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Aim

The aim of this paper is to add to discussions on the role of paradigmatic worldviews when planning for a research study. An understanding of paradigmatic developmental trajectories is necessary when planning a study and can shape the search for understanding. It is hoped that the discussion presented here will assist both novice and experienced researchers in their articulation behind the rationale for their paradigm choices.

Background

Thomas Kuhn's (1922-1996) acknowledgement of a paradigm as a way that scientists (within their relative time and society) make sense of their world and its reality gave recognition to the ideal of 'paradigm shift'. This 'shift' exposes the transient nature of paradigmatic development shaped by both societal and scientific evolution. This ongoing evolutionary development provides the researcher with a plethora of paradigmatic perspectives to consider with regards to how research is undertaken and the search for understanding achieved.

Discussion

In this paper, an overview of the dominant inquiry paradigms is presented reflecting an ongoing paradigmatic development trajectory shaped by ontological, epistemological and methodological perspectives. This developmental trajectory is considered with regards to potential paradigmatic choices that shape research aims, objectives and focus in the search for understanding.

Conclusion

The inherent debates with regards to paradigm shift, division, war and synthesis leaves the researcher with a plethora of perspectives to consider. Articulating the paradigm worldviews

underpinning constructivism, interpretivism and pragmatism is particularly challenging because of the blurring of boundaries between them.

Implications for research/practice

The evolutionary nature of paradigmatic developments has provided nurse researchers with the opportunity for methodological openness with regards to the myriad of research approaches, methods and designs that they may choose to answer their research question. However, in guiding the search for understanding, it is imperative that the researcher consider their ontological stance and the nature of the research question. This is challenging in constructivism, interpretivism and pragmatism, where there is often overlap of paradigm worldview positions.

Keywords

Paradigms, Epistemology, Ontology, Research Method

Introduction

Thomas Kuhn's (1922-1996) influential work *'The Structure of Scientific Revolutions'* (2012) first acknowledged the concept of a paradigm highlighting that this concept is in essence a way that scientists within their relative time and society make sense of their world and its reality. Kuhn's acknowledgement of 'paradigm shift' recognized that ways of viewing the world and reality were transient throughout history as both society and science evolve (Lincoln et al 2001, Crotty 1998, Guba 1990). To add to this complexity Morgan (2007) argued that Kuhn (2012) viewed the concept of a paradigm from very different outlooks summarizing four key perspectives, these being:

- Paradigm as a worldview acknowledging a way of thinking about the world that is inclusive of morals, values, attitudes and beliefs
- Paradigm as an epistemological stance acknowledging a set of shared belief systems that influence the manner in which research questions are asked and investigated
- Paradigm as a community of practice reflecting a shared agreed view about how a particular research discipline should investigate with agreement on the methodological procedures that should be employed
- Paradigm as set of exemplars that address how best to find solutions to research problems

Today while there are numerous recognised research paradigms (Creswell 2014; Denzin and Lincoln 2011, Lincoln et al 2011, Morgan 2007), the categorisation of these still remain nebulous. Denzin and Lincoln (2011) acknowledge six paradigms, these being: constructivism, interpretivism, feminism, positivism, post-positivism and critical theory. Creswell (2014) from a theoretical stance identified four paradigms, these being, post-positivism, participatory/advocacy, social constructivism and pragmatism.

The literature highlights inherent debates with regards to how these arrays of paradigms are understood with acknowledgement of the development of paradigms as a trajectory. This trajectory highlights a continuum from positivism/ post positivism focusing on predominantly objectivist research reflecting predominance in the use of quantitative methods to constructionist/ interpretive research reflecting predominance in the use of qualitative research (Rolfe 2006, Parahoo, 2014). This predominance toward particular research paradigms and methods gives rise to the inherent qualitative quantitative debate

reflected in the literature (Crotty 1998, Mertens 2015). However, Guba (1990) acknowledges an array of paradigmatic perspectives that guide our everyday actions recognising the paradigms “that guide disciplined inquiry” as paramount within research. The following provides an overview of the dominant inquiry paradigms describing their ontological, epistemological perspectives and methodological approaches, these being, positivism/post-positivism, constructivism, interpretivism and pragmatism.

