoubtedness is at the core of positivism school. Still, the Latin adjective *positivus, a, um*, from which the English adjective emanates, carries no connotation of certainty and the like. Indeed, the adjective *positivus, a, um* refers to something *settled by arbitrary appointment or agreement*, in opposition to natural… Similarly akin to the adjective *positivus, a, um* are the noun *positor, oris*, which stands for *a builder, founder* … and the noun *positus, us* meaning a *position*, *situation*, *disposition* (see Andrews, 1851, p. 1161). Even more suggestive, the root of the adjective *positivus* is with the Latin verb *ponere*, *pono*, *posui*, *positum*, with the primary meanings such as to put, place, set, lay, etc. And most suggestive here, the verb *ponere* indicates, in speaking or writing, *to lay down as true*, *to state, assert, maintain, allege, cite, etc*. … *To put hypothetically, to assume, suppose*… *To propose, to offer, fix upon a theme for discussion*" (see Andrews, 1851, p. 1160). The Latin origins of the word positivism suggest something proposed/offered rather than certain or indubitable.

While an argument may be made to question the originality of Comte about positivism, Comte remains a central figure in the articulate formulation of positivism (see Habermas, 1968/1987, p. 74). Prior influences in the history of positivism can well be proposed, but Comte (1924a, 1848) founding role defies skepticism on multiple fronts. To bring forth a valuable piece of evidence, Claude Henri de Saint-Simon (1760-1825), commonly known as Henri Saint-Simon, who can be claimed to have coined the word positivism, totally distanced himself from

URL: http://dx.doi.org/10.14738/assrj.1112.17989

philosophical reflections of positivism and refused (Saint-Simon, 1817, pp. 88-89; see also Saint-Simon, 1824, pp. 1-2) to be identified with those reflections (details below). Positivism also bore the appellation modernism considering that it was by and large fleshed out during the historical time termed Modern Times, stretching from the 1500s to 1945, with trendsetting events such as Renaissance, Enlightenment, Industrial Revolution, World War II, etc.

Positivism and Post-Positivism

One concept quite often associated with positivism and yet most susceptible of confusion is post-positivism. Research method materials display post-positivism with two main acceptations, one being anti-positivism and the other being pro-positivism; a middle ground is sometimes proposed, but with little to no avail. Usually, publication materials do not specify which acceptation of post-positivism is being formulated, leaving readers and researches unwarned about possible misconception. The first acceptation of post-positivism yields the understanding of post-positivism as a method inconsistent with positivism. One of the best explanations of post-positivism as anti-positivism was with J.W. Creswell and J.D. Creswell (2018) when they determined,

> *The postpositivist assumptions have represented the traditional form of research, and these assumptions hold true more for quantitative research than qualitative research. This worldview is sometimes called the scientific method, or doing science research. It is also called positivist/postpositivist research, empirical science, and postpositivism. [emphasis in original]. (p. 6, see also Denzin, Lincoln, Giardina, & Cannella, 2024a, p. 11; Erickson, 2024, p. 53)*

For the most part, as noted above, the word post-positivism is taken to entail science and the method(s) therefrom. The second acceptation of post-positivism is one in which post-positivism means the same thing as the reverse of positivism and the method(s) therefrom, for example interpretivism, constructivism, hermeneutics, etc. As McNabb (2021) noted, "The postpositivist approach is associated with qualitative research methods, it emphasizes understanding as well as description of a phenomenon" (p. 5, see also Morgan, 2007, p. 61). The idea behind post-positivism as antithetical to positivism resides in the prefix post understood as something of an objection to or reversal of a given phenomenon/movement. As J.W. Creswell and J.D. Creswell (2018) further elicited,

> *This last term [postpositivism] is called postpositivism because it represents the thinking after positivism, challenging the traditional notion of the absolute truth of knowledge… and recognizing that we cannot be absolutely positive about our claims of knowledge when studying the behavior and actions of humans. (p. 6)*

As shown supra, human behavior and actions cause post-positivist researchers to call into question the objectivity/positivity claimed by positivism. Denzin, Lincoln, Giardina, and Cannella (2024b) enumerated one such list of "post-isms --- from feminist inquiry, to critical indigenous inquiry, to postmodernism, postcolonialism, poststructuralism, postpositivism, postscientism, Marxism, postconstructivism, posthumanism, and the postqualitative turn" (pp. xxx-xxxi). The reason for the anti-positivist meaning of the concept post-positivism is in large part because much of interpretivism (details below) is no less than an after- and against-positivism movement/event. The best way to capture the anti-positivist prong of meaning

attributed to post-positivism might be with the concept modernism, a variant designation of positivism, and out of which terms such as post-modernism and post-colonialism --- to name just these two examples --- were developed. Thus, post-modernism is not the same as modernism; just as, post-colonialism is not the same as colonialism. In this respect, post-positivism emerged as an affront to the legacy of modernism, colonialism, imperialism, and the like.

Still one can argue for the prefix post being taken to mean a revisited, revamped version of a given movement, a good example might be with the concept post-Marxism. In this sense, post-positivism means a revisited version of positivism. As Morin, Olsson, and Atikcan (2021) asserted,

> *Post-positivist approaches may relax or reject one of these commitments [proper to positivism] and yet be committed to explanatory causal analysis, or they may depart in more thoroughgoing manner, posing an entirely different objective to the social sciences, as with the interpretivist and critical approaches. (p. 218)*

As explained above, the middle ground acceptation of post-positivism as part positivist and part interpretivist would involve an uphill struggle because in the opinion of positivists there is no such a thing as half-objectivity.

To be clear, positivism and post-positivism, at least as understood in this paper, do not amount to the same thing, rather post-positivism is indeed the opposite, post-positivism is also used as a synonym for interpretivism. The difference was also corroborated in other fields, for example, in anthropology anti-positivism is equated with post-structuralism. Again, structuralism is not the same as post-structuralism. As Rosa and Vermeulen (2022) described,

> *At a time when anthropologists worldwide continually claim new fieldwork experiences and ethnographic results, from antipositivist to poststructural, from "gone native" to compassionate, a second chance should be given to older texts through a critical and creative combination of historicism and presentism. (p. 2)*

For coherence sake, this paper proposes a difference between positivism and post-positivism. The difference manifests itself in the manner in which positivists regard and undertake research. For research efficiency, it would be less than helpful to assume that a positivist researcher looks at research and its design the same way as a post-positivist researcher does. The difference between post-positivist and positivist researchers was best depicted by Morin, Olsson, and Atikcan (2021), when concluding their work,

> *Post-positivist research traditions are more unified by what they reject than by what they share. What post-positivists reject are the tenets of… empiricism that often underpin a claim that the social world can and should be studied in the same way that the natural world is. But they agree with… positivists that the social world can be studied systematically, and that such study generates knowledge that is something other than mere partisan opinion. (p. 218)*

The difference between post-positivist and positivist researchers becomes clearer with ways in which quantitative and qualitative research contrast with each other. More exactly, confusion held on positivism can result in mistaking what is positivistic (e.g., research question, interview,

URL: http://dx.doi.org/10.14738/assrj.1112.17989

data collection, etc.) with what is not (details below). One reason for this is that the Enlightenment era, a movement of modernism or Modern Times described earlier, foregrounded reason as the power and tool with which to acquire knowledge by changing the world and replicating the laws of nature, irrespective of contexts or particularities involved. The type of knowledge sought and proclaimed by the Enlightenment era was said to be indubitable, incontrovertible, irrefutable, etc. in the same manner as the laws of nature. As will be apparent below, this is, for example, where/when the idea science came to be equated with exact, hard, or indubitable evidence. Thus, the notion modernism, specifically the historical context of Modern Times, remains indispensable in the manner in which positivism has been designated/developed. It is essential that researchers be aware of, more or less explicit, in their works, about historical components/meanings sitting beneath positivism and ensuing concepts/variations.

Major Types of Positivism

The major types of positivism give a better understanding of works accomplished/proposed when applying or dealing with positivism. Due to its widespread use in research methodology, positivism can be found in five most influential types: rationalism, Cartesianism, solipsism, psychologism, and empiricism (Habermas, 1968/1981; Cibangu, 2023). Rationalism has *ratio,* a Latin word for reason, as its core, with the belief that reason is the sole source of research, at the expense of human values, feelings, beliefs, opinions, etc. Owing to its focus on reason at the exclusion of human feelings and the like, rationalism is associated with the Enlightenment era, which therefore is also termed the Age of Reason. Rationalism was brought to the forefront of science with the work of English social analysist Francis Bacon (1561-1626) with Bacon idea of freeing reason from human idols/opinions for the sake of science. Bacon (1620/1901) claimed, "but to *know* to a Certainty and Demonstration, let him, as a true son of science (if such be his wish), join with us" (p. 10). The method of how to seek scientific knowledge was proposed was one of certainty through demonstration. Bacon wielded an immense influence in the Enlightenment era and beyond. Bacon was one of the leading authors of positivism. Bacon propounded his famous idea that human sentiments, feelings, expressions, opinions, and the like are antithetical to scientific, valid knowledge. Bacon propelled, "*nam et ipsa scientia potestas est* [and *indeed* knowledge itself is power (emphasis added)]" (1597/1859, p. 241). Bacon aforenoted idea has left an indelible mark on scholarly inquiry across disciplines. Although subject to debate, the notion knowledge as power continued to reverberate in and be congruent with Bacon later works and beliefs. As Bacon (1620/1901) submitted more than two decades later, "knowledge and human power are synonymous, since the ignorance of the cause frustrates the effect" (p. 11). One reason for the notion knowledge as power, according to Bacon, is that ignorance of the cause obscures its effect. Bacon (1620/1901) laid out a well-known aphorism that when free of opinions, sentiments, feelings, etc. knowledge is a power that enables humans to conquer nature. The underlying idea for Bacon is that human values, opinions, feelings, and the like are incompatible with and destructive to predictable, universal, and objective knowledge.

After rationalism, the second major trail of positivism is called Cartesianism, which was a movement started by French philosopher René Descartes (1596-1650). The term Cartesianism --- derived from the Latin word *Cartesius*, which was the Latin appellation of Descartes, originally spelled as Des Cartes --- refers to the school of thought that centers on Descartes (1637, 1644) teachings. Along with Bacon, Descartes can be considered as key figures of

Modern Times, hence modernism another term for positivism. Cartesianism also known as Cartesian method was a powerful movement of Renaissance, giving weight to doubt as a characteristic of the mind/reason/self. With reflections about methods for research, Descartes (1637, 1644) described the thinking self/person with its innate capacity to doubt/call into question and therefore to reason/think as the unique source of and/or space for indubitable, objective, and positive knowledge, independent from human feelings, biases, opinions, errors, etc. One principle of Cartesianism consists of linking doubt with the pursuit of truth. Cartesianism gained traction with the acclaimed Latin phrase "*dubito ergo cogito*, *cogito ergo sum*," [I doubt [of the body and world] therefore I think, I think therefore I am], which was first put forth in French in an essay published by French poet Antoine Léonard Thomas (1732-1785) to summarize Descartes doctrine on the anniversary marking the repatriation of Descartes ashes from Stockholm to Paris, more than a century after Descartes death (see Thomas, 1765, pp. 23-24). The phrase was translated into Latin because Latin was still the official language of education across Western Europe.

The key teaching of Cartesianism is the one known as universal doubt. More precisely, Descartes (1637) made the statement "*je pense, donc je suis* [I think, therefore I am]" (p. 34), first in French, and, a few years later Descartes expanded the idea in Latin noting: "*Ego cogito, ergo sum sive existo* [I think, therefore I am and therefore I exist]" (1644, p. 30). This statement considered to be the Cartesian root statement was rendered into Latin with more details because at that time Latin, as stated earlier, was the official language for teaching in Western Europe, thus enabling greater readership. Descartes, throughout his academic career, viewed doubt as integral to the search for knowledge. This can be seen, for example, on the one hand, in the Cartesian first principle of human knowledge which states, "*Veritatem inquirenti, semel in vita de omnibus, quantum fieri potest, esse dubitandum* [seeking truth once in life while doubting everything as much as possible]" (Descartes, 1644, see rule #1) and on the other hand in Descartes posthumously published work wherein Descartes (1684/1908) wrote "*dubito, ergo sum, vel, quod idem est: cogito, ergo sum* [I doubt [of the body, the world, ideas, etc.], therefore I am, which is the same as, I think, therefore I am]" (p. 523). From the 17th century onward, Cartesian method has come to be a chief tenet of research in general and positivism in particular.

Thomas (1765) summed up Cartesian method, as follows:

> *Puisque je doute, je pense; puisque je pense, j'existe… Tel est ce fameux doute philosophique de Descartes… Tel est le premier pas qu'il fait pour en sortir, et la première règle qu'il établit. C'est cette règle qui a fait la révolution de l'esprit humain. Pour diriger l'entendement, il joint l'analyse au doute [I doubt therefore I think, I think therefore I exist… That is the famous philosophical doubt of Descartes… That is the first step he took to move forward, and the first rule he formulated. This is the rule which has revolutionized the human mind. In order to achieve understanding, he connected doubt with analysis] (pp. 23-24)*

The big takeaway from Cartesianism is the idea that doubt or critical thinking, broadly speaking, leads to solid evidence when doing research.

The third type of positivism relates to solipsism. While researchers tend to pay less attention to the concept solipsism, they utilize solipsism more often than acknowledged. As Pihlström (2020) pertinently cautioned, "solipsism matters much more than we might think" (p. 2). This holds even truer for research method. One reason behind the overlook of the topic solipsism might be the paucity of discussion focused on research method, in general, and the widespread belief that solipsism is destined for philosophical verbiage, in particular. Solipsism can be and has been given different meanings for a variety of purposes. Generally speaking, solipsism subscribes to the "view that the world exists only due to our thinking" (Pihlström, 2020, p. 2). As such solipsism can understandably exhibit multiple variations. However, in this paper, solipsism is regarded as a research method that gives weight to the ability of a researcher's self/soul/mind to reach positive, certain knowledge by doubting about the external world. As Pihlström (2020) explained, "*methodologically*, the solipsist may claim that only the contents of my consciousness, my experiences, or mental states are the proper, or the only, place to begin scientific or philosophical investigation [emphasis in original]" (p. 9). The word solipsism comes from the Latin word *solipsismus*, which is composed of two Latin particles: the adjective *solus, a, um*, meaning only, just, alone, and the pronoun *ipse, a, um*, which stands for himself, herself, itself (Andrews, 1851, p. 838, p. 1435). Solipsism literally indicates that solely (*solum*) the self (*ipse*) exists or gives power to research by producing positive, indubitable knowledge. Solipsism cherishes the self/mind as the sole tool capable of yielding objective, scholarly knowledge concerning the external world or reality. The idea sole or alone implies that of being separate/withdrawn from the external world and related human feelings, opinions, beliefs, etc. To specify, when a method has its focus being placed on the thinking/reasonable self of the researcher as the only agent of scientific truth/science, the method becomes solipsist as it undervalues other venues when seeking truth.

A brief look at the history of solipsism helps highlight what solipsism entails. It can be argued that the word solipsism did not come into existence until 1645, when a work entitled *Monarchia Solipsorum* [kingdom of solipsists] was published in Venice, Italy, under the pseudonym Lucius Cornelius Europaeus (Europaeus, 1645), or until 1721 when the same work was translated into French under the title *La Monarchie des Solipses* (Inchofer, 1721). Nonetheless, scholars remain divided as to the right author of *Monarchia Solipsorum*, with some arguing for Italian writer Guilio Clemente Scotti (1602-1669) in 1645 in Venice and others proposing Hungarian Melchior Inchofer (ca. 1584-1648), when *Monarchia Solipsorum* was translated into French in Amsterdam (Inchofer, 1721). Equally, there is a lack of consensus about the birthplace/nationality of Inchofer. According to Inchofer (1721), "*Melchior Inchofer naquit à Vienne, capitale d'Allemagne, en 1584* [Melchior Inchofer was born in Vienna, capital city of Germany, in 1584)" (p. vii). In light of archives collected in Rome, however, where Inchofer had worked for a good portion of his life as a Jesuit priest, Inchofer was "Born around 1585 into a Lutheran family in Köszeg [currently in Hungary], he entered the Collegium Germanicum-Hungaricum in 1605" (Cerbu, 2001, p. 588, see also Artigas, Martínez, & Shea, 2005, pp. 213-233). Because Kőszeg, situated at the Austrian border, north-west of Hungary, is one of the Hungarian cities that shifted invariably between Hungarian and Austrian rules in the course of history (see Szende, 2021, pp. 266-267), Inchofer is usually described as an Austrian and/or Hungarian writer, depending on how Inchofer birthplace is presented.

As noted earlier, no consensus exists among experts as to whether Scotti or Inchofer published the pseudonymous work *Monarchia Solipsorum* (Europaeus, 1645). Despite the dispute on

authorship of Europaeus (1645), this work bears relevance to the history of solipsism (details below). By the same token, uncertainty about the authorship of Europaeus (1645) work has not contributed to an understanding of solipsism. Granted that the author of Europaeus (1645) work is unknown, the knowledge held by the author about the concept solipsism was strong enough to be applied in the author's characterization of and/or criticism against Jesuits --- the topic of the work. In addition, the fact that the author used a pseudonym for such a pointed criticism is an indication that solipsism was not uncommon among average readers during that period, the second half of the 1600s.

Understandably, solipsism is suggested to be nothing less than a byproduct of Cartesianism. As Pihlström (2020) claimed, "solipsism is not ancient; Descartes can be considered its father" (p. 21). Yet, deeper analysis demonstrates solipsism to trace as far back as ancient Egypt. For example, the solipsist idea that the external world revolves around the mind/soul resonates powerfully with the concept *Maat* and/or *Ba* in ancient Egypt (see Lichtheim, 2019, pp. 207-210; 413-415; 451-454). More exactly, however, the first recorded, articulate presentation of solipsism can be seen with the work attributed to Greek philosopher Gorgias of Leontini (ca. 483 BC-375 BC), in Sicily (then Greek colony), entitled *On Non-being* (Gaines, 1997; Schiappa, 1997). Solipsism stretches further beyond modern philosophy. The idea that solipsism is not a creation of Descartes, much less modern philosophy, is confirmed by Ural (2019) who noted that "The history of solipsism began with the Sophist definition and has reached our time with certain confusing interpretations" (p. xi). The only surviving copy of parts, and not all, of Gorgias aforesaid work was with Greek writer and physician Sextus Empiricus (ca. 160-260 CE), the life of whom is not much known, under the title *Adversus mathematicos* [Against mathematicians also translated as Against logicians] (Sextus Empiricus, ca. 160-260 CE/1569, ca. 160-260 CE/1914). It was with the translation of Sextus Empiricus (ca. 160-260 CE/1914) Greek work into Latin in 1569 (see Sextus Empiricus, ca. 160-260 CE/1569) that the work of Gorgias of Leontini (ca. 483 BC-375 BC) as well as the concept solipsism received greater readership across Western Europe. Specifically, solipsism seemed to have risen to popular usage in the second half of the 1500s with Gorgias of Leontini (ca. 483 BC-375 BC) work (Sextus Empiricus, ca. 160-260 CE/1569) and the Latin vulgarization of it. The Renaissance period, which extends approximately from the 14th to the 17th centuries, witnessed a keen interest in classical works and legacy that goes a long way toward to the vulgarization of Gorgias.