Before explicating the origins and focus of the dominant paradigms, it is important to clarify what is meant by key terms used in discussions on paradigms, i.e. ontology and epistemology. Ontology, considers existence questioning what constitutes reality. Thus, the researcher’s ontological stance reflected in how one views the world and the nature of that reality is influential in shaping the search for understanding (Creswell 2014). Epistemology considers how knowledge is created and most importantly how we learn about our world, again, this is important in shaping the methods chosen to study research questions and explicate understanding (Creswell 2014). Both ontology, exploring how reality can be understood, and epistemology, addressing what can be known are therefore key considerations shaping how the search for understanding is conducted.

Positivism

The positivist philosophy, associated with the French philosopher Auguste Comte (1789-1857) reflects the assumptions that logic, measurement and the utilization of deductive reasoning to prove absolute truths can be applied to the study of phenomena. Empiricism, being the main characteristic of positivism argues that what is observable by the human senses is factual suggesting the existence of an objective universal reality that is the subject

of universal laws and mechanisms (Creswell 2014).

Within the positivist philosophy the focus is on objectivity and distance involving hypothesis or theory testing highlighting both the researcher and the subject of research as separate independent structures. Thus, the researcher's role within this philosophical stance is that of objectivity and distance, explorer of universal realities, verifier of theories/hypothesis in the search for unbiased universal truths (Burns and Grove 2011, Polit et al 2013)

The methods used to achieve this goal are predominantly those that facilitate a process of objective measurement reflecting a hypothetico-deductive focus (Burns and Grove 2011, Polit et al 2013). For this purpose quantifiable measurements reflecting quantitative methods including mathematical and statistical analytical procedures are used with the aim of determining probabilities or general laws pertinent to the phenomena being studied (Burns and Grove 2011, Polit et al 2013).

Advantages of the positivist paradigm include its ability to generate what are deemed to be generalisable replicable findings (Denzin and Lincoln 2011, Polit et al 2013). However, criticisms have also been raised with regards to its focus on the measurement of observable phenomena to the exclusion of phenomena that is unobservable (Denzin and Lincoln 2011, Polit et al 2013).

Post positivism

While positivism and post positivism are sometimes grouped in a single paradigm, there are a number of differences in their ontological and epistemological perspectives. Post-

positivism as a paradigm reflects an epistemological and ontological evolutionary process in understanding the world highlighting the epistemological stance that research outcomes include an estimation of truth as opposed to absolute truth as reflected in the positivist stance (Creswell 2014, Denzin and Lincoln 2011). Philip and Burbules (2000) highlight some key assumptions associated with this paradigm reflecting an 'epistemological scepticism' that knowledge is conjectural as opposed to absolute. Thus, the focus of research is to make claims and reform, abandon or refine these for other more strongly warranted claims. Ontologically the perspective is one that assumes understandings of reality from the context of that reality being a potentially imperfect understanding (Welford et al 2011).

Furthermore differences exist from the positivist paradigm in that post-positivism acknowledges the existence of unobservable entities as well as the capacity to explain observable phenomena (Creswell 2014). To this end, the methodological focus within the post-positivist paradigm reflects the use of 'multiple methods' from both quantitative and qualitative data sources in the search for truths that can be provided by what was once viewed as dichotomous positions (Rolfe 2006).