Furthermore, it can be inferred that Gorgias oeuvre was so popular that, in 1620, several years before the first book of Descartes (1637) was published, Bacon mentioned Gorgias with great admiration (Bacon, 1620/1901, p. 47). In multiple respects, Sextus representation of Gorgias cannot be fairer than currently depicted. For example, "Because Sextus is reporting Gorgias's argument rather than criticizing it, his summary can be taken as a fairly "faithful" rendition of Gorgias's argument as Sextus understood it" (Schiappa, 1997, p. 15). Most interestingly, Gorgias statement in its original Greek version reads as follows,

> *εί δὲ τοῦτο, οὐχ ὁ λόγος τοῦ ἐκτὸς παραστατικός ἐστιν, ἀλλὰ τὸ ἐκτὸς τοῦ λόγου μηνυτικὸν γίνεται [But if so, word does not operate out of the external world while the external world becomes a display of word]. (Sextus Empiricus, ca. 160-260 CE/1914, I, 85-86; p. 20)*

The statement seen above implies the idea word (i.e., logos) being solipsist, more precisely *ipse*- or self-centered, so to speak, functioning from within itself and not from the external world on the one hand, and that of external world being the display of word or self, on the other. It follows from this statement that logos constitutes the sole source of external world and the knowledge of it, hence the word solipsism. In light of the fullest sense of the term logos, Gorgias statement proves to encapsulate the doctrine of solipsism. Put differently, word operates in and by itself, with the external world being its manifestation. Even aside from textual considerations of Sextus, which can be deemed as representations of Gorgias, the argument of Gorgias is proven to be more about solipsism (i.e., speech) than a representation of the world (Porter, 1993; Gaines, 1997).

To no small extent, the vulgarization of Gorgias (Sextus Empiricus, ca. 160-260 CE/1914) work in Latin came at a cost. To be clear, the translation of the Greek word used by Gorgias, namely, *λόγος* [logos] (see Sextus Empiricus, ca. 160-260 CE/1914, I, 85, p. 20) with the Latin word *oratio* (see Sextus Empiricus, ca. 160-260 CE/1569, p. 128), meaning speech, discourse, oracle, etc. tends to obscure the concept solipsism. The insistence on speech leaves aside the features of logos central to research method and solipsism. Although *λόγος* [logos], as understood supra, denotes one of the most multifold ranges of meanings in ancient Greek, some of the key meanings greatly illuminating for our discussion go beyond the idea speech/utterance, and include meanings as diverse as explanation, ground, reason, principle, scientific knowledge, inward debate of the soul, thinking, and precise language (Liddell & Scott, 1843/1996). Perhaps the most revealing, pertinent and all too often forgotten meaning of *λόγος* [logos] for research method is that of scientific knowledge. From Gorgias (Sextus Empiricus, ca. 160-260 CE/1914) solipsistic perspective, scientific knowledge operates from within itself, and the external world is nothing but a manifestation of scientific knowledge. As demonstrated supra, although Cartesianism or Descartes cogito contributes significantly to an understanding of solipsism, it does not relay the full ambit of solipsism. The Greek word logos can be expanded to include consciousness or ego, a key concept in several present-day versions of solipsism (see Ural, 2019). This paper did not consider the concept consciousness because consciousness and similar concepts (e.g., ego, selfishness, awareness, etc.) does not correspond to a research method. As noted above, this paper focuses on solipsism from a methodological perspective, wherein the external world is a display of a researcher's mind/self, which in turn functions from within itself. It can also be recalled as defended in this paper that solipsism is a form of positivism. This is important to keep in mind because a researcher's awareness about positivism has the potential to help best design research and the method therefrom, and no discipline is an exception.

The fourth type of positivism amounts to psychologism. Psychologism constitutes one of the easiest and most common forms of positivism. Psychologism is the form of positivism that values the objectivity of knowledge with an emphasis laid on the quality of a researcher's mental states or mind. In fact, "*Psychologismuskritik* [criticism of psychologism]" (Habermas, 1968/1981, p. 234) is a continuation of criticism leveled against positivism. Mental, psychological states, or mind, broadly speaking, have been at the center of human knowledge since immemorial time, but they have been elevated to an articulate doctrine of research method with the Cartesian universal doubt (Descartes, 1637, 1644, 1684/1908) and later with the work of John Stuart Mill (1808-1873), all of which provided groundwork for inductive and deductive reasoning (Ducheyne, 2008; Mill, 1843/1882). Psychologism is more influential in

shaping research method than commonly thought. The term psychologism is a term whose radical rests in the Greek noun *ψυχή, ἡ*, [psyche], which stands for soul, mind, emotional self, conscious self, etc. (Liddell & Scott, 1843/1996). To a great degree, the term *ψυχή* is simply a Greek variant for the Latin word *λόγος* [logos], with a focus being placed on the thinking, conscious self. Psychologism is a research method that professes that a researcher's conscious self is the sole tool which needed to acquire and impart indubitable, positive knowledge. Psychologism is the type of positivism that insists on the laws of the thinking self/psyche. This is because the activity and capacity of the reasoning self are nothing short of psychological or mind-centric. The self or *psyche* is thus accorded universal power that generates predictable and indubitable knowledge, irrespective of contexts and people's opinions. The primary teaching of psychologism is that scientific knowledge depends on psychological conditions, which are best found in self-observation.

The fifth and last form of positivism is called empiricism. Empiricism is the school of the opinion that experiment and observation are the privileged source of scientific knowledge, at the exclusion of from human opinions, biases, feelings, values, etc. As Habermas (1968/1987) alleged, "Positivism adopts the basic rule of the empiricist schools that all knowledge has to prove itself through the sense certainty of systematic observation that secures intersubjectivity" (p. 74). Humans have employed observation and experiment since earliest recorded times in areas such as cooking, liquor production, foundry, sculpture, skin care, agriculture, pottery, etc. However, experiment --- also identified as experimentation and sometimes as experience --- became an established research method with the Enlightenment era and more so with the work of John Locke (1632-1704) highlighting the school now known as empiricism (Locke, 1690). As Bacon (1620/1901) noted, "we must first, by every kind of experiment, elicit the discovery of causes and true axioms, and seek for experiments which may afford light rather than profit" (p. 46). As maintained above, for research method, experiment is suggested to yield light rather than mere profit. Experiment has come to represent a researcher's involvement in, arrangement of and/or interference with the researched or those researched. The English term empiricism has its origins in the Greek noun *ἐμπειρία* (empeiria), comprised of two components *ἐμ* [em] and *πειρία* [peiria]. The prefix *em* implies the sense of all around and comprehensive. The Greek noun *πεῖρᾰ, πείρᾱς* [peira, peiras], refers to an attempt, endeavor, trial, etc. The Greek verb *πειράζω* (peirazô) or *πειράω* [peiraô] has the following meanings: to make proof or trial of, attempt to do, attempt a thing, make an attempt, to seduce, to tempt, etc. The English adjective empirical is a transliteration of the Greek adjective *ἐμπειρικός, ή, όν*, [empeirikos], meaning experienced (Liddell & Scott, 1843/1996). As can be understood, the dominant and lesser known meaning of empiricism has nothing to do with accurate and absolute knowledge, rather signifies experience, acquaintance, attempt, show, trial, etc. As explained above, the concepts empiricism and positivism are usually employed as interchangeable, with the former being centered around experiment performed and the latter around objective (i.e., undisputable) knowledge reached.

Misunderstandings with Regard to Positivism

As research methods continue to draw attention across disciplines and university departments, misunderstandings with regard to positivism abound, of which two most recurrent are reviewed in what follows.

The first most recurrent misunderstanding concerning positivism concept revolves around science and ensuing related concepts, that is: measurement, physical sciences, life sciences, and statistics. From the origins of science both in Latin and in ancient Egypt, as recounted earlier, science is most strictly regarded as systematic knowledge, with no hint to or preference for a given worldview. One driving factor in misunderstandings related to positivism stems from an association of the term science with the history of positivism. According to multiple eminent authors (details below), positivism is generally believed to have started either in the 17th century, precisely with the work of Bacon (1620/1901) or thereafter, in the 18th century, especially the 19th century with the work of Comte (1848). It follows from this belief that most scholarly discussions about research method tend to cluster around the period of 17th, 18th, and 19th centuries onward. As Erickson (2024) summarized,

> *Simultaneously with the 17th-century writing on everyday practices, the quantitative physics of Galileo Galilei and Isaac Newton were being established. As the Enlightenment developed, quantitatively based inquiry became the standard for physical science. The search was for general laws that would apply uniformly throughout the physical world and for causal relations that would obtain universally. This became a worldview, assuming not only a "realist" ontology --- that the physical world exists apart from humans' awareness and conceptions of it --- but also an assumption that its processes were so consistent and stable that clear discovery of cause and clear prediction would be possible… It follows that the job of the "scientist" is to tabulate instances of regular association [of laws or causes] between events. (p. 34, see same idea in Park, Konge, & Artino, 2020, p. 691; Lévi-Strauss, 1978/1995, pp. 5-7; Popper, 1994/1996, pp. 72-73)*

As seen in the above account, science --- systematic knowledge --- as well as physical sciences –were claimed to have been created under the inspiration and as a manifestation of positivism. It is particularly noteworthy that most traditional social and human sciences (i.e., sociology, political science, anthropology, psychology, etc.) became established curriculums in the 19th century. This was primarily because a number of universities across Europe and North America were being built somewhere around or between the 17th and 19th centuries. Consequently, the understanding and practice of systematic knowledge (or science) and physical sciences tend to be conflated with the movement of positivism. Adding momentum to this conflation is the idea that physical sciences adopt the reasoning of mathematics, which is of an exact, certain, and provable nature.

Upon examination, however, the belief consisting in conflating positivism with science (i.e., systematic knowledge) along with physics (i.e. physical science) and mathematical reasoning gravely lacks foundation (details below). In fact, science or systematic knowledge, physical sciences as well as mathematics predate positivism by millennia. As discussed supra, to imagine science as something post-1800s is incorrect because much of modern human civilization and knowledge dates from Antiquity. Examples include telescopes, university system (i.e., scholars and departments), Egyptian calendar, hospital practice and setting, biology species, heliocentric theory of the universe, discovery of ovaries, division of the day, hour, and degree, etc. (Bernal, 2000; Depuydt, 2009; Shank, 2000; Vrettos, 2001). In addition, works such as Egyptian pyramids (Verner, 1997/2001) --- with astronomical size, identical shape, and dating from more than three millennia ago --- would presuppose nothing short of advanced systematic

knowledge and physical sciences along with exact and provable mathematical reasoning. This is not to mention in ancient Egypt the flourishing mining, i.e., production and treatment of most if not all metals known to date (Lichtheim, 2019) along with the Egyptian calendar (Depuydt, 2009) --- the oldest known and recorded in history, with a year composed of 365 days, 12 months counting 30 days each --- of which modern calendar is a copy. Greatly worthy of note also is the school of Alexandria, ca. 150 CE, in Egypt, which bustled with scholarly inquiry (see Vrettos, 2001), a definite reflection of Antiquity high-standard practice. Furthermore, a casual glimpse into Google indicates a number of universities in Western Europe and North America, with doctoral level of knowledge, created several centuries by far earlier than positivism: University of Bologna, Italy, founded in 1088, Oxford University, UK, in 1096, University of Salamanca, Spain, in 1134, University of Paris, in 1160, etc. Conferral of doctoral degrees in the above and similar institutions imply nothing but highly advanced science or systematic knowledge, physical sciences, and use of numbers. One example needing attention although pertaining to the Middle Ages is with Notre Dame of Paris cathedral (Sandron & Tallon, 2013), which typifies nothing but gigantic, unparalleled work of scientific, systematic knowledge dating as far back as 1163. There was/is no way that the practice of systematic knowledge (i.e. science), or of number/measurement much less physical sciences would ever be an offspring of positivism as late as the 17th, 18th, and 19th centuries.

Most interestingly, positivism itself, as a doctrine of research, was initiated with a firm conviction of a new tool of research being implemented --- hence the phrase *Novum Organum* [new tool]; the title of Bacon (1620/1901) book, as opposed to the title *Organon* indicating the set of Aristotle writings dedicated to logic. The Latin word *organum* is a direct transliteration of the Greek word *ὄργανον* [ôrganon], meaning: tool, instrument, organ, work, etc. (Liddell & Scott, 1843/1996). The new tool of research was put in place with the exact purpose of throwing out of research practice/methodology all metaphysical, human opinions and reflections. Prior to the Baconian claimed new tool, metaphysical, spiritual, cultural, human opinions and reflections etc. formed an integral part of scholarly inquiry and standards. Numerous illustrations of Antiquity high-standard works have been listed above. Moreover, it was determined that like a good many Greek authors, Aristotle had been educated or at least exposed to ancient Egypt academia (see Meltzer, 2001). Exposure to ancient Egypt and great fondness for it were not unusual in Antiquity. As Hornung (1999/2001) recounted,

> *Already in antiquity, there was an opinion that the land of the Nile was the fount of all wisdom, and the stronghold of hermetic lore. Thus began a tradition that is still alive today, and which I venture to designate "Egyptosophy." (p. 2)*

As explained in the above claim, it is all but a proven fact that physical sciences and science have each operated fully successfully for millennia before and independently from the advent of positivism.

A more neutral if not genuine description of science might be the one suggested by Kuhn (1962/1996) alleging that

> *science is the constellation of facts, theories, and methods collected in current texts… scientists are the men who, successfully or not, have striven to contribute to one or another element to that particular constellation. Scientific development*

URL: http://dx.doi.org/10.14738/assrj.1112.17989

> *becomes the piecemeal process by which these items have been added, singly or in combination, to the ever growing stockpile that constitutes scientific technique and knowledge. (pp. 1-2)*

As portrayed above, science comprises a tapestry of facts, theories, and methods as well as the contributions produced. Similar to the statement above is Babbie (2021) idea that characteristics of science "relate to the three major aspects of the overall scientific enterprise: theory, data collection, and data analysis" (p. 8). Theory typifies scientific work.

Some of the most incisive critiques of the misconceptions bedeviling physical sciences and the concept science --- yet much lesser relayed in textbooks and scholarly materials across disciplines --- were with American scientist and mathematician Warren Weaver (1894-1978) discussed above. While Weaver is most known for Shannon and Weaver channel and, by implication, for the so-called mathematical theory of communication (Shannon, 1949/1964; Shannon, 1948a, b; Weaver, 1949), Weaver delivered one of the sharpest appraisals of modern physical sciences and science (Weaver, 1948, 1960, 1962). Conceptions, to use a neutral term, held on modern day physical sciences and science have come to be somewhat too commercial --- for the simple reason that these conceptions appear to be less empirically proven ideas than mere opinions.

As Weaver (1948) warned,

> *Science has made notable progress in its great task of solving logical and quantitative problems. Indeed, the successes have been so numerous and striking, and the failures have been so seldom publicized, that the average man has inevitably come to believe that science is just about the most spectacularly successful enterprise man has ever launched. (p. 543)*

It bears remembering that as seen earlier science as well as the use of logic and numbers have existed and operated in the distant past. Weaver (1962) went on to say, "If these are indeed true characteristics of modern science, as I believe them to be, then there would seem to be no inherent" (p. 100). Science is nothing other than a feature of human civilization, and as such it can have its ebb and flow. However, positivism tends to be presented as the beginning, origin, and even epitome of science. More often than not, positivism is found to be equated with concepts such as science, physics, statistics, life sciences, and measurement, as pointed out earlier. Measurement is taken here to mean numbered knowledge as shown above. Science, in this sense, is fairly commonly understood as "hard science" (Erickson, 2024, p. 53). The bombastic notion hard science used to designate science may leave one with the impression that there is no science before and outside the appearance of positivism. This is also one further reason for the identification of positivism with physical sciences and to a lesser extent life sciences.

Weaver (1960) stated,

> *Careful thinkers have for long been skeptical about the supposed objectivity of so-called scientific facts… The idea that the so-called objective facts of science may not be so sacrosanct is thus not an exclusively recent suspicion… With the extremely*

> *small or the extremely large, with inconceivably brief or extended phenomena, science has a difficult time. (p. 426)*

Objection to and pursuit of objectivity of scientific knowledge as the hallmark of science prove to have been raised as a research practice long before positivism.

As Weaver (1960) maintained,

> *But if one looks deeply within this system [of science] … He finds unresolved and apparently unresolvable disagreement among scientists concerning the relationship of scientific thought to reality --- and concerning the nature and meaning of reality itself. He finds that the explanations of science have utility, but that they do in sober fact not explain. He finds the old external appearance of inevitability completely vanished, for he discovers a charming capriciousness in all the individual events. He finds that logic, so generally supposed to be infallible and unassailable, is in fact shaky and incomplete. He finds that the whole concept of objective truth is a will-o'-the-wisp. (pp. 426-427)*

Objectivity of science and the often-claimed detachment of a scientist are no more objective and/or impersonal than can be proved to be true.

As Weaver (1960) reminded researchers,

> *Science is not a system of certain, or well- established statements; nor is it a system which steadily advances toward a state of finality… The old scientific ideal of epistēmē --- of absolutely certain, demonstrable knowledge --- has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative for ever. The empirical basis of objective science has thus nothing "absolute" about it. Science does not rest upon rock-bottom. The bold structure of its theories rises, as if it were, above a swamp [emphasis in original]. (p. 427)*

As demonstrated supra, systematic knowledge or science is not a contemporary practice of research, not by a long shot. For example, the Greek noun *ἐπιστήμη* [epistêmê] out of which the English term epistemology is derived, as noted earlier, conveys the meanings of systematic knowledge or science, among others (Liddell & Scott, 1843/1996) so does god Thoth who represented knowledge in ancient Egypt (Lichtheim, 2019). What is rather appealing is that god Thoth is also presented to be the source/god of mathematics, measurement, and medicine/magic. Mathematics is that which confers positive knowledge, not to mention measurement whereas medicine/magic displays the sense of effect/impact upon life or in the world. Still, the attempt of scientists/researchers to produce systematic knowledge comes with challenges.

After science and physical sciences, one concept commonly involved in misunderstandings about positivism entails life sciences, or simply put, life. As Weaver (1960) clarified, "I refer to the fact that many scientists --- and the public which they have over and falsely impressed ---

have created a horrid and dangerous gap between science and the rest of life" (p. 427). In this respect, life sciences are described in most research materials as synonymous with physical sciences, at least methodologically speaking. The concept life cannot be used as the dividing, but rather as the unifying factor of scientific disciplines operating in the world in order to change the world. The ultimate outcome (i.e., impact) of any acquired and sought knowledge is to make the world a better place. Weaver (1960) cautioned, "In the realm of animate matter, science has made wonderful, but more limited, progress" (p. 426). Limited progress of science regarding research into animate matter tends to escape discussions about and characterizations of positivism, science, and physical sciences.

More to the point, in life sciences, Bernard (1865), a no less forgotten figure of research method, declared,

> *Une autre forme d'application très-fréquente des mathématiques à la biologie se trouve dans l'usage des moyennes ou dans l'emploi de la statistique, qui en médecine et en physiologie, conduisent pour ainsi dire nécessairement à l'erreur. Il y a sans doute plusieurs raisons pour cela; mais le plus grand écueil dans l'application du calcul aux phénomènes physiologiques, est toujours au fond leur trop grande compléxité qui les empêche d'être définis et suffisamment comparables entre eux. L'emploi des moyennes en physiologie et en médecine ne donne le plus souvent qu'une fausse précision aux résultats en détruisant le caractère biologique des phénomènes [Another very common type of application of mathematics in biology lies in the use of averages or rates, which in medicine and physiology, leads unavoidably, so to speak, to error. There are undoubtedly several reasons for this; but essentially the biggest threat in the application of numbers to physiological phenomena resides always in their all too broad complexity which prevents them from being defined and comparable between them. The use of averages or proportions in physiology and medicine provides constantly misleading accurate outcomes which obscure the biological nature of phenomena]. (p. 235)*

Uncontrollable, inherent complexity of phenomena across scholarly disciplines prevents science from relying on numbers and their results. The 19th-century, well-fitting remarks against overly reliance on statistics and numbers tend to escape research method circles, leaving the concept science trapped in relentless quantification.

After life sciences, the concept igniting misunderstandings about positivism includes statistics. One reason why statistics is regarded as the marker of positivism is because of the emphasis placed on physics in most teachings of positivism [details infra], more particularly the method of social physics proposed by Comte (1824a, p. 6) for social research. Physics was proposed because of its tendency toward objectivity in its mathematical formulation of natural phenomena. Perhaps most confusion arising from the misunderstandings about positivism centers around the concept statistics. Part of the confusion is that statistics does not entail the same thing in physics as it does in social, human sciences. It is not uncommon for authors to simply mistake one for the other when discussing positivism. To explain, statistical physics often called statistical mechanics is rather an exhibition of systems/models and the mathematical formalization thereof whereas statistics in the social, human sciences focuses on real world phenomena to the extent that a given sample represents the larger population out

of which the sample was extracted. On the one hand, the mathematical formalization of systems or models is primarily what makes statistical physics more of a branch of mathematics than a branch of social sciences (Bouchaud, 2023; Cimini et al., 2019; Rocco, 2023). On the other hand, engagement with real world phenomena causes statistics to align with social, human sciences. By all means, this difference is commensurate with the root of the term statistics, namely, *state* (hence statistic), nation, country, population, society, etc. --- more so with the nature of statistical physics (details below).

Indeed, since its early beginnings in the 19th century onward, statistical physics has seen its framework and/or end-product to be nothing but mathematical articulation/elicitation of concerned systems or models. On this point, Brown (2018) noted,

> *As a mathematical discipline, the study of dynamical systems most likely originated at the end of the nineteenth century… But as the study of what it actually means to model phenomena via functions and equations, Dynamical Systems is sometimes called the mathematical study of any mathematical concept that evolves over time… A dynamical system is a mathematical formalization for any fixed rule that describes the dependence of the position of a point in some ambient space on a parameter [emphasis in original]. (p. 1)*

As is apparent from the above explanation, an emphasis on systems or models as the primary objective of research will lead to research questions and goals unconcerned with real world problems. This is not by any means claiming that systems and/or models generated by statistical physics cannot and should not be applicable to real world phenomena. Rather, the applicability of systems and/or models to real world phenomena and the assessment or optimization of ensuing outcomes, if any, do not fall within the compass of statistical physics. One much closer or more correct terminology for statistical physics might be mathematical physics.

The association of the phrase statistical with physics was first suggested in 1871 by 19th-century British physicist James Clerk Maxwell (1831-1879) when reflecting on the system displaying the properties of heat, and the science therefrom, namely thermodynamics. Maxwell (1871) reasoned,

> *The whole science of heat is founded on Thermometry and Calorimetry… which is the investigation of those relations between the thermal and the mechanical properties of substances which form the subject of Thermodynamics. The whole of this part of the subject depends on the consideration of the Intrinsic Energy of a system of bodies, as depending on the temperature and physical state, as well as the form, motion, and relative position of these bodies. (p. v)*

As seen in the above statement, the system heat was looked at from an understanding of a system comprised of relations and dependencies between physical bodies. Maxwell (1871) went on to propose a method of analysis thought to be appropriate for such a system, saying,

> *In dealing with masses of matter, while we do not perceive the individual molecules, we are compelled to adopt what I have described as the statistical method of*

> *calculation, and to abandon the strict dynamical method, in which we follow every motion by the calculus. It would be interesting to enquire how far those ideas… are applicable to our actual knowledge of concrete things, which, as we have seen, is of an essentially statistical nature, because no one has yet discovered any practical method of tracing the path of a molecule, or of identifying it at different times. (p. 309)*

As described above, the suggested adjective statistical came with some no small expectations and caveats. Hence, Maxwell (1871) made a crucial remark yet largely unheeded if not unknown in most subsequent materials of statistical physics, adding,

> *I do not think, however, that the perfect identity which we observe between different portions of the same kind of matter can be explained on the statistical principle of the stability of the averages of large numbers of quantities each of which may differ from the mean. For if of the molecule of some substance such as hydrogen, some were of slightly greater mass than others, we have the means of producing a separation between the molecules of different masses, and in this way we should be able to produce two kinds of hydrogen, one of which would be somewhat denser than the other. As this cannot be done, we must admit that the equality which we assert to exit between the molecules of hydrogen applies to each individual of molecule, and not merely to the average of groups of millions of molecules. (p. 309)*

As can be deduced from the statement seen earlier, from its conception as a discipline statistical physics was already challenged by a discrepancy between the real-world manifestation of the bodies or molecules experimented on and the systems adopted. Despite the caveat posed at the start of statistical physics, the discrepancy advised of has remained most vastly unattended to.

Statistics in social, human sciences, however, presents researchers/scientists with a rather distinct role --- one of heads-on involvement with real world phenomena. As Weinberg and Abramowitz (2020) posited,

> *In general,… what holds true for the sample also holds true for the population at large. These two factors are the method of sample selection and the size of the sample. Only when data are collected on all individuals about whom a conclusion is to be drawn (when the sample is the population and we are therefore in the realm of descriptive statistics), can the conclusion be drawn with 100 percent certainty. Thus, one of the major goals of inferential statistics is to assess the degree of certainty of inferences when such inferences are drawn from sample data [emphasis in original]. (p. 2)*

As observed supra, mathematical or statistical physics operates from and around a system-centric paradigm/worldview whereas statistics operates from and around a real world-centric paradigm/worldview. Little to no wonder that "Dialogue between [statistical] physicists and economists therefore remains difficult" (Bouchaud, 2023, p. 9). Failure to take into account the historically long received methodological difference separating statistical or mathematical

physics from social sciences, statistics, or demography can and does lead to the type of misunderstandings and accompanying counter-productive discussions complained of in the present paper.

As is now clear, contrary to popular belief, statistics is not a branch of physics per se. Statistics was not an established science until the 19th century. Yet, since its inception in the first half of the 19th century, statistics was a branch of political science, henceforth a social science. As an illustration, the well-known 19th-century encyclopedia, *The Penny Cyclopaedia* (1842) noted,

> *Statistics is that department of political science which is concerned in collecting and arranging facts illustrative of the condition and resources of a state… It is chiefly to the rise of political economy that we are indebted for the cultivation of statistics… A limited knowledge of facts had previously been an obstacle to the progress of political economy; and on the other hand the neglect of that science caused indifference to statistical inquiries… For this reason, statistics which had been neglected until political economy rose into favour, have since been cultivated with continually increasing care and method, as that science has been further developed, and the knowledge of its fundamental principles widely diffused. (p. 456)*

As described supra, statistics arose from political science. The typical explanation of statistics as a social science is with the idea demography, a variant term for statistics. This is because statistics seeks to inquire into the movements of human populations. This was confirmed in the 19th-century dictionary of medicine and life sciences by Littré, Baillière, and Robin (1873) when they asserted, "*la démographie… a montré la première et la plus brillante application de la méthode statistique* [demography… has undertaken the first and most brilliant application of statistical method]" (p. 1464). The social science dimension of statistics needs to be kept in mind for a better understanding of positivism in general and research method in particular. Recently, the social science nature of statistics was corroborated by Acree (2021) saying, "Beginning just before World War II, the new theory of statistical inference developed during the 1920s and 1930s transformed the social sciences and neighboring disciplines" (p. 4). The most important implication of statistics being a social science discipline, quite often forgotten, is that statistics alongside its widespread tests and procedures were devised, revamped, and still are, by social scientists (e.g., sociologists, psychologists, demographers, etc.) for the purpose of social science phenomena. It is no accident that the software package for statistics is called SPSS, acronym standing for Statistical Package for the Social Sciences (https://www.ibm.com/spss). The central teachings of positivism delineated supra are not a matter of physics so much as of scholarly knowledge in general and social science research in particular. Positivism sought to outline the skills of objectivity in the pursuit and production of scholarly knowledge --- giving weight to reason (i.e., rationalism), universal doubt (i.e., Cartesianism), self (i.e., solipsism), state of mind (i.e., psychologism), observation (i.e., empiricism), etc.

Most closely related to statistics and all too often taken to be synonymous with and/or typical of positivism is the concept measurement, measurability, or more precisely numbers. While the fathers of positivism, mentioned above, notably Comte (1824a, b, 1848), Bacon (1597/1859; 1620/1901) and Descartes (1637, 1644, 1684/1908), did not equate knowledge or certainty with measurement or number, a cause-effect relation between positive knowledge and

URL: http://dx.doi.org/10.14738/assrj.1112.17989

measurement is not uncommon. The correlation of positive knowledge and measurement results from a widespread belief basically stating that one cannot possess positive knowledge about that which they cannot measure/number (details below). Of note here is that while numbers enjoyed sophisticated usage in ancient civilizations around the globe (i.e., Egyptian, Greek, Chinese, Arab, Aztec, etc.), they were not elevated to the status of best/positive knowledge. Even in cultures that possess no writing/script, numeracy/numbers are in no way regarded as the best form of knowledge. Because these cultures do not possess writing, they would have every reason, one would assume, to raise numbers to the status of best, measurable knowledge, but they do not in the slightest. As demonstrated above, spectacular achievements of human civilization such as Egyptian pyramids dating as far back as 2780 BC (Verner, 1997/2001) and Notre Dame cathedral in Paris, France, the construction of which stretches as far back as 1163 CE (Sandron & Tallon, 2013), to give just these two examples, were built without and well before the advent of statistics field, much less modern physics. Interestingly, the claim of and debate about positivism was/is about scholarly knowledge, not physics, statistics, or numbers.

The idea number or measurement cannot be said, as it does, to have arisen from positivism inasmuch as deity Thoth in ancient Egypt was the custodian of number as well as sciences widely dubbed as exact sciences such as mathematics and chemistry (Lichtheim, 2019). The fact that the roles played by god Thoth comprised number along with mathematics, among others, is a telling indication that number and mathematics were, for that matter, part of scholarly research during that time. There is no better evidence of measurement and the use of it than Egyptian pyramids and their construction. Positivity of knowledge was no less than reflected in the roles incarnated by deity Thoth, such as sciences, mathematics, justice, impartiality, order, accuracy, balance, etc. While cause of contention might emerge as to the originality and/or preeminence of Egyptian deity Thoth vis-à-vis Greek deity Hermes, the application and/or evolution of the title "thrice-great Egyptian Thoth to Hermes Trismegistus" (Bull, 2018, p. 32), meaning, Hermes three times great, biggest; bears unequivocal testimony to the special place of Egyptian deity Thoth. Egyptian deity Thoth special place is further confirmed by the fact that there existed several other Greek deities of whom similar Egyptian deities were identified (Hornung, 1999/2001; Bull, 2018), but none of them was accorded the title of three times or more as great as was Hermes, based on an association of him with Thoth. One point far worth being borne in mind is that Egyptian god Thoth was the god that enjoyed the longest worship throughout the entire history of Egypt. Least of all, Greek civilization was/is much younger than that of Egyptians (Bull, 2018). These and many other facts pointedly underscore the originality of Egyptian god Thoth and attendant roles. Number, measurement, mathematics, and science, among others, were no unfamiliar, unknown practices in ancient Egypt.

Still, given the nature of misunderstandings overlaying current scholarly research method, it is worth pondering the foundation of statistics, in the 19th century, and to a larger extent measurement or number, each of which was met with unflagging skepticism (details below). Although the practice of numbered knowledge or measurement occurred in ancient Egypt, as proven supra, it is proposed by some authors to have begun with 17th-century English philosopher, economist, scientist William Petty (1623-1687) when he propounded, "From hence it necessarily follows, that this people must labour hard, and set all hands to work: rich and poor, young and old, must study *the art of number, weight, and measure* [emphasis added]

(Petty, 1690, p. 21). Notwithstanding, the practice of number, weight, and measure is a preference/practice that can be found or justified at any time and in any location of human civilization, based on the needs at hand. For the purpose of our discussion, the direct correlation between positive/best knowledge and numbers did not start until the second half of the 19th century, more precisely with the famous statement made by English explorer Francis Galton (1822-1911). Galton (1879) alleged "that until the phenomena of any branch of knowledge have been subjected to measurement and number, it cannot assume the status and dignity of a science" (p. 149). According to this claim, science was believed to consist in and deal with numbers.

Ten years later after Galton (1879) statement, seen above, English physicist William Thomson (1824-1907), aka Lord Kevin, made yet another famous claim with lasting effect on science and its research, stating,

> *In physical science the first essential step in the direction of learning any subject is to find principles of numerical reckoning and practicable methods for measuring some quality connected with it. I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind: it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science, whatever the matter may be. (Thomson, 1889, pp. 73-74)*

As can be imagined, science is presented as that which involves and produces measurable and/or measured knowledge. Such a statement, although extraordinarily charming, does not reflect the tenets of positivism in the forms of Cartesianism, rationalism, solipsism, psychologism, and empiricism, discussed supra. The context within which Thomson (1889) made the above statement is of great interest here, namely a lecture entitled *Electrical Units of Measurement* delivered by Thomson at the Institution of Civil Engineers on May 3, 1883 specifically about the practical applications of electricity (Thomson, 1889, p. 73). The context was one at the point of which the inventions of electricity spurred by the Industrial Revolution were in the process of being articulated, therefore calculation of electrical properties of matter was needed for safety and trade purposes. The idea was to find units with which the properties of matter seen in electricity could be computed. As Thomson (1889) explained,

> *The first step toward numerical reckoning of properties of matter, more advanced than the mere reference to a set of numbered standards… is the discovery of a continuously-varying action of some kind, and the means of observing it definitely, and measuring it in terms of some arbitrary unit or scale division. But more is necessary to complete the science of measurement in any department; and that is the fixing on something absolutely definite as the unit of reckoning, which, with reference to electric and magnetic science, is the subject of my lecture of this evening [emphasis added]. (p. 80)*

As elicited supra, the goal of Thomson was not so much about knowledge in general as it was about the units of analysis/measurement in the area of electricity, for the specific purpose of trade across Europe, nothing more. In fact, rather than positive knowledge per se, the idea

URL: http://dx.doi.org/10.14738/assrj.1112.17989

measurement presupposes arbitrary unit and scale as acknowledged by Thomson himself. Numbers or scales are arbitrary insofar as the space/division set from one number/scale to another remains nothing short of discretionary. The arbitrary nature of numbers and scales amounts to an utter reversal of objectivity, the kernel of positivism.

Furthermore, steering away from the belief of measurement as the core of science, Thomson (1889) himself clarified,

> *There cannot be a greater mistake than that of looking superciliously upon practical applications of science. The life and soul of science is its practical application, and just as the great advances in mathematics have been made through the desire of discovering the solution of problems which were of a highly practical kind in mathematical science, so in physical science many of the greatest advances that have been made from the beginning of the world to the present time have been made in the earnest desire to turn the knowledge of the properties of matter to some purpose useful to mankind [emphasis added]. (pp. 79-80)*

As is now apparent, science is defined as that which has a purpose/impact on humanity. In other words, science and the knowledge produced center around the impact on and/or change of humanity rather than mere measurability or replication of units for the sheer sake of them. Without such an impact-driven notion, our view on science is nothing but an arrogant error. This is precisely because measurement remains a finite, fallible endeavor. Humans have used numbers since time immemorial. As explained earlier, both in ancient Egypt and ancient Greece, numbers were highly sophisticated in arithmetic, geometry, and mathematics, for instance, but they were not accorded the status of best knowledge, either. No methodology textbook regards numbers as the best form of knowledge (Babbie, 2021; J.W. Creswell & J.D. Creswell, 2018). Even most startlingly, Thomson (1889) himself acknowledged, "Nothing that we can measure is inconceivably large or inconceivably small in physical science" (p. 147). This critical qualification by Thomson on measurement remained, and still does, one of the least known and discussed truisms of research method materials both in quantitative and qualitative research. The direct consequence is that infinitely large as well as infinitely small units rather fall beyond scientific capability, much less human imagination. Weaver (1960) confirmed the qualification/caution on numbers in his emphasis on science limitations regarding infinitely large and small reality. The statement above showcases the limitations of numeracy, well proven across civilizations. Yet, the universe and the atom, to name just a few examples, are inconceivably large and small, respectively.

Galton (1879) and Thomson (1889) statements of highly romanticized, one shall say, view of numbers are completely at odds with the stringent objections raised exactly in the 19th century against the then nascent statistics and accompanying cult of numbers. Evidently, in 1842, *The Penny Cyclopaedia* sounded a warning,

> *That facilities for deception are afforded by statistics cannot be denied; but fallacies of this kind, like all others, are open to scrutiny and exposure. Reliance need not be placed upon statements of facts nor on numbers; unless supported by evidence; and inferences from them should only be admitted according to the rules by which all sound reasoning is governed. (p. 456)*

Caution was issued against reliance on numbers, designed to promote and practice statistically driven science.

Perhaps, the most open defiance of measurement being advocated as the core of physical sciences is with quantum physics (Freire Jr et al., 2022; Hacking, 2012; Heisenberg, 1927, 1930). Quantum physics is a reminder that far beyond numbers, nature is composed of waves swarming with convoluted interactions rather than linear, measurable, and lab-destined units. Quantum physics brings to the forefront the entangled complexity of reality. Areas indicative of complexity wherein numbers are utterly inappropriate include smell, fragrance, scent, flavor, zest, sweet, color, hue, tint, voice, pitch, shriek, touch, feel, etc. Most if not all values such as trust, love, peace, truth, justice, compassion, etc. cannot be numbered, either.

Resulting from misunderstandings about positivism is the list of so-called exact or hard sciences. Much, if not most, of the time, the proposed list varies immensely from author to author, and other than positivism, the criterion in determining the list of exact sciences is not known nor specified, either. Such confusion simply fans the flames for the misunderstandings plaguing positivism. Thus, it is generally determined that "The experimental (positivist) sciences (e.g., physics, chemistry, economics, and psychology) are often seen as the crowning achievements of Western civilization" (Denzin, Lincoln, Giardina, & Cannella, 2024a, p. 11). For whatever reason, economics and psychology are included in the list of exact sciences. Alternatively, positivism is shown to be dominant in fields such as "education, medicine, and business" (Erickson, 2024, p. 53). Barring physics and chemistry, the rest of sciences enumerated above rather fall within the arena of social, human sciences and the world thereof. Furthermore, no science could be better inspiration for a rethink of social research than economics, psychology, education, biology, and business, to name a few. In fact, since their inceptions, these and similar disciplines have been in the vanguard of a revamp of science. The present paper did not aim to suggest a definite list of exact sciences, but rather to highlight the extent to which misconceptions about positivism are fueled. The most commonly if not universally listed exact science is physics essentially because of the mathematical component of it. However, as discussed above, the objectivity of science as well as the history of physics are in no way a by-product of positivism.