However, it is worth noting that post-positivism is not a rejection of the positivist stance but rather a desirability to reach an estimation of the truth emphasizing empirical testing and controlled research methods in the achievement of this goal (Lincoln et al 2011, Creswell 2014). The position taken within this paradigm is one of modified dualism and attempted objectivity (Lincoln et al 2011). Some criticism has been raised of this stance that 'holism' is neglected and in essence post-positivism is a limited attempt to address the criticism of the positivist paradigm (Mertens 2015, Patton 2015). This viewpoint is contested with O'Leary (2014) arguing that post-positivism is intuitive, holistic, inductive and exploratory. However,

the predominant view is that both positivism and post-positivism is more often aligned to quantitative methods of data collection and analysis (Guba 1990, Denzin and Lincoln 2011) perhaps validating both Mertens' (2015) and Patton's (2015) assertions. Nevertheless, post-positivism strongly supports the use of some qualitative methods. This is illustrated for example in the case of 'scientific phenomenology' (otherwise known as 'descriptive or empirical phenomenology' developed in the pursuit of a "scientific practice based upon phenomenological philosophy" (Giorgi 2000 p. 4), which arose out of dissatisfaction with the limitations of empiricism (Giorgi 2000). Moreover, in another example, Routledge (2007) describes her use of a feminist empiricist perspective fitting in a postpositivist paradigm.

Interpretivism

The epistemological stance within the interpretivist paradigm is one of both subjectivity and intersubjectivity (Weaver and Olson 2006). The ontological stance reflects one of lived experience, cultural influence and meaning while acknowledging the potential for multiple realities (Welford et al 2011, Weaver and Olson 2006).

Within this paradigm the recognition of potential 'multiple realities' as explained from the emic perspective of the 'lived experience' is emphasised (Lincoln et al 2011, Welford et al 2011). The German intellectual traditions of both 'Hermeneutics' [interpretation] and 'Verstehen' [understanding] are acknowledged as the key influences in the development of the interpretivist paradigm, giving clues to the complexity and many 'shades' of methodologies that all under the heading of 'interpretivism', which can be perplexing (Dahlberg et al, 2008). These include the methodologies and methods of phenomenology, symbolic interactionism and hermeneutics, and within each of these are a range of

approaches, each with subtle differing philosophical nuances. For instance, the many approaches to studying the 'lived experience' range from the lifeworld approach offered by Dahlberg et al (2008) to the inclusion of idiography in interpretative phenomenological analysis (Smyth et al 2009).

Wilhelm Dilthey's (1833-1911) distinctions between natural and human sciences are the catalyst in the development of the interpretive paradigm. Dilthey's *'Introduction to the Human Sciences'* (1883) identified distinctions in both natural and human/social science realities. Verstehen as described by Dilthey acknowledges all of the human capacities including subjective lived experience as opposed to Verstand (pure intellectual understanding) reflecting in essence the positivist paradigm of identifying causality, consistencies, regularity and universal laws.

Max Weber (1864-1920) is also acknowledged as contrasting research within the human and social sciences as Verstehen or understanding and Erlaren or explanation reflecting research within the natural sciences (Crotty 1998). Weber's work contests the earlier 'distinctions' made by Dilthey between the natural and human sciences. He argued that "interpretation of social actions" can provide "explanation" with regards to both causality and effects within sociology (Weber 1951, cited in Crotty 1998, p 69). Thus, Weber's viewpoint reflects a potential synthesis of research methodologies with his research outcome of 'causally adequate' reflecting a deviation from the solely positivist stance of 'absolute truth' to one of 'probability'. Thus within the literature Weber's Verstehen is viewed as empiricist (Schütz 1972). However, Weber's view of Verstehen has been contended (Schütz 1972). Schütz' (1972) work *'The Phenomenology of the Social World'* provides a critique of Weber and asserts that the manner in which meaning is constructed from individual experience is the

way individuals make sense and come to terms with their own unique world of daily experiences. He therefore contests Weber's notion of interpretation of social actions as *Erlären* or explanation and puts forth individual (subjectivity) as the centre point of interpretivism. Nevertheless, Schütz attempted to fuse sociology and phenomenology by incorporating the phenomenological viewpoints of Husserl with Weber's 'verstehen', and Mead's symbolic interactionism in the development of ethnomethodology (Dowling, 2007). Ethnomethodology is basically a way of studying how people in everyday settings reason and formulate their actions and it aims is to gain an understanding of "taken-for-granted" rules which shape our everyday lives (Heritage, 1984).

Essentially, the interpretative paradigm reflects arecognition of "... subjective understanding and the need to interpret it". Thus "explanation and understanding" reflect "the researcher's understanding of the subjects own understanding of his or her experience" (Hovorka and Lee 2010, p 3). Within this stance the researcher's role is one of interpreter reflecting a subjectivist stance (Guba 1990). Inherent within this role is the recognition by the researcher of their own experiences that potentially shape their interpretations (Crotty 1998, Guba 1990, Paley 2005). Attention to reflexivity is therefore central in methodologies within this paradigm.

Constructivism

Constructivism which is often aligned to interpretivism reflects in essence a challenge to both the positivist and post-positivist paradigms (Creswell 2014; Crotty, 1998). Similarities between the interpretivist and constructionist paradigms can be drawn (Creswell, 2014; Crotty, 1998). For instance, the contemporary methodology of the Vancouver School of

doing phenomenology (Halldorsdottir 2000) is an approach to phenomenology that is heavily influenced by the ideas proposed in constructivism.

It is important to distinguish between constructivism and constructionism which are often used ambiguously within the literature (Crotty, 1998; Young and Collin, 2004). Crotty (1998, p 58) alerts us to the distinctions between these two concepts highlighting that constructivism addresses the “unique experience of each of us” while constructionism “emphasizes the hold our culture has on us: it shapes the way in which we see things....and gives us a quite different view of the world”. From an epistemological perspective constructivism is focused on ‘how we know’ and in essence by inference ‘what meaning we place on this knowledge’.

Interestingly, arguments abound as to the ambiguous use of both ‘constructivism’ and ‘constructionism’ with evidence of limited agreement on what separates these two perspectives apart from the foci on individual cognition versus social interaction or processes. Crotty (1998, p58) suggests constructivism places emphasis on mind and meaning making as opposed to constructionism which places emphasis on “the collective generation of meaning”

More recently both of these perspectives appear to be collectively referred to as ‘constructivisms’ (Young and Collin 2004). However despite this ongoing ambiguity what is clear is the use of qualitative interpretive methods within both constructivism and constructionism (Crotty 1998). Thus, the interpretative paradigm is both influential and intertwined with constructivism and constructionism (Gergen 2015, Crotty 1998).

As an exemplar, critical realism highlights the potential recognizing both individual meaning making and collective generation of meaning with regards to knowledge generation. Critical realism combines realist ontology with an interpretive epistemology (Bhaskar 1989, Archer 1995, Layder 1997). Its' principles acknowledge that; society and people exist mutually in a social world; mechanisms [structures] have potential to impact on existence and the human being as actor/agent may not always be aware of the impact broader social structures have on their existence (Bhaskar 1989, Layder 1997). This in essence means there is a reorientation of the relationship between ontology and epistemology, recognising the imperative to analyse what exists (ontology) in the context of what can be known and understood (epistemology) (Bhaskar 1989, 2008, Archer 1995, Layder 1997).

This ontologically layered approach toward knowledge generation and understanding has potential within nursing research as it provides for the opportunity to expose both the subjective and objective realms of existence. In this manner, meaning making linked with subjective emic experiences has the potential to be explained with regards to the possible causative mechanisms that are shaping that experience. In essence it offers the nurse researcher the opportunity to acknowledge social context in conjunction with individual meaning. Acknowledgement of this realist ontology with an interpretivist epistemology facilitates opportunity for a pragmatic approach toward knowledge development. This reflects what has been described as 'the third way' of creating knowledge that since the 1990's has given rise to the pragmatic paradigm (Cresswell 2007, 2009).