Most misconceptions seen in textbooks and publication materials across disciplines regarding science and accompanying concepts are part of the idea that a physicist's lab completely supplants the physical world, rather than being a fraction if not a manipulation of it. Such a position loses sight of the fact that the physical world is too intricate to be reduced to any imagination and action. As Camic (2021) cautioned, the flaw sits with the belief "that… only quantifiable information is 'real' (and valuable)" (p. 9). The misconception about physical sciences is easily held about life sciences, with the life world or life itself tending to be simply supplanted by or reduced to a biologist's lab. The dominance commanded by positivism in any given discipline does not mean origination/creation of that discipline, much less science.

Founder(s) of Positivism

Examination of who might be the founder(s) of positivism brings the teachings and understanding of positivism into sharper focus. For a long time, there has been heated controversy on whether Comte or Saint-Simon (mentioned supra), a contemporary, friend, and

URL: http://dx.doi.org/10.14738/assrj.1112.17989

professor of Comte, is the founder of positive philosophy --- positivism broadly speaking. As Muckle (1908) vividly put it,

> *da beweisen die Schüler Comtes die völlige Originalität ihres Lehrers, die Saint-Simonisten Comte einfach als Plagiator hinstellen wollen. Eine ganze Literatur handelt schon über dieses Problems, ohne daß allerdings das letzte Wort in dieser Sache gesprochen werden wäre [because Comte students proclaim the complete originality of their professor whereas the staunchest supporters of Saint-Simon want to make Comte look like nothing but a plagiarizer. An entire literature has already dealt with this issue, without however having the last word on the matter]. (p. 252)*

The controversy about the founder of positivism bears consideration because of the role that positivism continues to play in research design across disciplines. One stronger reason for this is that, as outlined supra, a researcher's idea about positivism determines the manner in which research is undertaken. While the term positivism is arguably believed to have been first used by Saint-Simon in 1817 (Saint-Simon, 1817), as pointed out earlier, an examination of historical materials continues to shed greater light on Comte as the originator of the word positivism. For the purpose of our discussion, however, three most important facts call for attention.

The first most important fact regards the relationship between Saint-Simon and Comte. There is an overwhelming consensus among critics (Littré, 1877; Bourdeau, 2016, 2019) that the relationship between Saint-Simon and Comte was the closest, longest, and most distinct in Saint-Simon life, stretching from 1817 to 1824. From these characteristics of the first most important fact result a number of consequences. Comte relationship with Saint-Simon started in 1817 when Comte first met Saint-Simon at L'École Polytechnique de Paris. One point of note is age gap between Comte and Saint-Simon; Comte, as presented above, was born in 1798 and died in 1857 whereas Saint-Simon was born, more than three decades earlier than Comte, in 1760 and died in 1825. In 1817 Comte was only 19 years old while Saint-Simon was 57 years old. Comte was a student of Saint-Simon for no more than two years, from 1818 to 1820 (see Littré, 1877, p. 11). In addition, Comte was secretary of Saint-Simon from 1817 to 1824, a position Comte took over from Augustin Thierry (1795-1856), an adopted son of Saint-Simon (see Thierry, 1817). Comte was also younger than Thierry, who was born in 1795, the adopted child of Saint-Simon (Thierry, 1817). Close collaboration between Comte and Saint-Simon with such a wide age gap suggests something no less valuable and original found by Saint-Simon in Comte, and not in others. This is further confirmed by the glaring popularity of Saint-Simon prior to meeting Comte, let alone Comte was nearly a youth, as noted supra, with no social profile/fame (i.e., job, status, degree, money, etc.) at the time. Collaboration of Saint-Simon with Comte was thus no accident, neither was the decision of Comte to part company with Saint-Simon.

It was no mere random that professor Saint-Simon did not collaborate for such a long time with one or more colleagues out of the many that he had at L'École Polytechnique de Paris, in France and in the US (because Saint-Simon had lived in the US for some time (see Littré, 1877; Bourdeau, 2019). Equally, there was no point for professor Saint-Simon at the height of his fame to collaborate with a student, more so a youth/young, for more than half a decade, seven years, especially regarding academic work. Most paradoxically, the collaboration between Saint-

Simon and Comte was specifically focused on academic, philosophical work (Littré, 1877; Bourdeau, 2016, 2019). Academic, scholarly work was something that Saint-Simon as an illustrious professor had been teaching and practicing several years before even meeting Comte. Saint-Simon did not need a student in order to publish his own works, either. To add to the dilemma, it is reported that not long after Comte became secretary of Saint-Simon in 1817, Comte represented and defended victoriously Saint-Simon in court when Saint-Simon was sued by the royal family (see Bourdeau, 2016, p. 281). Furthermore, Comte came to the rescue of Saint-Simon in 1823 when Saint-Simon attempted to commit suicide (Littré, 1877; Bourdeau, 2016). In more ways than one, the relationship that Saint-Simon entertained with the youth/young Comte called into the question the originality and personality of Saint-Simon, more so the co-authorship of Saint-Simon with Comte.

The second most important fact is that Saint-Simon was not the only professor that Comte had known at L'École Polytechnique de Paris. Nor was Saint-Simon the only figure that Comte came across in person or in writing. Indeed, Comte dedicated a whole book to professor Daniel Encore (Littré, 1877; Bourdeau, 2019), a colleague of Saint-Simon at L'École Polytechnique de Paris, from which Comte graduated. For example, Comte corresponded with English philosopher John Stuart Mill, to whom Comte referred in his writings, not to mention several others (e.g., Kant, Descartes, Bacon, etc. Also interestingly, Comte credited Condorcet with ascribing the status of empirical/positive sciences to social sciences (see Comte, 1824b, pp. 132-133). One immediate consequence of the second most important fact is that being a student of a popular professor (and Saint-Simon was one of them) is in and by itself an honor for students, and even more so when a student acknowledges in public or in publication the borrowing or implementation of their professor's term. In other words, the acknowledgement and/or implementation of a professor's term (in this case Saint-Simon's term) is no way a disservice or disgrace, but rather an honor for both the student (in this case, Comte) and the professor.

There was no apparent reason for Comte to conceal and/or ignore any borrowed concept of Saint-Simon, especially one that was as central as positivism. Yet, as Comte (1824a), when introducing his book on positive social research, put it,

> *Afin de caractériser avec toute la précision convenable l'esprit de cet ouvrage, quoiqu'étant, j'aime à le déclarer l'élève de M. Saint-Simon, j'ai été conduit à adopter un titre general distinct de celui des travaux de mon maître [Although a student of Saint-Simon, I enjoy proclaiming to be so, I was led to propose a generic title different from the works of my professor in order to best describe the thesis of this book]. (p. 6)*

More interestingly, a professor will not tolerate nor claim credit for a word/term they never invented, for fear of bearing the burden of having to define, clarify, and/or defend the new term before the potential critics of detractors or fellow academics.

Indeed, as Saint-Simon and Comte split in 1824 a little before Comte published his book on positive social research in open disagreement with Saint-Simon, Saint-Simon (1824) clearly warned in a foreword to that book, saying,

URL: http://dx.doi.org/10.14738/assrj.1112.17989

> *Ce troisième cahier est de notre élève, M. Auguste Comte. Nous lui avions confié, ainsi que nous l'avons annoncé dès notre première livraison, le soin d'exposer les généralités de notre système: c'est le commencement de son travail que nous allons mettre sous les yeux du lecteur. Ce travail est certainement très-bon; considéré du point de vue où son auteur s'est placé; mais il n'atteint pas exactement au but que nous nous étions proposé, il n'expose point les généralités de notre système, c'est-à-dire, il n'en expose qu'une partie, et il fait jouer le rôle prépondérent à des généralités que nous ne considérons que comme secondaires [This third series is written by our student, Mr. Auguste Comte. We assigned to him, as we announced in the first series, the task of laying out the fundamentals of our system. This is the beginning of his work that we are bringing to the attention of readers. This work is definitely excellent, from the point of view of its author, but it falls short of describing the fundamentals of our system, meaning that it only provides part of our system, and it accords a central role to reflections that we consider less important]. (p. 1)*

As can be observed above, Saint-Simon is clearly departing from the writings of Comte, his student. If, in fact, a term was an invention or hard work of a professor, the professor would claim and defend that term tooth and nail, keeping it separate from the student work and name. A professor who had invented a term/idea would also tend to teach that term or idea almost to everyone, not just one student, and everywhere as soon as they get a chance to do so. This was not the case with Saint-Simon as demonstrated supra. What is even most interesting is Saint-Simon funerals. While Comte attended Saint-Simon funerals upon Saint-Simon death, Comte did not deliver a discourse/speech for the occasion (Littré, 1877). Yet, the funeral was the right occasion on which the terms or works borrowed from the deceased professor could have been publicized. Thus, it can be inferred from the second most important fact that the work of Comte about positive social research was that of Comte.

The third and last most important fact resides in Saint-Simon position touching on the core tenets of positivism. Most pertinent to our discussion is a detailed explanation, often unmentioned if not unknown in much literature on positivism, made by Saint-Simon in differentiating his work from that of Comte. As Saint-Simon (1824) elucidated,

> *Les capacités scientifiques, dans la direction de Platon et dans celle d'Aristote, doivent être considérées par les industriels comme leur étant d'une égale utilité, et ils doivent également leur accorder une considération égale, et leur répartir également les moyens de s'activer. Voilà notre idée la plus générale; elle diffère sensiblement de celle de notre élève, qui s'est placé au point de vue d'Aristote, c'est-à-dire au point de vue exploité de nos jours par l'académie des sciences physiques et mathématiques, il a considéré par consequent la capacité aristoticienne, comme la première de toutes, comme devant primer le spiritualisme, ainsi que la capacité industrielle, et la capacité philosophique. De ce que nous venons de dire, il résulte que notre élève n'a traité que la partie scientifique [de] notre système; mais qu'il n'a point exposé sa partie sentimentale et religieuse: voilà ce dont nous avons dû prévenir nos lecteurs. Nous remédierons autant qu'il nous sera possible à cet inconvénient dans le cahier suivant; en présentant nous-mêmes nos généralités [Scientific reflections according to the doctrine of Plato and to that of Aristotle,*

> *must be considered by social organizers as of equal necessity, equal value, and equal implementation. That is our most key idea, which differs substantially from that of our student, who took the point of view of Aristotle, that is, a point of view espoused nowadays by scholars dealing with physics and mathematics. He therefore considered the Aristotelian school of thought as the central one, overriding spiritual beliefs, social values, and philosophical assumptions. It follows from what we just said that out student exposed the scientific part of our system rather than the subjective and religious part. That is what we had to warn our readers about. We will be redressing this flaw as much as we can in the following series by describing ourselves our key ideas]. (Saint-Simon, 1824, pp. 1-2)*

While the characterization of Aristotle presented supra by Saint-Simon is not entirely correct, the statements advanced in desisting from Comte position have great merit. As described earlier, positivism tends to value the manner in which traditional disciplines of physics and mathematics conduct research, at the expense of human experiences, spiritual values, philosophical reflections, and metaphysical ideas, etc. The statement above of Saint-Simon, among others, exemplifies one of the starkest pieces of evidence that Saint-Simon was not a positivist, nor the founder of positivism.

To add flavor to the discussion, the warning delivered by Comte (1824a) himself about his book on positive social research needs mention. Comte (1824a) stated,

> *Cet ourvrage se composera d'un nombre indéterminé de volumes formant une suite d'écrits distincts, mais liés entre eux, qui tous auront pour but direct soit d'établir que la politique doit aujourd'hui s'élever au rang des sciences d'observation… Le but de la première partie est proprement d'établir d'une part, l'esprit qui doit régner dans la politique, considérée comme une science positive; et, d'autre part, de démontrer la nécessité et la possibilité d'un tel changement… En un mot, la première partie traite de la méthode en physique sociale, et la seconde de son application [This book will be comprised of an unspecified number of volumes pertaining to a series of separate but related writings, which all have the precise goal of establishing that social research today must be raised to the status of empirical sciences… The first part aims specifically to, on the one hand, outline the worldview that should prevail in social research regarded as positive research, and on the other, determine the relevance and feasibility of such a change… In short, the first part deals with method in social physics and the second with the implementation of it. (pp. 5-6)*

As seen in the above explanation, one of the most distinct teachings of Comte about positivism is the view of social research as social physics, research yielding results in the manner identical to that of physics and mathematics. In furtherance of positivism, Comte also proposed the consideration of social research as social physics to be a change. This point all too often neglected is one in which Saint-Simon and Comte diametrically differ. As Saint-Simon (1824) concluded,

> *Au surplus, malgré les imperfections que nous trouvons au travail de M. Comte, par la raison qu'il n'a rempli que la moitié de nos vues, nous déclarons formellement*

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> *qu'il nous paraît le meilleur écrit qui ai jamais été publié sur la politique générale [On the whole, despite the shortcomings that we noted in the work of Mr. Comte, on the account that he described only part of our views, we officially declare that he produced the best writing ever published on general social research]. (p. 2)*

As noted in the remark made above, positivism as applied in social sciences has a lot to do with Comte teachings. Authorship of Comte does not mean that prior to Comte writings, just like any line of thought, influences did not occur. A contention can be made that the first use of the word positivism traces back to Saint-Simon (1817) writing. The argument might be that, as Saint-Simon (1817) alleged,

> *La politique dès lors n'est plus dans le vague de conjectures; elle n'est plus livrée au caprice des circonstances; son sort n'est plus attaché à celui d'un pouvoir, d'une forme, d'un préjugé; son terrain est connu; sa manière est appréciée; et la science des sociétés a désormais un principe; elle devient enfin une science positive [Social research does no longer reside in presumptions, it is no longer dependent on circumstances, its status is no longer subject to an institution, a form, prejudice; its status is known; its approach is acknowledged; social science has therefore a principle: it finally becomes positive science]. (pp. 86-87)*

While the statement formulated supra shows social research to be positive research, the use of the word positive was common in those days following the Cartesian principle of doing science, as discussed earlier. Further, Saint-Simon statement seen above fails to articulate the gist of positivism, namely social research as social physics or empirical science. In effect, Saint-Simon (1817) specified that

> *Au reste, on ne crée pas un principe; on l'aperçoit et on le montre. Celui que je viens d'établir n'est pas le résultat des mes travaux, il est dû à ces écrivains, à ces savants dont j'ai parlé [Nonetheless, a principle is not created, rather it is observed and demonstrated. The one that I just stated did not result from my work, it belongs to those writers, those scholars that I mentioned]. (p. 88)*

The explanation offered by Saint-Simon calls into question Saint-Simon originality on the position proposed about social science as positive science. It bears noting here that 1817 was the year in which Comte took over as the secretary/writer of Saint-Simon (Littré, 1877; Bourdeau, 2019). Still, other writers suggested social research to be positive because the Enlightenment era as explained earlier has at its core the idea that science must be positive/indubitable.

Perhaps, what refutes the most Saint-Simon originality regarding positivism is Saint-Simon refusal to engage with the discussion and implementation of social science as positive science. Saint-Simon (1817) persisted,

> *Vous me direz, sans doute, Monsieur, … qu'après être monté au principe par l'observation des faits, je dois descendre ensuite à des expériences de ce principle, et soumettre ainsi mon opérationx à sa preuve. Je le pense comme vous; mais… je ne dirai rien désormais, qui ne soit un développement et une application de ce principe,*

> *que pour le moment je me contente d'avoir posé [One would no doubt, Sir, argue with me that after stating the principle by observing facts, I should then propose an experimentation of the principle to prove it. I agree with you on that, but… from now on I won't make any statement whether about the development or implementation of the principle, which for the moment I did no more than stating]. (pp. 88-89)*

As explained above, failure to advance reflections on social research as positive research leaves researchers and readers puzzled as to what positivism does and does not entail. Saint-Simon statement in the above paragraph further confirms and sheds greater light on Saint-Simon (1824) detailed explanation of substantial difference between him and his student Comte. The difference stated by Saint-Simon (1817, 1824) to be between him and Comte is typical of the practice vs theory war (Hollnagel, 2017) looked at earlier. Saint-Simon seemed to have gone a bit further by rejecting positivistic reflections and as well as reflections about the systems or patterns behind practical social research. Saint-Simon disregarded the tenets of positivism as well as the criticisms against or self-reflexivity about (details below) social research practice. Most pertinently, the discussion of social physics or empirical sciences is the flaw for which Saint-Simon (1824, pp. 1-2) blamed Comte, regarding the work Saint-Simon assigned Comte, as noted supra. The flaw was also something Saint-Simon insisted on to pinpoint the difference between him and Comte, and to correct himself by removing the part of social science as empirical science. It can thus be inferred that the idea social science as social physics or empirical science, a key feature of positivism, was none of Saint-Simon interests. More than two centuries after Comte (1824b, 1848) steady appeals of social physics, scientific social research was corroborated by Babbie (2021) insisting, "Social regularities do exist, then, and are worthy of theoretical and empirical study. As such, social scientists study primarily social patterns rather than individual ones. These patterns reflect the *aggregate* or collective actions and situations of many individuals" (p. 12). Theory is that which characterizes science, rather than the adjectives social or human. In light of Comte (1824b, 1848) work on positivism, inquiry in social sciences was performed in compliance with positive facts in the same way as it is in natural sciences or sciences. Comte work gained greater publicity with the work of French sociologist Émile Durkheim (1858-1917) in which Durkheim (1895/1982) presented sociology as social physics, a concept defended by Comte (1824a, p. 6). It is useful here to recall, as stated earlier, that the English word positive stands for certain, indubitable, exact, objective, universal, etc. Thus, positivists regard knowledge as being indubitable, certain, exact, etc. and they define science as the endeavor to attain positive knowledge that reflects indubitable and universal facts and that is replicable/transferable across time and location rather than being affected by contexts, feelings, particularities, opinions, etc. Scientific knowledge is thus the type of knowledge that applies from context to context. Bacon (1597/1859) along with Descartes (1637, 1644, 1684/1908) are referenced considerably in Comte (1848) stance about positivism. For an informed scientific work to be completed, a look at a researcher's worldview is beneficial. Descartes (1637, 1644, 1684/1908) and Bacon (1620/1901) teachings prove to be some of the most influential documents of Modern Times or modernism, bringing in sharper relief the Enlightenment era or Age of Reason. Moreover, coupled with a massive reconstruction of Western Europe in the aftermath of World War II, the Industrial Revolution in the 1800s and early 1900s built additional momentum to modernism, or a variant word for positivism.

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To recap, positivism is the paradigm from which most scientific fields have originated and along the lines of which they tend to operate. Positivism constitutes the underlying context out of which and within which the activity of most disciplines takes shape. Positivism privileges the objectivity of knowledge, with weight being paid to the power of (1) reason, hence rationalism, (2) universal doubt, Cartesianism, (3) one's method, solipsism, (4) state of mind, psychologism, and (5) experiment, empiricism.

INTERPRETIVISM

The second worldview or paradigm in accordance with which scientific research operates is called interpretivism, interpretationism, or interpretativism. As a research paradigm or worldview, interpretivism rests chiefly on qualitative research and the methods thereof. Thus, interpretivism has come to receive varying appellations, based on what a researcher identifies qualitative research with (details below). The English term interpretivism came to the fore with the English translation of the German phrase "*verstehende Soziologie*" (Weber, 1921/2002, p. 8), literally rendered into English as interpretive or understanding sociology, and generally believed to be first used (details below) by 19th-20th-century German sociologist Max Weber (1864-1920). The German word *verstehend* is the gerund of the verb *verstehen*, meaning to understand, to comprehend, to grasp, etc. (see Duden, https://www.duden.de/). One common synonym of *verstehend* is the German gerund *interpretierend* (Weber, 1921/2002, p. 449), whose radical is the verb *interpretieren* which stands for: to interpret, elicit, explain, understand, etc., hence the word interpretivism. It follows that the phrase *verstehende Soziologie* is interchangeable with the phrase *interpretierende Soziologie*. Meanwhile, several decades after Weber (1921)/2002) work, interest in research methods has been on the rise across academic disciplines. But interpretive method and the movements therefrom have undergone considerable confusion (details below).

The blueprint for interpretive research might be with the work of Weber (1921/2002), specifically about *verstehende Soziologie*. Only too strikingly does this work contrast with an understanding of interpretivism as a sub-realist and/or subjectivist line of research. Authoritative materials of interpretive sociology/social research vastly disprove a view of interpretivism as subjectivism or sub-realism. Rightfully and powerfully, Weber (1921/2002) stressed,

> *Soziologie (im hier verstandenen Sinn dieses sehr vieldeutig gebrauchten Wortes) soll heißen: eine Wissenschaft, welche soziales Handeln deutend verstehen und dadurch in seinem Ablauf und seinen Wirkungen ursächlich erklären will. „Handeln" soll ein menschliches Verhalten (einerlei ob äußeres oder innerliches Tun, Unterlassen oder Dulden) heißen, wenn und insofern als der oder die Handelnden mit ihm einen Subjektiven Sinn verbinden. „Soziales" Handeln aber soll ein solches Handeln heißen, welches seinem von dem oder den Handelnden gemeinten Sinn nach auf das Verhalten anderer bezogen wird und daran in seinem Ablauf orientiert ist* [Social research (in the sense considered here of this term quite diversely employed) indicates a discipline, which, according to the intended meaning arising from an active agent or active agents, seeks to grasp by way of showing and thereby clarify the origins of social activity in the flow and effects thereof. "Activity" designates a human way of doing things (whether it is an external or inner act, desistance, or attitude) to the extent that an active agent or active agents assign to it a

> subjective meaning. "Social" activity, however, entails some such activity, which is associated with others' way of doing things and whose flow is geared toward that way. (p. 1)

As seen with the above explanation, social phenomenon/social action is taken to be a notable objection to the popular division of sciences, which identifies human/social sciences as those that aim to understand and natural/physical sciences as those that attempt to explain. This classic listing of sciences is traceable to German philosopher and psychologist Wilhelm Dilthey (1833-1911), with Dilthey (1894/1924) argument that "*Die Natur erklären wir, das Seelenleben verstehen wir* [One explains nature whereas one understands mental/emotional life]" (p. 144). The listing sought to differentiate human/social from natural/physical disciplines, with the understanding of meaning being the landmark. By contrast, the Weberian characterization of social research (with the word sociology taken in its broad sense) is based on nature, whose properties such as effects and flow are described to determine both the active role of involved agent(s) and meaning therefrom. Weber (1913/1922) further refuted the afore-shown listing of sciences, alleging,

> *Keineswegs nur zweckrationales Handeln ist uns verständlich: wir »verstehen« auch den typischen Ablauf der Affekte und ihre typischen Konsequenzen für das Verhalten. Das »Verständliche« hat für die empirischen Disziplinen flüssige Grenzen* [On no account can only rational oriented action/phenomenon be understandable to us, we can "understand" even the typical flow of emotions and outcomes of conduct. That which can be "understood" is fluid for empirical disciplines]. (p. 404)

As characterized above, a separation of disciplines resting on the Diltheyian consideration of the verb to understand vs to explain has been redressed. Social research is shown to consist in causally explaining or more exactly breaking down/clarifying the origins or root causes underlying that which is researched. Such an understanding of social inquiry speaks to the leading teaching of Comte (1824) laid out supra, with the idea social physics. Social physics implies the type of social research that attends to objective and such-like properties found in nature. As is now amply evident, interpretivism can in no way be portrayed as subjectivist, sub-realist, or merely text-pursuing.

Clarification about interpretivism has the potential to help researchers best (re)focus on interpretivism. One of the widest spread confusions infesting the word interpretivism or interpretive work rests on the idea that interpretivism has come to be a meaning cult, with meaning being commodified as the sole determinant/icon of interpretive practice. Forcefully relevant here is Ricoeur (1971) suggestion that interpretivism, more exactly interpretation or hermeneutics is a rendition of the event, rather than of the text about the event. Perhaps the most telling rendition of interpretive work is the English verb to interpret with which interpretive work can very well be identified. In fact, to interpret a person or reality has less to do with relaying or pursuing a meaning than with unfolding, unwrapping reality to the fullest extent. To interpret consists in unraveling to the fullest a given reality/event with all its facets. An interpreter is concerned with the full manifestation and/or (re)presentation of (the) reality being narrated, of which meaning is only a fraction, if not diversion. Three professions that best exemplify the endeavor to interpret might be with a lawyer, reporter, and tour guide. When a lawyer defends a client, a reporter presents a game, or a tour guide shows a city, the reality,

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incident, or event at hand remains the focus, rather than the meaning. To interpret an event or person's cause entails by far much more than the mere meaning of it. Etymological examination of the word to interpret diverges far beyond from the notion meaning and the pursuit thereof (details below).

It becomes unsurprising that although the phrases *verstehende Soziologie* and *interpretierende Soziologie*, commonly translated as interpretive sociology, have been perhaps the most popularized terms in much literature pertaining to interpretivism, Weber employed far more enlightening and lesser propagated phrases such as "*deutende Soziologie*" [showing/pointing/indicating sociology] (Weber, 1921/2002, p. 7), "*deutendes Verstehen*" [understanding while showing/indicating/pointing] (Weber, 1921/2002, p. 3), or "*interpretierend einzugreifen*" [to intervene/act by the force of understanding] (Weber, 1921/2002, p. 449), etc. These and many statements of Weber lend crisper clarity to interpretivism. Notwithstanding, for our discussion, the paper focuses on the term *verstehende Soziologie* variedly called *interpretierende Soziologie*, although, for clarity purposes, the nuances/phrases of Weber brought up earlier might come along from time to time.

Interpretive sociology, at least its teachings, can be said to have existed from time immemorial (details below). Nonetheless, as an articulate doctrine, interpretive sociology is a line of research method believed to have arisen, as mentioned supra, at the close of the 19th century with German sociologists George Simmel (1858-1918) and Max Weber (1864-1920). Interpretive sociology is a research method whereby traditional top-down research method was reversed to foreground a comprehension of people from people's own perspectives and a manifestation of people's own reality as from a local/native living that reality (Simmel, 1908; Weber, 1921/2002). Interpretive sociology also termed "*Verstehen* approach" (Bryman, 2016, p. 27) or "interpretive method" (David, 2010, p. xxiv) had enjoyed an array of trends (details infra). Regardless of the denomination used, interpretive method represents one of the most plastic terms of research methods, leading to no less confusion as to its features, founders, and meanings. Perhaps the biggest confusion surrounding interpretive method, as demonstrated earlier, resides in the determination of its founder, with a panoply of figures being listed from a variety of disciplines, such as Wilhelm Dilthey, Alfred Schütz, Paul Ricoeur, Georg Lukacs, Clifford Geertz, Herbert Blumer, Harold Garfinkel, Jurgen Habermas, etc. (see David, 2010, pp. xxvi-xxx). This paper seeks to refocus attention on the original context within and out of which interpretive method arose. Such a perspective enables a better understanding and implementation of interpretivism.

Some of, if not, the most illuminating accounts of interpretive sociology can be found with Lichtbau (2011, 2018, 2020). It bears specifying that interpretive sociology was created in the first half of the 19th century out of a need for the field of sociology that was then just being articulated as a university curriculum to define and defend its status as a science as well as the methods of its activity from that point onward. In applying interpretivism, the transition from sociology to other fields needs to be kept in mind. This is because as a research method interpretivism was originally designed as an effort toward investigating social action. More precisely, the method *verstehende Soziologie* was a method outlined in a publication of Weber (1921/2002) in response to Simmel position on the same topic (as will be next noted). The crux of the matter was/is to foster the understanding of others and the immersion into or familiarity with others' reality/life. Interpretivism can be found with Simmel (1908) famous phrase:

"*durch Verstehen Andrer und Verstanden werden*" [by understanding others/the researched and by allowing the researched to be understood]' (p. 674). This type of research can be said to be about a reversal of the researcher-centered or top-down method inherited from the Enlightenment era. Although positivism was keen on examining and privileging experiment and the laws therefrom, it was centered around the researcher's mind or thinking self, hence the word top-down. This means that scientific conclusions were being applied indiscriminately as universal laws, from the top (i.e., thinking self of a researcher) to the bottom (i.e., the researched) to all individuals across space and time.

Inversely, *verstehende Soziologie* or *interpretierende Soziologie*, is a type of social research that drills much deeper than the top-down approach by untangling the views, realities, or real world lives of others or of concerned individuals. Because the task of unraveling/untangling everyday life of others is a matter of research agenda and real world of the researched, it is an ongoing endeavor. As Simmel (1908) underlined, "*wir können unserer Interpretation des Andren, der Konstruktion seiner Innerlichkeit, oft garnicht Einhalt tun* [One is unable to put an end to one's interpretation of others, indeed to the unraveling of the other's deeper sensitivities/fuller life]" (p. 352). Interpretive research is more about the fuller manifestation/realization of the other's life/reality than the mere interpretation of a researcher. As Weber (1921/2002, p. 449) pointed out, behaving by way of nothing but unraveling, fulfilling the life of others. A (social) researcher practice/endeavor is one of unraveling the (fuller) life of the others.

It bears recalling that the attempt of interpretive research or interpretivism to immerse into and disentangle individuals' reality from individuals' own perspectives is the cornerstone of qualitative research. Central to interpretive research is an enhancement/fulfillment of the values, qualities, perspectives, beliefs, opinions, etc. of the researched and their world. The point being, "qualitative research is seen as an assault on this tradition, whose adherents often retreat into a 'value-free objectivist science' … model to defend their position" (Denzin, Lincoln, Giardina, & Cannella, 2024a, p. 11). It follows from this statement that interpretivism and qualitative research are interchangeable concepts. Objectivistic research is a softer label for positivism, discussed supra, or as Gravetter and Forzano (2018) suggested, "Science has been called 'a dispassionate search for knowledge,' meaning that the researcher does not let personal feelings contaminate the observations" (p. 18). As one can now see, confusing positivism with that which is not positivism can generate misleading research, concepts, methods, questions, and theories. A perfect example will be with interview. A positivistic interview is one in which close-ended questionnaires are performed, using identical, transferable variables to produce broad-based conclusions whereas an interpretivistic interview is one wherein open-ended questions about and immersion into people's experiences, struggles, pains, values, believes, opinions, etc. are used to enhance/open an understanding of the topic looked at.

The genesis of the term interpretivism holds considerable merit. Interpretivism is a derivation of the Latin deponent verb *interpretor*, *interpretari*, *interpretatum*, which means to interpret. This Latin verb is comprised of two components: the preposition *inter*, meaning within, across, between, etc., as well as the verb *praestare*, *praesto*, *praesteti*, *praestatum*, the meaning of which is to discharge, fulfill, perform, execute, etc. (Andrews, 1851, p. 1189). Furthermore, the Latin verb *praestare* is made of two particles: the prefix *prae*, standing for: in front, before, etc., and the verb *stare: sto, steti, statum*, which signifies to stand firm, be thick with, be full of, stand out, etc. (Andrews, 1851, p. 1190). Interestingly enough, both German present participles

URL: http://dx.doi.org/10.14738/assrj.1112.17989

verstehend and *interpretierend* result from the Latin verb *stare*. In detail, from the Latin radical verb *stare* spring both German verbs: *interpretieren*, transliterated from the Latin verb *inter-prae-stare*, and *verstehen* composed of two particles: *ver* (i.e., particle alluding to the Latin preposition *per*, meaning: through, with, throughout, etc.) and *stehen* (i.e., radical directly deriving from the Latin verb *stare*). The takeaway message about the meaning of *verstehende Soziologie*, *interpretierende Soziologie*, or more exactly, of interpretivism, is the message of being thick with, full of, standing out in, standing firm in, etc. This is where the key idea of an individual or people being full of or thick with life rises to the fore. Following from the linguistic origins of the concept interpretivism is the idea that rather than twisting, misrepresenting, or manipulating the researched and their lives in a lab or lab-like setting in conformity with a researcher's agenda and concepts, interpretivists aim to enable the researched to be full of, thick with, or excel in life/reality/value. As explained supra, the goal of interpretive research is not a researcher's manipulation, experimentation, or representation of the researched and the world thereof, but rather an unrestricted unfolding of individuals' fuller, better, and fresher life/value.

In the last analysis, interpretivism tenets are tenets that can be traced back to pharaonic times. One typical example is with Seshi (24th-22th centuries BC) --- sixth-dynasty Egyptian official discussed earlier (Lichtheim, 2019, pp. 49-50). While Seshi did not employ or cite the term interpretivism, he laid out one of the most unique and instructive worldviews needed for research, practice, governance, and human interaction. For the purpose of our discussion, three ideas emerging from Seshi approach warrant consideration. The first idea to glean from Seshi approach is the top-down approach; the endeavor --- quite uncalled-for and uncharacteristic of Seshi title, rank, and function --- to deliberately move/go from the highest level of government position and city to the lowest city and condition in the nation. The second idea is the ability to seek and collect the most detailed description of the nation's direst condition of life, that is, the homeless, the boatless, the landless, the sick, the voiceless, the defenseless, the vulnerable, etc. --- without pressure to do so. The third and last idea arising from Seshi approach is his resolute engagement to transform and/or attend to the dire conditions of the world's poorest. It can be inferred from this approach that the findings arrived at are nothing but in-depth, fine-grain research. Considering the highest rank status of Seshi alongside the peace and worldwide well-known wealth seen with ancient Egypt, the detailed description of the nation's poorest people and the subsequent engagement in taking action come as a contradiction --- something rather untypical of modern day researchers, policy makers, and government officials. As such the above ideas found with Seshi, namely the approach and the outcomes of it serve as foundation/clarification of interpretivism. As remote in history and somehow different from contemporary mindset as Seshi account might be, it amounts to be a classic, interpretive characterization of real world, human conditions afflicting ancient Egypt's poorest individuals.

Most Recurrent Misunderstandings About Interpretivism

For a firmer grasp of the concept interpretivism, this paper has identified three areas underlaid with most recurrent misunderstandings about interpretivism: (1) historical context, (2) science characteristics, and (3) distinction between qualitative and quantitative research. The first area with most recurrent misunderstandings about interpretivism is historical context. One major event resulting from the historical context of interpretivism is that the concept *verstehende Soziologie* arguably goes back to a work published by Weber in 1918 in response to his colleague and compatriot sociologist George Simmel (1858-1918) specifically about the topic

Über einige Kategorien der verstehenden Soziologie [Regarding a few types of interpretive sociology] (Weber, 1913/1922). It can very well be inferred from this event that *verstehende Soziologie* was a work shared between and co-authored by Simmel and Weber, to which Weber was adding a few Weber contributions/versions. This event is of particular significance because Weber was a person of global reputation, acquainted with scores of scholars within and beyond his sociology discipline.

Perhaps most confusion crippling the concept interpretivism, as pointed out earlier, comes from the consideration of various authors as founders of interpretivism. Most revealingly, the fact that Weber chose to collaborate with and respond to Simmel and nobody else on *verstehende Soziologie* was in no way random, neither was the fact that in 1908 Weber credited Simmel with the best description of interpretation (Lichtblau, 2011, 2018, 2020; Weber, 1918/1922, 1921/2002). It can also be inferred that Simmel was fully aware of the type of work (i.e., *verstehende Soziologie*) to which Weber was contributing and for which Simmel had offered the fundamentals. In this sense, it can be stated that Simmel and Weber are the founders of *verstehende Soziologie.* Nonetheless, being a founder of a movement does not mean that there were/are no prior, remote influencers therefrom.

The second area closely related to the first with most recurrent misunderstandings about interpretivism concerns science characteristics --- examined earlier with regard to positivism. The characteristics of science tend to be identified as synonymous with positivism to the effect of contrasting them with interpretivism and the disciplines thereof. In the aftermath of the Enlightenment era or Age of Reason roughly covering the 17th and 18th centuries, with leading figures such as Descartes (1637, 1644, 1684/1908), Bacon (1597/1859; 1620/1901) seen above, heated debates erupted in the 19th century as to what the concept science entailed. Apologists for positivism or Cartesianism opposed altogether anything emotional, subjective, personal, metaphysical, etc. as unfit for and/or detrimental to science, i.e. systematic knowledge. This was also the context in which most universities across Western Europe and North America were being founded and traditional disciplines were being established as accredited curriculums. Remember that at that time no textbooks for newly created curriculums existed yet, and sociology was not an exception. Consequently, one of the most demanding tasks Weber and Simmel, in fact all scholars in the 19th century onward, were and are still faced with is to define what science or scientific work entails. The underlying teaching of interpretive method was/is that there is no such a thing as a (scientific) work free of or untouched by values, experiences, contexts, beliefs, etc. and that personal experience is not in and by itself incompatible with scientific work.

The relationship between science and interpretivism is further showcased in the city called, by ancient Egyptians, Khmun, as described above, and built for the worship of god Thoth (Lichtheim, 2019, pp. 642-646). Perhaps the most beneficial point for our discussion is that deity Thoth was the patron of scribes, messengers, or interpreters (hence interpretivism comes into play). As clear as the analogy between Egyptian deity Thoth and Greek deity Hermes might be, deity Thoth was endowed with, as explained supra, a wide-ranging variety of powers, namely: scientific knowledge, sciences, mathematics, astronomy, chemistry, medicine (i.e., magic), measurement, justice, natural order, etc. --- all of which present a crucial supplement to or validation of interpretivism. This comes in addition to the empirical work, so to speak, of sixth-dynasty Egyptian official Seshi (Lichtheim, 2019, pp. 49-50), analyzed above. Science

URL: http://dx.doi.org/10.14738/assrj.1112.17989

received greater emphasis in Khmun with god Thoth being the custodian of measurement, mathematics, chemistry, and astronomy, to name a few, which lends accuracy, certainty, and indubitability to research undertaken. One telling example is that while it can be disputed that the word chemistry originates in the term Khemeia (Budge, 1901/2007, pp. 19-20) and like terms such as Khmun or Khemenu, etc., it is also true that ancient Egyptians were not unfamiliar with the transmutation of metals and the knowledge of it. It is equally true that the powers of which Egyptian deity Thoth was the guardian sharply contrast with and/or outstrip the role of interpreters ascribed to Greek deity Hermes. As Budge (1901/2007) insisted, "At a very early period, the Egyptians were famous for their skills in the working of metals and in their attempts to transmute them" (p. 20). The type of work involved in the transmutation of metals observed with ancient Egyptians is nothing short of chemistry and/or physics, now widely considered as exact/hard sciences. The early period also coincides with the time and city of Khmun, not least god Thoth. While contention might exist as to the originality of Egyptian deity Thoth vis-à-vis Greek deity Hermes, the longest and earliest-recorded veneration accorded by ancient Egyptians to Thoth for entire three millennia, more significantly so extending as far back as predynastic period in the 60th century BC outweighs by a long shot Hermes whose cult did not appear until much later in the 15th or 13th century BC. There is no way deity Thoth could be an imitation of such a belated and short-venerated deity.