Pragmatism

The evolution of the pragmatic paradigm reflects the net result of the 'paradigm wars' in

which the singular or mono method approach to research was criticised and the movement to a more eclectic approach inclusive of ‘mixing’ both qualitative and quantitative methods were developed (Tashakkori and Teddie 2010). In mixing methods, debates abound as to how this mix is being attained and acknowledges either combination, concurrent, sequential or parallel mixes of research designs (Creswell 2014; Tashakkori and Teddie 2010).

However, criticisms have been raised of the use of the term ‘mixed methods’ highlighting that perhaps within the pragmatic paradigm the foci should be on the development of ‘mutual research designs’ that as opposed to mixing or being mixed serve to compliment the research process. Thus, Armitage and Keeble (2007, p. 8) argue that this foci “recognises the separateness of opposing views but also recognises the other’s attributes, characteristics and beliefs i.e. a partnership based upon a reciprocal relationship”. This perhaps echoes the viewpoint that the dichotomous view of both quantitative and qualitative research should be reframed to reflect a continuum to acknowledge the strength of both approaches and diminish their respective weaknesses (Onwuegbuzie and Leech 2005, Patton 2002, Tashakkori and Teddie 2010).

Thus, the pragmatic paradigm from an ontological and epistemological perspective reflects a pluralistic emphasis on both understanding the world and on how research questions or problems can be resolved (Morgan 2007, Tashakkori and Teddie 2010). Emphasis is placed on ‘methodological openness’ (Patton 2015) in order to address and answer the complexity of real world research reflecting a myriad of real life challenges (Creswell 2014, 2013). Thus, the foci of the researcher’s stance who is a pragmatist is on plurality and is reflected in the myriad of research approaches, methods and designs that they may choose to utilise to best answer the research question (Creswell 2014;

Onwuegbuzie and Leech 2005).

Implications

For the nurse researcher, due consideration of the research question, aims and objectives shape their choice of paradigmatic perspective. For example, from both a positivist/post positivist viewpoint if the aim and objective of the research is to expose 'absolute truth' or an 'estimation of truth', using these paradigms as an underpinning theoretical framework is useful (Creswell 2014, Denzin and Lincoln 2011). In aiming to expose this type of truth predominantly the research methods employed reflect a focus on measuring observable phenomena, empirical testing or control (Creswell 2014, Polit et al 2013, Denzin and Lincoln 2011, Lincoln *et al* 2011). The role of the researcher and the researched within these paradigmatic perspectives is that of two separate structures emphasising objectivity or attempted objectivity, distance and modified dualism (Burns and Grove 2011, Creswell 2014, Polit et al 2013). Interpretation of knowledge is predominantly underpinned by a deterministic, empiricist focus in which probable cause and effect or outcomes are revealed (Creswell 2014). However, as outlined earlier, descriptive phenomenology is an example of a qualitative approach within a postpositivist paradigm.

From an interpretivist perspective, while there are a range of multiple methodologies available for nurse researchers to choose from, making the choice that best suits the research question very challenging. Moreover, while the overlap between the interpretivist and constructivist paradigms presents another challenge for phenomenological nurse researchers it also presents opportunities. The Vancouver School of doing phenomenology represents a contemporary approach to undertaking a phenomenological study which offers

a way of uncovering individuals' lived experiences in their context, as well as appreciating that how each person perceives the world is unique to them and their perception is formed by previous experiences and their own interpretations of these experiences (Halldorsdottir 2000).

Conclusion

The discussion has revealed the inherent debates with regards to paradigm shift, division, war and synthesis (Creswell 2014, 2013; Kuhn 2012, Morgan 2007, Tashakkori and Teddie, 2010) leaving for the researcher a plethora of perspectives to consider with regards to how research is undertaken. However, we return to Creswell's (2014) view that irrespective of the chosen research method all research is guided by the researcher's ontological stance and the nature of the research question asked. These key considerations are paramount in shaping the researcher's ontological, epistemological and methodological focus that guides the search for understanding.

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