One consequence of interpretivism can be seen with an increasing consensus among scholars that the well-known methodological binaries such as subjective/objective, empirical/theoretical, practical/conceptual, positive/speculative, nomothetic/idiographic, etc. are misleading indications of what determines science. In other words, scientific work is not free from nor unaffected by dimensions found to be objective and/or subjective, empirical and/or theoretical, practical and/or conceptual, positive and/or speculative, etc. For example, text is described to be an objective/independent entity leading to objective hermeneutics (see Ricoeur, 1971; Rosenthal, 2014). It follows that interpretivism is in no way the same as subjectivism. Meanwhile, researchers ought to be aware of the limitations associated with and/or inherent to their work. As Weber (1921/2002) warned,

> *Das alles entbindet aber die verstehende Soziologie nicht von der Aufgabe: im Bewußtsein der engen Schranken, in die sie gebannt ist, zu leisten, was eben wieder nur sie leisten kann [All of this does not by any means dispense interpretive social research from the task of being fully alert to the tough barriers that prevent it from unraveling nothing but what it can unravel]. (p. 8)*

The task of interpretive social research is not one of manipulating, but rather of nothing more than achieving, bringing about life.

The third and last area with most recurrent misunderstandings about interpretivism regards the distinction between qualitative and quantitative research. As qualitative and quantitative research are gaining currency across disciplines a distinction between them is becoming most beneficial. One of the best illustrations of a distinction between qualitative and quantitative research is with the method called mixed method, meaning a combination of qualitative and quantitative research (J.W. Creswell & J.D. Creswell, 2018). While quantitative research can be said to focus primarily on proportions deduced from and between numbers of a given phenomenon or topic, qualitative research is the type of research noted for a thicker, finer,

deeper description or experience of investigated matter. Mixed method, however, does not mean fusion, confusion, or identity of qualitative and quantitative research, but rather a greater emphasis being set on one or more features proper to each of qualitative and quantitative research. Just like the characteristics of science, a growing consensus among researchers is that the binaries, seen supra, namely: subjective/objective, empirical/theoretical, practical/conceptual, positive/speculative, nomothetic/idiographic, etc. are erroneous, misplaced indicators of the distinction between qualitative and quantitative research. Although interpretivism uses preeminently qualitative research and positivism quantitative research, neither interpretivism nor positivism is equivalent to either concept of listed binaries (e.g., subjective/objective, empirical/theoretical, practical/conceptual, positive/speculative, nomothetic/idiographic, etc.). Explained differently, it will be downright oversimplified and indeed incorrect to state that positivism supplies empirical work whereas interpretivism does not. As elicited supra, the English adjective empirical is a derivation of the Greek adjective *ἐμπειρικός* [empeirikos], signifying shown, experienced, all of which has nothing to do with an aversion to or absence of theory. An even starker illustration might be with the Greek origins of the word theory or theoretical, seen supra, which are by far more reality-watching than popularly believed. Theory presupposes a closer viewing of and/or connecting with reality or the thing(s) researched.

The use of theory in both quantitative and qualitative research repudiates the idea theoretical or subjective being ascribed to or identified with interpretivism or qualitative research. As J.W. Creswell and J.D. Creswell (2018) inferred,

> *Theories serve different purposes… In quantitative research, they provide a proposed explanation for the relationship among variables being tested by the investigator. In qualitative research, they may often serve as a lens for the inquiry or they may be generated during the study. In mixed methods studies, researchers employ them in many ways including those associated with quantitative and qualitative approaches. (p. xx)*

As is obvious from the above reasoning, theory resides at the core of scholarly inquiry. Science whether in quantitative or qualitative work is defined by the application of theory in reality. Theory is that which characterizes science (see Babbie, 2021, p. 8). Theory guaranties the verification/implementation of selected inquiry. Perhaps the best and further illustration is with the binary nomothetic/idiographic, which more often than not is used as the yardstick for the difference between positivism and interpretivism more precisely between physical/natural sciences and human/social sciences, with positivism being deemed as nomothetic and interpretivism idiographic.

It is worth remembering at this juncture that the binary nomothetic/idiographic was coined in 1894 by German social thinker Wilhelm Windelband (1848-1915) during his inaugural address as the then freshly appointed president of the University of Strasbourg, France, which was under German rule around that time. Upon coining the now well-known terms nomothetic and idiographic, Windelband (1894) offered unequivocal and yet widely overlooked explanations, noting,

> *So dürfen wir sagen: die Erfahrungswissenschaften suchen in der Erkentnniss des Wirklichen entweder das Allgemeine in der Form des Naturgesetzes oder das Einzelne in der geschichtlich bestimmten Gestalt; sie betrachten zum einem Teil die immer sich gleichbleibende Form, zum anderen Teil den einmaligen, in sich bestimmten Inhalt des wirklichen Geschehens. Die einen sind Gesetzeswissenschaften, die anderen Ereignisswissenschaften; jene lehren, was immer ist, diese, was einmal war. Das wissenschaftliche Denken ist --- wenn man neue Kunstausdrucke bilden darf --- in dem einen Falle nomothetisch, in dem anderen idiographisch [As we can now claim, regarding knowledge of reality, empirical sciences search either what is general in the form of natural laws or what is unique in the historically determined form. They deal on one side with what is invariable and on the other with what is unique in the specific content of a real event. The former are prescriptive sciences and the latter are descriptive sciences; the former teach what is invariable and the latter teach what is variable. Scientific thought is --- if one may be permitted to create new professional terms --- in the former instance nomothetic and the latter idiographic]. (p. 12)*

As described above, it is most helpful remarking that empirical disciplines are of a prescriptive as well as descriptive nature while the knowledge therefrom is one made of both invariable and variable components, namely nomothetic and idiographic. All disciplines can very well produce nomothetic and idiographic knowledge, at the same time.

Windelband (1894) went on, saying,

> *Wollen wir uns an die gewohnten Audrücke halten, so dürfen wir ferner in diesem Sinne von dem Gegensatz naturwissenschaftlicher und historischer Disciplinen reden, vorausgesetzt dass wir in Erinnerung behalten, in diesem methodischen Sinne die Psychologie durchaus zu den Naturwissenschaften zu zählen [If one agrees to these suggested terms, one will also be able according to this binary to discuss natural sciences and historical sciences, assuming that in light of this methodological binary one is aware of having psychology definitely fall within natural sciences]. (p. 12)*

As explained above, a scientific work can be nomothetic or idiographic, depending on the manner in which the scientific discipline of that work is being viewed and/or undertaken – psychology was the example proposed.

More explicitly, Windelband (1894) cautioned,

> *Ueberhaupt aber bleibt dabei zu bedenken, dass **dieser methodische Gegensatz nur die Behandlung, nicht den Inhalt des Wissens selbst classificirt.** Es bleibt möglich und zeigt sich in der Tat, dass dieselben Gegenstände zum Object einer nomothetischen und zugleich einer idiographischen Untersuchung gemacht werden können. Das hängt damit zusammen, dass der Gegensatz des Immergleichen und des Einmaligen in gewissem Betracht relativ ist [But by all means, it must be borne in mind that **this methodological binary classifies only the approach to and not the content of knowledge itself**. It is possible and*

> *indeed proven to be true that the same topics can be the object of nomothetic and idiographic inquiry at the same time. This has to do with the fact that the difference between what is general and what is specific remains to some extent relative [emphasis added]]. (p. 12)*

Approaches to knowledge are what the distinction between nomothetic and idiographic is all about, and not the knowledge gained or sought, much less the discipline concerned with. Stated differently, rather than being about the content of knowledge differentiating a group of disciplines from another, the methodological concepts nomothetic and idiographic have do with the approach(es) held toward a topic. While the distinction between nomothetic and idiographic has a proven record of widespread confusion about the classification and understanding of scientific disciplines, recent methodological research signals no difference to speak of.

For example, Babbie (2021) indicated,

> *Idiographic [is] an approach to explanation in which we seek to exhaust the idiosyncratic causes of a particular condition or event. Nomothetic [is] an approach to explanation in which we seek to identify a few causal factors that impact a class of conditions or events. (p. 19)*

Notice how nomothetic approach does not involve universal, positive, or exact type of research as commonly believed and taught. Nomothetic approach is an approach limited to and dependent on a specifically selected sample and/or topic, so is an idiographic approach. Better terminologies than the binary nomothetic and idiographic tend to be more beneficial and efficient for research. However, being aware of the confusion arising from and leading to nomothetic and idiographic binary helps researchers best design, articulate, and implement their work.

Trails of Interpretivism

Interpretivism has evolved into a great many and increasing trails, of which six most prevalent warrant a cursory breakdown, for lack of space: hermeneutics, constructionism or constructivism, historicism, naturalism, phenomenology, and ethnography (Denzin, Lincoln, Giardina, & Cannella, 2024a, b, c; Erickson, 2024; Hammersley & Atkinson, 2019; Neimeyer & Torres, 2015). It is also quite common to see qualitative research simply equated with one trail of interpretivism, depending on the preference or focus taken by a researcher. Hermeneutics is of the most known trails of interpretivism because of its focus placed on meaning or interpretation. Hermeneutics pays particular attention to patterns embedded in meanings and human activities.

Hermeneutics:

Hermeneutics represents the school of thought with some of the most informative and indeed most influential developments for research method and scientific practice. For the purposes of this paper, however, only a few of those developments merit a quick review. The English term hermeneutics is a transliteration of the Greek adjective *ἑρμηνεύτικος* [*hermeneutikos*], which springs from the Greek verb *ἑρμηνεύω* [hermeneuô], meaning to expound, to explain, to put in

URL: http://dx.doi.org/10.14738/assrj.1112.17989

words, to interpret foreign languages, to articulate, to speak clearly, etc. (Liddell & Scott, 1843/1996). The Greek verb *ἑρμηνεύω* [hermêneuô] stems from the Greek noun *Ἑρμῆς* [Hermes], as noted supra, taken to be the deity of eloquence, message, speech, learning, writing, etc. --- hence the city of Hermopolis (*Ἑρμοῦ πόλις* [hermo polis]), literally meaning city of Hermes, which was Khmun for ancient Egyptians. While Hermes bore resemblance to Egyptian deity Thoth, Thoth was the deity of sciences, mathematics, measurement, and magic, among others, as described above (Lichtheim, 2019), which hold much broader, newer ramifications for the traditional scope of hermeneutics. It would imply that hermeneutics seeks to acquire and produce knowledge beyond the mere notion of meaning or textual, scribal, or literal units. This is because hermeneutics attends to unravel the world/reality well beyond the written (word) and the writer/author (identity). Authorship comes to be multifaceted and plural behind and beyond written text.

While the word hermeneutics owes its roots to ancient Egypt, fine-grained scrutiny of relevant materials reveals that the earliest Latinized usage of the Greek *ἑρμηνεύτικος* [*hermeneutikos*], namely *hermeneutica* --- from which the English term hermeneutics was taken -- dates as far back as the first half of the 17th century with Lutheran theologian Johann Conrad Dannhauer (1603-1666). Indeed, as claimed earlier, during the Renaissance period, roughly covering the 14th and 17th centuries, interest in a rebirth of classical works and ideals prevailed across Western Europe. Thus, literature about interpretation of languages or writings was quite broad in Latin readership with the seminal work of, among others, Swiss theologian Theodore Bibliander (1506–1564) about the underlying principle of all languages (see Bibliander, 1548) and that of English philologist Lawrence Humphrey (1527-1590) about the skills of interpretation of languages (see Humphrey, 1559). One most distinguishing fact, however, not always recognized in much literature engaging hermeneutics (Gräb, 2016; Sparn, 2014), is that the specific usage of the Greek Latinized term *hermeneutica* did not emerge up until 1630 with Dannhauer (1630) work published about suitable interpretation. Perhaps even most paradoxically, Dannhauer (1630) appeared to be the first author in outlining the so-called hermeneutic circle, of which his later and much more publicized work (Dannhauer, 1654) was a continuation. Evidently, Dannhauer (1630) work represents one of the most overlooked legacies of Renaissance, sandwiched between Bacon (1597/1859, 1620/1901) and Descartes (1637, 1644, 1684/1908) works.

For example, although Bibliander (1548) was aware of "*quae per sensum & intellectionem euidenter patet* [that which is obvious by way of meaning and understanding]" (p. 97), he fell short of addressing the concept hermeneutics, much less hermeneutic circle. What stands out here is that, Humphrey (1559) extensively elaborated on the concept interpretation, looking at both sacred and profane authors, and vividly delineating the tasks of a decent interpreter, Humphrey (1559) alleged, "*côplanare, contrahere, dilatare, supplere, explanare, corrigere, probi interpretis partes sunt & munia* [to interrelate, to shorten, to amplify, to improve, to describe, to rectify, those are essentials and functions of a skillful interpreter]" (p. 115). At the same time, Humphrey (1559) was unable to deal with the concept hermeneutics much less hermeneutic circle, and he even cited Hermes in passing (see Humphrey, 1559, p. 115). Briefly described, hermeneutic circle is a research method or idea that object and subject alongside their respective components are totalities/entities that unfold in tandem and thus are better understood as belonging to and shaping one another. The central point is one of context out of and within which object and subject along with related components develop.

Dannhauer (1630) started out by emphasizing that "*Omnis homo ratione ac judicio utens etiam est capax hermeneuticae facultatis* [Every human being, using reason and judgment is equally able of hermeneutic faculty]" (p. 25). Hermeneutics was being justified as part of and contributive to human potentials. This is in stark contrast with Bacon (1620/1901) positivistic tenets, ten years earlier. Dannhauer (1630) provided plentiful details along the lines of hermeneutics and accompanying concepts such as hermeneutic circle. The idea circle was not uncommon among Latin and/or Renaissance readers, hence the phrase *circulus vitiosus*, from which the English term vicious circle was derived. One key idea is that whether dealing with that which is written or non-written, illuminated or non-illuminated, sacred or profane, rational or irrational, etc. hermeneutics is nothing but a circular, dialectical, progressive, inclusive, and uninterrupted process peering at both the object and subject and attendant dimensions. As Dannhauer (1630) explained, hermeneutics operates "*en circulum & progressum in infinitum* [endlessly inclusively and progressively]" (p. 6). Circular, inclusive, and progressive hermeneutics presupposes the production of effect/impact to dispel darkness/obscurity. One fundamental point to keep in mind is that hermeneutic circle differs dramatically from sophistic circle. The reason being that hermeneutics is distinct from the type of knowledge whereby "*certitudinem suam non nisi circulo sophistico tueri potest* [one can safeguard one's positive knowledge only by way of sophistic circle]" (Dannhauer, 1630, p. 18). Sophistic circle is one that destroys/denies knowledge for the sheer sake of it. Perhaps the clearest, richest indication of hermeneutics and/or hermeneutic circle can be found in the diagram (see Figure 3) proposed by Dannhauer (1630, p. 36), yet all too unmentioned in most hermeneutic and research method outlets.

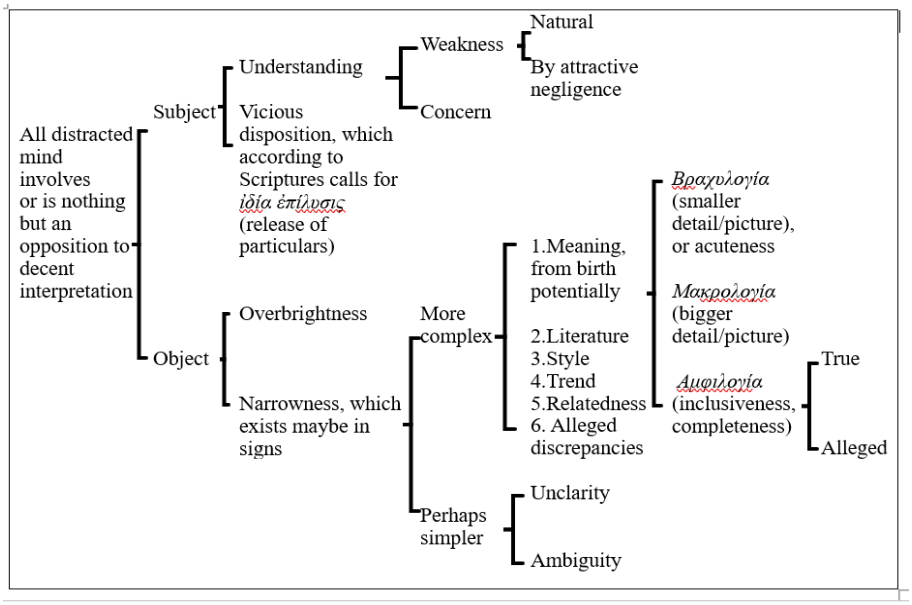

Figure 3: Limitations of hermeneutics
(Dannhauer, 1630, p. 36; this paper translation)

As noted above, hermeneutic circle considers object and subject along with associated constitutive components/factors as totalities overlapping with each other. Such an approach engages an understanding of finer detail and of coarser components, with the goal of being inclusive and impactful. The Greek term *μακρολογία* [macrologia] indicates a coarse-grained

perspective whereas *βραχυλογία* [brachologia] indicates a fine-grained perspective; with *αμφίλογία* [amphilogia] resulting from the word *αμφίλογος* [amphilogos] and signifying completeness. *Μακρολογία* comes from the adjective *μακρός* [macros], meaning, large, long; *βραχυλογία* is a derivation of the adverb/neutral adjective *βρᾰχῠ́* [brakhu], which stands for little, small, and *αμφίλογία* originates in the preposition *αμφί* [amphi], meaning all around, about, etc. (Liddell & Scott, 1843/1996). A coarse-grained perspective allows the release/impact of whole(s) or coarse part(s) while a fine-grained perspective leads to the release/impact of fine particulars or subtleties. Hermeneutic circle seeks to reverse just as much a denial as a unilateral possession of knowledge. Denial as well as unilateral/monolithic possession of knowledge were the outcomes of sophistic school. For added clarity on and needed supplement to hermeneutic circle, Dannhauer (1630, 1654) advanced a whole range of allegories from light to disease to painting to mirror to symphony to stream, etc. As Dannhauer (1654) explained,

> *Finis à (post gloriam DEI, qui est finis omnium disciplinarum) proprius & domesticus isque ultimus est symphonia sensuum, sensus explicati cum sensus explicante, άσφαλής [For sure, the special and familiar goal [of hermeneutics] (after the glory of God, which is the goal of all disciplines), the one of the utmost importance consists in a symphony of understanding, that is, understanding the unmasked in sync with understanding the unmasking]. (p. 62)*

As noted above, hermeneutics represents a method that serves all disciplines. Hermeneutics came to be one of the earliest attacks on positivistic teachings.

In the aftermath of Dannhauer (1630) characterization of hermeneutics, subsequent rephrasing of hermeneutics as well as hermeneutic circle had occurred with half a dozen notable authors such as German philologist Georg Anton Friedrich Ast (1778-1841), see Ast (1808, p. 186); German Protestant theologian and philologist Friedrich Schleiermacher (1768-1834), see Schleiermacher (1838, p. 97); German philosopher Martin Heidegger (1889-1976), see Heidegger (1927/1967, p. 153); German philosopher Georg Gadamer (1900-2002), see Gadamer (1960/1993, p. 57); and Dilthey (1894/1924, p. 172; 1883, pp. xvii-xviii).

Ast (1808) wrote,

> *Auch hier tritt der oben bemerkte Zirkel ein, dass nehmlich das Einzelne nur durch das Ganze und umgegehrt das Ganze nur durch das Einzelne verstanden werden kann [Here also, the circle described above takes place, in the sense that the particular can only be comprehended through the whole and, inversely, the whole can only be comprehended through the particular]. (p. 186)*

Understanding the interaction of object and subject along with respective constitutive dimensions (i.e., human, cultural, social, historical, economic, etc.) causes hermeneutics to reverse the solipsistic and/or monopolistic tendencies of positivism.

Perhaps a rephrasing of hermeneutic circle and hermeneutics with the utmost significance is the one suggested by Dilthey (1894/1924). In highlighting the varying dimensions/factors involved in the formation of object and subject being studied, Dilthey proposed somewhat a

standard distinction between social sciences and natural sciences (as seen above), with the former taken to be concerned with understanding the meaning of lived experience and the later with explaining the laws of nature.

In proposing the difference of sciences with the idea that researchers explain nature while they understand emotional/spiritual life, Dilthey (1894/1924) reasoned,

> *Dies bedingt eine sehr große Verschiedenheit der Methoden, vermittels deren wir Seelenleben, wie Historie und Gesellschaft studieren, von denen, durch welche die Naturerkenntnis herbeigeführt worden ist [This (the distinction of sciences) implies quite a significant difference in the methods whereby one studies spiritual life, such as history and society, and those whereby natural sciences are achieved]. (p.144)*

The statement cited above goes a long way toward demarcating the boundary lines between social, cultural, and human sciences, broadly termed social sciences or sometimes humanities, on the one hand, and natural or physical sciences on the other. To add clarity to the discussion, Dilthey (1894/1924) explained,

> *Für die Frage, welche hier erörtert wird, ergibt sich aus dem angegebenen Unterschied, daß Hypothesen innerhalb der Psychologie keineswegs dieselbe Rolle spielen als innerhalb der Naturerkennens … Ihre Methode ist von denen der Physik oder Chemie gänzlich verschieden… Zugleich besitzen aber Hypothesen auf psychologischem Gebiet keineswegs die Leistungsfähigkeit, welche sie im naturwissenschaftlichen Erkennen bewährt haben [As argued here, the stated difference reveals that hypotheses do not play the same role within psychology as they do within natural sciences… Its method differs entirely from that of physics or chemistry… Meanwhile, hypotheses in psychology do not yield in any way, shape, or form the same benefit as they do in natural sciences]. (p. 144)*

As found above, psychology was used as an example to illustrate the suggested classification of human, social sciences vs natural, physical sciences. While the statement of Dilthey analyzed above aims to specify hermeneutics, it has come to serve as the somehow standard classification of scientific disciplines, with physical/natural sciences being posited as the sciences concerned with the explanation or reproduction of natural laws at one extreme and human, social, sciences as being absorbed in understanding the meaning of human experience at the other.

The reason is that, according to Dilthey point view, social, human sciences are being mischaracterized to suit positivistic criterion of certainty. In other words, the pursuit of certainty or positive knowledge required of all types of scientific disciplines seems to cause human, social sciences to function as physical, natural sciences in disguise. As Dilthey (1883) argued,

> *Die Antworten Comte's und der Positivisten, St. Mill's und der Empiristen auf diese Fragen schienen mir die geschichtliche Wirklichkeit zu verstümmeln, um sie den Begriffen und Methoden der Naturwissenschaften anzupassen [It occurs to me that the answers of Comte and positivists, St. [Stuart] Mill and empiricists to these*

> *questions were to distort historical, human reality in order to match it with the concepts and methods of natural sciences]. (p. xvi)*

Although the explanation of Dilthey in determining the characteristics of humans, social sciences has attracted astoundingly broad admiration, it has faced one of the stiffest objections of methodologists from within both social sciences and physical sciences. The clearest and most comprehensive objection to the proposed dichotomy between social sciences and physical sciences can be found with computer scientist and engineer Waren Weaver (1894-1978), discussed above.

Constructionism:

Constructionism is a movement most closely related to and/or identified with interpretivism. Constructionism --- usually called social constructivism or simply constructivism (details below) --- is a trail of interpretivism that recognizes that scientific work is determined by the social conditions under which it takes place (Holstein, 2018). The idea is that scholarly research, like any human endeavor, is no way neutral, but rather socially shaped and produced. In other words, science takes on the forms/features of the world in and out of which it unfolds. Constructivism can be extended back to ancient Egypt (Lichtheim, 2019) wherein humans were imparted the power to be generators and guardians of knowledge, virtues, abilities, skills, etc., which would fall for the most part under the umbrella term magic or medicine. In the 5th and 4th centuries BC in ancient Greece, sophist philosophers, among others, would place humans at the center stage of knowledge creation and acquisition.

The word constructivism was arguably first used by Russian artists Naum Pevsner (1890-1977), later to be known as Naum Gabo, and his brother Antoine Pevsner (1886-1962) in a manifesto --- claimed to be realistic --- written in 1920 (Olson & Chanin, 1948; Read, 1948) wherein they designated themselves as constructivists. Emblematic of a movement that swept Western Europe in the 1910s, the manifesto sought to define artists (i.e., pictorial and plastic artists) with the role of creator/constructor of forms in space and time rather than mere producer/imitator of the world or reality. The goal of the manifesto was one urging artists to shape and be shaped by the industrial world, the trend at hand during that time. As Read (1948) noted, “The machine is the universal and coercive symbol of our age…. As a general tendency, the new medium was to be not paint, but rather steel; the new method not composition on a plane surface, but rather construction in space” (p. 8). A reflection of the world/society in which a researcher and research thereof are situated is what delimits constructivism.

One of the earliest explicit mentions of constructivism as a research method might reside in the work of French philosopher of knowledge Gaston Bachelard (1884-1962), when he averred,

> *Et, quoi qu'on en dise, dans la vie scientifique, les problèmes ne se posent pas d'eux-mêmes. C'est précisément ce sens du problème qui donne la marque du véritable esprit scientifique. Pour un esprit scientifique, toute connaissance est une réponse à une question. S'il n'y a pas eu de question, il ne peut y avoir de connaissance scientifique. Rien ne va de soi. Rien n'est donné. Tout est construit [And, however one might argue, in scholarly practice, issues do not occur out of thin air. This understanding of issues is what determines genuine scholarly knowledge. For a scientific mind, all knowledge is a response to a question. If there is no question*

> *there is no scientific knowledge, either. Nothing is to be taken for granted. Nothing is a given. Everything is constructed]. (Bachelard, 1934/1967, p. 17)*

As remarked in the above paragraph, with everything being constructed, nothing ought to be innate. Constructivism refutes the innateness of research and the outcomes of it. Another earliest explicit mention of relevance here, perhaps one of the most known, is with Swiss zoologist and psychologist Jean Piaget (1896-1980) use of the word "*une épistémologie constructiviste* [constructivist epistemology]" (Piaget, 1967, p. 1265). The idea constructivist epistemology, for Piaget, refers to the fact that a child's intelligence is not innate to the effect that the child is a creator of intelligence in interacting with the environment. Piaget writing and research alluding to constructivism have had wide-ranging coverage in education and psychology research.

Perhaps the most explicit account of social constructivism emerges from the work of Austrian-born American sociologists Peter L. Berger (1929-2017) and Thomas Luckmann (1927-2016) in 1966 as they posited,

> *At the moment, it is important to emphasize that the relationship between man, the producer, and the social world, his product, is and remains a dialectical one. That is man (not, of course, in isolation but in his collectivities) and his social world interact with each other. The product acts back upon the producer. (Berger & Luckmann, 1966/1991, p. 78)*

As related supra, social constructivism presupposes a dialectic between humans and the social world, with each party shaping and being shaped by the other. Berger and Luckmann work is one that lends the prestige of social dimension to constructivism as a research method, hence the phrase social constructivism.

One note of precision ought to be made insofar as with its dialectic, constructivism does not seek nor imply to deny human actualization/agency. Berger and Luckmann (1966/1991) elucidated,

> *Man is biologically predestined to construct and to inhabit a world with others. This world becomes for him the domain and definite reality. Its limits are set by nature, but, once constructed, this world acts back upon nature. In this dialectic between nature and the socially constructed world, the human organism itself is transformed. In this same dialectic man produces reality and thereby produces [actualizes] himself. (p. 204)*

As explained above, the dialectic of constructivism emphasizes the changing dynamic in constructing research and the practice of it. One of the outcomes highlighted by social constructivism is the locally situated meanings of scholarly work.

Discussions can arise as to the difference between constructivism and constructionism. However, from a methodological vantage point, the alleged difference does not affect research method if anything. As Neimeyer and Torres (2015) reasoned, "Despite their diversity,

constructivist and social constructionist methods share a common concern with revealing the personal or 'local' meanings that characterize an individual or group, and strive for pragmatic utility rather than objective veracity in the usual sense" (p. 724). Constructivism alleges that scientific work and society shape each other reciprocally. This approach suggests that there is no such a thing as an objective science or scientific work because all scientific activity is socially shaped by the society in which it occurred. As described earlier, the Latin roots of the English term positivism --- for example the adjective *positivus, a, um* as well as the nouns *positor, oris* and *positus, us* --- irrevocably highlight proposition/offer rather than certainty/finality. Knowledge is about provisional and not final undertakings. "Of course, the constructionist perspective can unsettle *any* sense of innate social order. Because it denies the 'naturalness' of any state of human affairs, it can destabilize political claims from all sides" (Holstein, 2018, p. 406). Naturalness is taken here to mean inherent, intrinsic, or essential quality vs something temporary, extrinsic, or provisional. Constructivism is the type of research method that objects to the innateness or *intrinsicness* of society and entities thereof (i.e., science, culture, language, institution, etc.). Constructivists call into question the consideration of society and the works thereof, including scientific work, as a given. What constructivists question is the naturalness, givenness, or innateness of scientific activity and the claims therefrom. Because particular attention paid to the social setting in and out of which researchers, the researched, and research operate, constructivism tends to be readily deemed interchangeable with qualitative research (see J.W. Creswell & J.D. Creswell, 2018). The underlying criticism here is one against positivistic objectivity, positivistic indisputability, positivistic impartiality, or positivistic valuelessness. Constructivism does not seek sheer subjectivity or relativity, either.

Historicism*:*

Historicism is the trail of interpretivism that holds that scientific inquiry is dependent on facts or patterns formed in the course of time. As Popper (1945/2020) stated, "Historicism is… the doctrine that history is controlled by specific historical or evolutionary laws whose discovery would enable us to prophesy the destiny of man" (p. 8). The concept historicism grew to fame in the 19th century with Dilthey (1883) work foregrounding the status of human sciences, variedly termed social sciences. In that work, Dilthey (1883) stressed the centrality of context to the extent that scientific activity shapes context while being shaped by it. The original German word used by Dilthey was that of *Gebundenheit*, denoting the sense of bond, alliance, responsivity, or responsiveness. The English noun responsivity is rooted in the Latin verb *respondeo*, from which spring several English words such as correspondence, responsibility, sponsor, etc. The verb *respondeo* stands for to offer or present in return, to accord, correspond with (Andrews, 1851, p. 1316). The point is to offer or present back or in return.

As Dilthey (1883) wrote,

> *In so harter Arbeit hat sich aus der ersten Gebundenheit des geistigen Gesamtlebens, in welcher dem Menschen die Wirklichkeit gegeben ist und immer gegeben bleibt, der Zweckzusammenhang des Erkennens in der Wissenschaft zur Selbstständigkeit herausgearbeitet. So schwierig war dieser Wissenschaft der Ersatz der ursprünglichen Vorstellungen durch solche von einer größeren Angemessenheit an ihren Gegenstand. Denn der Zusammenhang der Dinge ist ursprünglich von der Totalität der Gemüthskräfte hervorgebracht worden; nur schrittweise hat dann das Erkennen das rein Gedankenmäßige aus ihm*

> *herausgelöst. Leben ist das Erste und immer Gegenwärtige, die Abstraktionen des Erkennens sind das zweite und beziehen sich nur auf das Leben [With so much hard work, the designated context of scientific knowledge manifests itself from primary responsiveness to entire human life --- wherein reality is given to experts and always remains so --- to a stand-alone status. For this discipline, a rendition of early descriptions by way of those with greater relevance to concerned matter was so demanding. Because the connectivity of things is implemented chiefly by the totality of mind; and only progressively is the knowledge becoming conceptual knowledge discharged from it. Life is the first and always prevailing; conceptualizations of knowledge are secondary, and refer to nothing but life]. (p. 185)*

As delineated earlier, the notion human sciences and indeed science betokens responsiveness or responsivity, which in turn entails the notion bondedness, alliance by way of which knowledge and related environment interplay with each other, and above all is associated with life.

One crucial concept deriving from the Diltheyan idea *Gebundenheit* or responsivity with subsequently broader prevalence in research method circles is the German concept called *Standortsgebundenheit* (see Berger & Luckmann, 1966/1991, p. 19) that can be best translated in English as situational responsivity, situational bondedness, or more generically situational awareness. The concept *Standortsgebundenheit* alternatively written *Standortgebundenheit* or situational responsivity was brought to the fore by Hungarian-born German sociologist Karl Mannheim (1893-1947), developed in his book on sociology of knowledge in 1929, in the aftermath of Dilthey historicist writing. The concept dealt, for example, with "*Standortsgebundenheit jedes historischen Denkens* [Situational responsivity of every historical thought]" (Mannheim, 1929, p. 33). Situational responsivity examines the driving forces underlying the social setting in which scientific practice develops. From the notion situational responsivity has resulted the well-known notion social constructionism. The adjective/connotation social in the concept social constructionism reflects a realization that the setting in which scientific developments occur constitutes an integral part of a given society at a given time and location. Dilthey went on to allege that life underlies the setting in which scientific developments take place, which entails that knowledge operates hand in glove with (better, fuller) human life. One English term closer to and perhaps clearer than responsivity is replication, which comes from the English verb to replicate, which in turns stems from the Latin verb *replicare, replico* meaning, to fold or roll back, to bend or turn back (Andrews, 1851, p. 1306). Responsivity denotes the fact that nature and the phenomena thereof roll or bend humans, and humans roll back or bend back nature and its phenomena.

From the Diltheyan idea of knowledge attuned/bonded/responsive to life, as observed supra (Dilthey, 1883, p. 185), comes the famous German concept *Sitz im Leben*, most strictly translated as site in life, namely: the place that seats/accommodates life. The phrase *Sitz im Leben*, site in life or site filled with life, was arguably first employed in 1933 by German writer and theologian Johann Friedrich Hermann Gunkel (1862-1932) in an understanding of written text according to the site replete with life in and around which the text was composed. As Gunkel (1933/1985) posited,

> *Ferner müssen solche zusammengehörigen Lieder [songs/tunes] natürlicher Weise einen gemeisamen Schatz von Gedanken und Stimmungen aufweisen: es sind diejenigen, die eben durch ihren Sitz im Leben gegeben waren oder sich leicht daran schließen konnten [Moreover, such corresponding songs should typically have a shared set of thoughts and opinions; there are those given by a specific site in life or could readily adjust to it]. (p. 22)*

As seen in the above account, *Sitz im Leben* represents the site from and around which a text's genre and the like take shape. *Sitz im Leben* symbolizes the locus where text manifests itself to the fullest extent. Habermas (1968/1981) showed that through historicism social sciences and/or humanities seek to describe world facts in a lawlike manner to reflect/preserve objectivity. Historicism is the research movement that asserts the scientific nature of research in highlighting the patterns behind investigated phenomena.

Naturalism:

Naturalism represents one of the least taught and understood research methods in textbooks and publication materials. Naturalism considers scientific knowledge as one arising from a natural (hence the word naturalism), non-manipulated setting or habitat rather than a lab or researcher-manipulated site. This paper envisages naturalism in its original meaning (details below) as the doctrine advocating untainted/untouched context of the researched and the researcher. The paper deviates from the understanding of naturalism as synonymous with the practice/domain of natural sciences and positivism (see Morin, Olsson, & Atikcan, 2021). Naturalism as comprehended in this paper seeks to keep nature free from human and supranatural interferences. Naturalism is a school of thought that enjoys significant usage in film, art, theater, and literature, wherein an emphasis is being placed on natural expressions more than anything else. The first use of the term naturalist/naturalism can arguably be found with Italian critic and biographer Giovanni Pietro Bellori (1613-1696) in 1664, during a speech (see Bellori, 1672/1821a, pp. 7-18) delivered at the Academy of San Luke in Rome, alluding to artists "*che si gloriano del nome di Naturalisti* [who exult in the title naturalists]" (Bellori, 1672/1821a, p. 16, see also "*naturalisma* [naturalism]" Bellori, 1672/1821b, p. 97). Incidentally, world-famous Italian 17th-century painter Michelangelo Merisi da Caravaggio (1571-1610) was pinpointed to be "*unico imitatore della Natura* [an exceptional imitator of nature]" (Bellori, 1672/1821a, p. 220). To a great extent, Caravaggio artistic style, more precisely Caravaggesque style, was noted for, among other things, nature-focused intense presentations and effects.

While Caravaggio was somewhat praised to be a one-of-a-kind artist, it bears specifying that artists have been (re)producers, (re)presenters, and more accurately (re)creators of nature since early humans. Indeed, emphasis on nature goes as far back as ancient Egypt with a deity named "*Geb* (earth-god)" (see Lichtheim, 2019, p. 718), considered to be author of farms, growth, health, etc. Furthermore, attempts to highlight nature as the origin/principle of reality was evidenced among Greek writers, more powerfully with Thales of Miletus (624 BC-547 BC). As Aristotle (c. 350BC/1924) narrated,

> *τὸ μέντοι πλῆθος καὶ τὸ εἶδος τῆς τοιαύτης ἀρχῆς οὐ τὸ αὐτὸ πάντες λέγουσιν, ἀλλὰ Θαλῆς μὲν ὁ τῆς τοιαύτης ἀρχηγὸς φιλοσοφίας ὕδωρ φησὶν εἶναι (διὸ καὶ τὴν γῆν ἐφ᾽ ὕδατος ἀπεφήνατο εἶναι)[Yet the quantity and type of that principle [of*

> *nature] is not what everyone speculates about, but Thales indeed the founder of that philosophy affirms that it is water, therefore the earth grows out of water]. (Metaphysics, Book 1, 983b, 20-22)*

As apparent from the above statement, affirmation of nature as the principle of reality sets the tone for research method purposely untethered from human or supranatural interferences. If nothing else, ordinary language of humans is filled with and/or centered on nature; examples include words as diverse as to mushroom, to shine, to grow, to fly, to flow, to flourish, to blossom, to bloom, to blow, etc. Naturalism or, to put it plainly, nature resides at the core of human action/expression.

It is helpful to recall that, as hinted above, positivism represents a form of naturalism inasmuch as positivism places a great focus on nature and its laws. As Bacon (1620/1901) postulated, "Man, as the minister and interpreter of nature, does and understands as much as his observations on the order of nature, either with regard to things or mind, permit him, and neither knows nor is capable of more" (p. 11). Nothing more than nature and its order is supposedly the focus of positivism. One critical flaw in positivistic naturalism, however, resides in a complete disregard of particularities (i.e., social, psychological, religious, economic, cultural, historical, political, etc.) as antithetical to and disruptive of scholarly work. Particularities convey factors as diverse as values, beliefs, opinions, experiences, assumptions, practices, etc. Positivist disregard of particularities (i.e., human values and the like) is allegedly justified on the grounds of objectivity/universality, and has caused authors to advocate for a return to (full) nature. Still objectivity/universality is not incompatible with human values, beliefs, experiences, etc., much more so with life itself. Conversely, a decade after Bacon (1620/1901) position, Dannhauer (1630) stressed the role of a more inclusive and non-reductionist spectrum of scholarly inquiry with the idea circular hermeneutic to fully cater to particularities characterizing the researcher and the researched. To a much greater extent, positivism --- with its proclaimed ideal of objectivity/universality deduced from the laws of nature --- came under fire from critics in the 19th century. For example, upon its inception as a field of research in the 19th century, statistics was deluged with sterner warnings against number-driven inquiries. More specifically, the doctrine of naturalistic research was laid out by French physiologist and research methodologist Claude Bernard (1813-1878) in order for researchers to best attend to the complexity of life/nature. Still, Bernard (1865) work and related earnest cautions issued against the then nascent field of statistics remains lesser known and mentioned in methodology textbooks.

Bernard (1865) outlined the fundamentals of scholarly inquiry, elaborating,

> *on donne le nom d'observateur à celui applique les procédés d'investigation simples ou complexes à l'étude de phénomènes qu'il ne fait pas varier et qu'il recueille, par conséquent, tels que la nature les lui offre. On donne le nom d'expérimentateur à celui emploie les procédés d'investigation simples ou complexes pour faire varier ou modifier, dans un but quelconque, les phénomènes naturels et les faire apparaître dans des circonstances ou dans des conditions dans lesquelles la nature ne les lui présentait pas [The designation observer is ascribed to one who applies simple or advanced processes of inquiry to the study of phenomena unchanged and collected therefore just as nature offers them. The designation experimenter is ascribed to*

URL: http://dx.doi.org/10.14738/assrj.1112.17989

> *one who uses simple or advanced processes of inquiry in order to change or turn, for an intended purpose, natural phenomena into circumstances or conditions in which nature did not provide them to him]. (p. 29)*

As seen above, observation is that which collects phenomena as found in nature whereas experiment seeks to transform natural phenomena into ones designed by the researcher according to a given purpose.

Bernard (1865) specified further,

> *Dans ce sens, l'observation est l'investigation d'un phénomènex naturel, et l'expérimentation est l'investigation d'un phénomènex modifié par l'investigateur. Cette distinction… donne cependant… le seul sens suivant lequel if faut comprendre la différence importante qui sépare les sciences d'observation des sciences d'expérimentation ou expérimentales [In this respect, observation is an inquiry of a natural phenomenon whereas experiment is an inquiry of a phenomenon modified by the researcher. This distinction, however, provides… the meaning in light of which one ought to understand the important difference that demarcates observational inquiries from experimentational or experimental inquiries]. (p. 29)*

As the above explanation put it, the deliberate transformation of natural phenomena into phenomena intended by a researcher and according to a researcher's agenda leads to what is called experimentational or experimental inquiries whereas the collection of and/or immersion into natural phenomena as unfolding in nature characterizes observational inquiries. The difference consists in methods of inquiry rather than the classification or form of sciences. The difference was, almost three decades later, powerfully suggested/corroborated by Windelband (1894, p. 12) from unrelated research, when alluding to the terminology nomothetic/nomological sciences vs. idiographic sciences.

A case can be made that naturalism as a research method was popularized by French writer Emile Zola (1840-1902) in 1880 (see Zola, 1880/1881). As Zola (1880/1881) asserted,

> *Le retour à la nature, l'évolution naturaliste qui emporte le siècle, pousse peu à peu toutes les manifestations de l'intelligence humaine dans la même voie scientifique [Return to nature, the naturalistic movement that characterizes the [19th] century, steadily drives all areas of human knowledge in the same scholarly path]. (p. 1)*

Reverting to the fullness of nature, as pointed out earlier, ought to be a gauge of scientific research, something of an offense against positivism and the manipulation/simulation of reality therefrom.

As Zola (1880/1881) wrote,

> *L'homme n'est plus une abstraction intellectuelle, la nature le détermine et le complète Le naturalisme c'est le retour à la nature, c'est cette opération que les savants ont faite le jour où ils se sont avisés de partir de l'étude des corps et des phénomènes, de se baser sur l'expérience, de procéder par l'analyse [Human being*

> *is no longer a conceptual abstract, rather he is shaped and fulfilled by nature… Naturalism is about returning to nature, it is the move that scientists made the moment that they decided to depart from the study of bodies and phenomena to be involved with experience and conduct the inquiry]. (p. 114)*

As explained earlier, however, the doctrine of naturalistic inquiry was outlined by Bernard (1865). Sure enough, Zola (1880/1881) himself admittedly credited Bernard with devising the naturalistic movement, stating: "*car je compte, sur tous les points, me retrancher derrière Claude Bernard* [For I intend, on all accounts, to be allegiant to Claude Bernard]" (p. 2). With naturalism, human experience --- long rejected by positivism as contrary to positive knowledge --- has been (re)integrated within the realm of scholarly research across disciplines and methods.

In modern day literatures of research method, naturalism as a method put forth to remedy the flaws of experimental inquiry has received considerable attention. Some of the most useful contemporary vulgarizations of naturalism, also termed as naturalistic inquiry, can be encountered with the works of Willems and Rausch (1969a, b, c), Willems (1969), and Denzin (1970). As Willems and Rausch (1969a) indicated, naturalistic investigation is "investigation of phenomena within and in relation to their naturally occurring contexts" (p. 3). The natural, unaltered setting in which selected phenomena develop distinguishes naturalistic from experimental inquiry. As Willems and Rausch (1969b) further clarified, "'naturalistic' is an adjective that modifies 'research' or 'method' and not 'phenomena'" (p. 273). Naturalistic inquiry is a matter of degree to which a researcher interferes with a topic/phenomenon. This is the doctrine of naturalism inherited from Bernard (1865). As such naturalism applies to all specialties of scientific research to permit a fuller grasp of the chosen phenomenon. From another perspective, naturalistic inquiry presupposes "the studied commitment to actively enter the worlds of native people and to render those worlds understandable" (Denzin, 1970, p. 166). The focus is laid more on the non-manipulated or non-controlled setting of the topic being studied than on the chosen topic and espoused method of the study. To explain, "naturalness or naturalism," as Willems (1969, p. 46) would phrase it, indicates the method adhered to rather than the topic/phenomenon coped with. For naturalistic inquiry, the expression naturalness entails freshness, primitiveness, genuineness, or originality of that which is researched, the researched context, and/or those researched.

Among the major benefits of naturalistic inquiry is, for example, greater ability for researchers to study process as well as to increase generalizability (see Guba, 1978, pp. 79-80). A process is better studied and understood in its natural realm than it is in its staged, manipulated, or controlled realm. Equally, the power of generalizability regarding a phenomenon increases as the full, natural context of the phenomenon is unwrapped. Just like any method, naturalistic research method can pose challenges to uninformed researchers. Some of the most pressing challenges seen to be concomitant with naturalistic inquiry include focus and boundary (see Guba, 1978, pp. 80-81). Because the non-manipulated, natural setting of a phenomenon tends to be intricate in scope and depth there is a great need for focus and boundary to make the study feasible. Focus and boundary depend on the topic selected, site/setting concerned with, and resources granted. Naturalistic inquiry helps reverse the widespread entrenched dichotomy between natural, physical sciences and human, social sciences, with the idea that a

broader view on and/or fuller involvement with human experience, or any topic of scholarly inquiry --- be it social or physical ---, from within or in reference to its real-world setting yields greater latitude for generalization. The goal is to promote the inquiry into and understanding of fuller and fresher reality/life as opposed to lab-simulated reality/life. With its major emphasis on fuller, untainted context of those researched or that which is researched, naturalistic inquiry can profit research in a variety of ways.

Phenomenology:

Phenomenology, as generally understood in research method literature, is the trail of interpretivism that advocates for the fuller manifestation of reality/world, relieved from biases and taken-for-granted attitudes. Phenomenology is a term believed to have been first employed in 1764 (Lambert, 1764) by mathematician and social thinker Johann Heinrich Lambert (1728-1777). Because Lambert was born in the city of Mulhouse, northeast of France, at the German and Swiss borders, that has changed nationality, from Swiss to French to German, for most of its history from the 14th century up until it was reintegrated into France in 1918, Lambert can be presented as a German, French, or Swiss. While phenomenology is traceable to various authors such as Aristotle, Oetinger, Kant, etc., it is believed to have been explicitly articulated by German philosopher Edmund Husserl (1859-1938), who comprehensively disapproved of positivism (Renaudie, 2021; Husserl, 1913). The word phenomenology derives from the Greek phrase *φαινόμην* [phainomên], which is the imperfect tense of the verb *φαίνω* [phainô] meaning to bring to light, to cause to appear, to show forth, to shine brightly, to be manifest, etc. Phenomenology believes that biased, taken-for-granted attitudes of humans preclude the manifestation of reality. One central teaching of phenomenology resides in Husserl (1901/1913) determined reminder that, all things considered, "*Wir wollen auf die 'Sachen selbst' zurückgehen*" [we need to return to things themselves]" (p. 6). In order to implement this teaching, a whole host of explanatory phrases are suggested throughout Husserl writings, most of which being centered around the Greek concept *ἐποχή* (epochê), referring to a practice consisting of suspending judgment/knowledge. The Greek noun *ἐποχή* --- purposely used by Husserl (1913/2020, p. 87) --- means cessation, pause, suspension, check, etc., and derives from the Greek verb *ἐπέχω* (épéchô), which stands for: to pause, hold on, stop, cease, contain, hold back, keep in check, etc. (Liddell & Scott, 1843/1996). Purposely, Husserl (1913/2020) proposed a variety of terms to highlight the leitmotif of phenomenological method, as he put it, "*eine Methode 'phänomenologischer Reduktionen'* [a method of phenomenological reductions]" (p. 87). As illustrated further, the method implies "*eine gewissen Urteilenthaltung* [a kind of abstention from judgement" (Husserl, 1913/2020, p. 87). Phenomenological method is not just about a suspension of judgement, but rather a reversal of and/or antidote to prejudices. This means "*das Phänomen der 'Einklammerung' oder 'Auschaltung' … des Zweifelsversuches* [the phenomenon of 'bracketing' or 'unplugging'… [or] of critical approach" (Husserl (1913/2020, p. 87). By emphasizing self-reflexivity, epochal or phenomenological reduction helps a researcher to better investigate the topic at hand.

As Husserl (1913/2020) clarified,

> *das heißt aber, sich nach den Sachen selbst richten, bzw. von den Reden und Meinungen auf dies Sachen selbst zurückgehen, sie in ihrer Selbstgegebenheit befragen und alle sachfremden Vorurteilen beiseitetun [Typically, the point is to conform with things themselves, or rather move from speeches and opinions back*

> *to things themselves, investigating them in their own conditions and putting aside all unwarranted biases]. (p. 59)*

As a method, phenomenology recommends an unrestricted return to and/or fresh involvement in things/phenomena themselves or reality itself in its fuller brightness or fresher unfoldment.

Ethnography:

Ethnography represents one of the least advertised and taught research methods. Ethnography, also termed fieldwork (Hammersley & Atkinson, 2019; Whitehead, 2005), is a research method that has at its core a researcher's deeper, longer immersion into and/or firmer familiarity with people's life/reality. Ethnographic research method presupposes comparatively prolonged participation and stay, depending on the topic and location at hand. Widespread consideration of ethnography as the province of socio-cultural anthropology is at best shortsighted and at most unscientific. Humans across cultures and locations have practiced, and still do, ethnography in countless ways. It is like saying that speech/writing is the province of linguists, or that business is the province of business experts, or even that decency is the province of psychologists, etc. More than popularly believed, lots of professions demand prolonged observation and stay, some of which throughout a practitioner's lifespan, for example farmers, sculptors, potters, biologists, miners, etc. What is worth-remembering is that the word fieldwork originates from agriculture (hence the expression field), wherein intense activity of observation and stay is spent in the crops to maximize harvest/outcome. The word ethnography is a Latinized transliteration, *ethnographia*, of the Greek words *ἔθνος* [ethnos] and *γραφή* [graphê], respectively meaning people and writing. Importantly worth-remembering also is that the word *ethnographia* was arguably first used in 1767 by historians, not by anthropologists (see Rosa & Vermeulen, 2022).

As depicted supra, ethnography is applied by people on a daily basis, in infinite ways, such as repeated observations, relationships, apprenticeships, and all learnings purposely completed from a younger age onward (i.e., sport, skill, adoption, etc.). Even within the field of social/cultural anthropology -- with which the term ethnography tends to be equated -- ethnography is a method in flux and did not receive a fully-blown status up until the 19th century, with the work of, among others, Polish-born British social scholar Bronisław Kasper Malinowski (1884-1942). As Rosa and Vermeulen (2022) asserted,

> *It was mostly Malinowski and the graduate student of his seminar at the LSE [London School of Economics] who would equate the description of a people with participant observation. But there were others, notably in Britain… Thanks to their efforts, the term "field work" or "field-work" became the modern-day equivalent of what previously had been generally known as "ethnography." Before 1900, ethnography referred to a descriptive and comparative study of a people, tribe or nation, a research program rather than a method of inquiry – even if it was evident for ethnographers before Malinowski describing implied observing and comparing. (pp. 29-30)*

As seen in the above characterization, ethnography made its way in anthropology relatively late, beefing up long held human skills. This is not tantamount to downgrading anthropological

fieldwork. To clarify, Malinowski himself, largely regarded as the father of fieldwork method, earned his PhD in physics/mathematics, not in anthropology (Skalník, 2021). One point of utmost merit here, with regard to ethnography being employed in the field of cultural anthropology, is that anthropologists avid for ethnographic research method had/have to oppose the teachings of positivism. As Rosa and Vermeulen (2022) elicited, "The variety of survey methods within the expeditionary and multidisciplinary model compromises the idea that it pioneered ethnographic intensive fieldwork" (p. 10, see also Malinowski rejection of positivism in Skalník, 2021, p. 2). It is hardly startling that due to the fundamental tasks of finer immersion into and/or familiarity with people's reality or that which is researched, ethnography irrevocably defies cookie-cutter approach, a staple of positivism. As Hammersley and Atkinson (2019) affirmed, "ethnography usually involves the researcher's participating, overtly or covertly, in people's daily lives for an extended period of time" (p. 3). Extended period of time aims to instill deeper observation along with finer understanding of that which is researched. Ethnography represents one of the oldest and most fundamental forms of research method.

To recap, interpretive inquiry repudiates the view of research, scientific knowledge, and conclusions that are free/independent from human beliefs, values, agendas, perspectives, and/or contexts in and from which a given research has operated. Neither the term hermeneutics deriving from the Greek adjective *ἑρμηνεύτικος* [hermeneutikos], precisely from the Greek verb *ἑρμηνεύω* [hermeneuô] (Liddell & Scott, 1843/1996), nor the Latin deponent verb *interpretor*, akin more exactly to the verb *praestare* (Andrews, 1851, p. 1189), nor the German phrases *verstehende Soziologie* and *interpretierende Soziologie* from which results the term interpretivism --- deems the pursuit of meaning as the definer/gist of interpretivism. This is not arguing that interpretivism does not involve the meaning intended by concerned individuals for given experiences. Rather interpretive work stretches far beyond the cult or pursuit of meaning, by unraveling researched reality to the fullest.

Both human, social sciences and physical, natural sciences have a lesson to learn from the inadequacy of the proposed duality human sciences vs physical sciences. As shown earlier, very many warnings about not embracing solipsistic or reductionistic lines of scientific inquiry had been issued all along the formation of major research methods. To refresh the memory, hermeneutic circle formulated by Dannhauer (1630, p. 36) highlights object and subject as totalities inescapably overlapping with each other --- something of benefit to both physical, natural sciences and human/social sciences. Hermeneutics in general and hermeneutic circle in particular came about as a backlash against the celebration by Bacon (1597/1859, 1620/1901) of scientific inquiry at the exclusion of and in opposition to metaphysical, human, and philosophical statements/inquiries. Fairly understandably, racing to the rescue of social research from scientific disqualification and mischaracterization, Comte (1824a, p. 6) championed the idea social physics regarding social research method. To add flavor to the discussion, most contention that broke out between Saint-Simon and Comte --- as observed supra --- boiled down to Saint-Simon relegating philosophical, metaphysical reflections of social research to the fringes of scholarly research (see Saint-Simon, 1817, pp. 88-89; 1824, pp. 1-2). Similarly, in coining the well-known phrase idiographic and nomothetic research, Windelband (1894, p. 12) discouraged the divide idiographic vs nomological disciplines or alternatively the divide descriptive vs prescriptive disciplines as being inaccurate and less about knowledge itself than the methods used across and within all disciplines. One prime lesson to be learned

here for scholarly research is that in order to achieve the greatest impact, scientific inquiry ought to involve circular process, peering at all dimensions/factors that have shaped or are shaped by that which is researched or those researched. Circular inquiry is one that goes past the traditional divide objective (i.e., object) vs subjective (i.e., subject) as the marker of science. Circular inquiry or scholarly inquiry attuned to hermeneutic circle is a litmus test for greater impact in the world. The crux of the lesson here is, just as physical, natural sciences are not as objective as often claimed, so too human, social sciences are not as subjective as commonly advertised. Although the advice or reasoning of circular research or hermeneutic circle is readily well taken, most academic research hardly departs from the divide objective vs subjective when defining and/or designing research method.

LIMITATIONS

While the paper reassessed multiple concepts proper to research methodology, it suffers from some limitations, of which four warrant recognition. First, the paper embraced several important topics that could have each needed a separate paper. Second, the paper combined key sprawling historical periods from Antiquity to Middle Ages to Modern Times to Contemporary Times, without homing in on one. Third, and last, the paper did not single out a particular academic discipline as a prototypical example (e.g., psychology, sociology, anthropology, geography, etc.) out of which discussions could have arisen. Despite avowed and and such-like limitations, the paper broached fundamentally shared trails and concepts of research to allow for better, deeper informed research methodologies needed across scholarly specialties. To this effect, the paper shed greater light on unilaterally held research practices.

CONCLUSION

Misunderstandings besetting research methods tend to thwart research practice across disciplines. Not one research method owns reality and the knowledge of it. Rather research method entails an approach toward/worldview about reality and inquiry thereinto. This paper reassessed two foremost worldviews of research, namely, positivism and interpretivism along with related eminent types and concepts. Authoritative materials out of which have arisen positivism and interpretivism respectively remain lesser known, giving free rein to misleading understandings from across the spectrum of methodological niches. Pervasive beliefs equating science with Western civilization and positivistic tenets have been reversed, so has the cult of meaning with which interpretivism tends to be identified. Interpretivism has been recalibrated to real world, well past textual or semantic pursuit. Thought-provoking methodological concepts such as hermeneutic circle, situational responsivity, quantum physics, *deutendes Verstehen* [showing/pointing/indicating grasp], etc. have been moved to center stage. Review of words such empirical, theoretical, theory, etc. brings to light much lesser advertised and discussed notions of a tighter watching of, engaging with, or experiencing the thing(s) researched, etc. Research methodologies call for a rethink to fuel starker, life-changing impact in the world.

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