Giddings, L. S., & Grant, B. M. (2007). A Trojan Horse for positivism? A critique of mixed methods research. *Advances in Nursing Science, 30*(1), 52-60.

Mixed methods research is being promoted as a practice that breaches divide between qualitative and quantitative research. Here we join the current debate in the nursing literature[1-5] by advancing the view that mixed methods is a Trojan Horse for positivist enquiry, depending for its appeal on a pragmatic orientation. The critique of mixed methods research offered here arises from our shared concern at its contemporary positioning as the "third methodological movement"[6(p.ix)]. Such a positioning is fraught with theoretical and political complexities: in particular it shores up the argument that research is value neutral rather than grappling with its painful politics. In what follows, and drawing on a comprehensive review of recent nursing research (Giddings & Williams in process), we will argue that mixed methods research in nursing and health generally, and increasingly in the social sciences including education, has been captured by a pragmatic postpositivism and that such capture secures mixed methods within the broader positivist project to know the world in particular ways. The effect of this capture is to reinstall the marginalisation of other forms of knowing. Moreover the resultant narrowing of focus means more circumscribed fields of values at play, questions being asked, forms of data being collected, modes of analysis being undertaken, and possible outcomes being generated.

The trend towards reinstalling positivist research as the methodology 'of choice' has been noted by others. For example Patti Lather notes "a resurgent positivism and governmental imposition of experimental design as the gold standard in [educational] research methods" [7(p.35)] in North America, as does Robert Donmoyer [8] who notes that this has been a recent and rather dramatic change. In her critique of evidence-based practice, Sue Clegg points towards similar trends in attitudes towards social policy research in the United

Kingdom as they increasingly become subject to the logic of "what works" [9(p.416)]. A cursory survey of websites for health funding bodies by one of the authors (Giddings) shows the prevalence of terms such as "holistic", "integrated", "multi-disciplinary", "inter-disciplinary", "cross-disciplinary", and "collaborative", all code-words signalling a preference for mixed methods research designs.

In what follows we explain our position by exploring how mixed methods research has been captured by pragmatic postpositivism. In particular we will tease out the theoretical continuities between positivism and postpositivism to clarify our claim that the latter remains within the paradigmatic purview of the former. In previous work we have laid out a schematic view of researcher paradigms in the health and social sciences [10]. The critique presented here draws on that schema which comprised four paradigms: positivist, interpretivist, radical (also called critical) and poststructural. In that work we also acknowledged the emergence of indigenous research – for example Kaupapa Maori research in Aotearoa New Zealand – as a possible further paradigm. We go on to attend to two related conceptual confusions that are critical to this debate. Finally, we acknowledge the strengths of mixed methods research and explore the ways it can serve paradigms other than that most closely associated with science.

The Pragmatic and Postpositivist Capture of Mixed Methods Research

Pragmatism and postpositivism have been significant influences on the modern mixed methods movement. Although both have been viewed as paradigms or "knowledge claims"[11(pp.4-12)], we see pragmatism as an ideological position *available within any paradigm* rather than a paradigm in its own right. In practice, proponents of mixed methods research are often pragmatists in orientation. Rather than focussing on epistemological integrity, they emphasise the importance of getting "the job done"[12(p.101)] . It is the practicality of the designs and their "wide range of uses" [13(p.364)] that is valued. For these reasons, pragmatism's

conjuncture with postpositivism is particularly fitting: as modes of research enquiry, both are marked by a lack of theoretical reflexivity and both value eclecticism in choice of methods, although for different reasons.

In contrast to pragmatism, postpositivism *is* of the order of a paradigm: it is a distinctive development *within* the paradigm of positivism, arising from the recognition of positivism's ideological and practical limitations for some forms of research, including nursing, health and social science research. Crucially post-positivist thinking also contributed to the emergence of the alternative research paradigms identified above, making space for standpoints that no longer believed in the possibility of understanding life from an objective point of view. Our critique is not directed at post-positivism per se but rather the way in which it works stealthily to entrench positivism.

In the short history of health and social science research, the views of scientific positivism have dominated, although not without criticism. For instance, Wilhelm Dilthey (1833-1911) and Edmund Husserl (1859-1938), whose ideas became the basis for modern phenomenology, argued that the scientific method was inappropriate for studying human phenomena: "What [life] is cannot be expressed in a simple formula or explanation. Thought cannot fully go behind life, for it is the expression of life" [14(p.25)].

In the second half of the 20th century, there were multiple challenges to positivist science from the protagonists of other competing paradigms such as feminists, critical social theorists and poststructuralists. But probably most influential were the even earlier criticisms in the 1960s and 70s within the positivist paradigm itself from a group of philosophers of science, including Karl Popper [15], Thomas Kuhn [16], Stephen Toulmin [17] and Paul Feyerabend [18]. While these thinkers came from different perspectives, collectively they destabilised the positivist notions of absolute truth, provable hypotheses, and unbiased, value-free researchers. Their criticisms meant that positivist science began to lose the high ground. Indeed, it was

these postpositivist thinkers that made the ideological space for the emergence of qualitative methodologies in the 1980s and, in turn, the modern-day appearance of mixed methods research. Postpositivism – the 'post' signalling a *development* of positivism – emerged as a more moderate form of positivism, but one that is neither accepted nor understood by all positivists. Indeed it is the case the many positivist researchers do not understand themselves in an epistemological or an ontological sense, a phenomenon not unusual in the self-awareness of dominant social groups.

In many ways the underpinning assumptions of postpositivism are continuous with positivism, as Table 1 below makes plain. Before we go any further, a caution: by categorising research activities into a neat list of philosophical assumptions and characteristics, we are at risk of stereotyping the so-labelled researchers. We are aware of the diversity of opinion among postpositivists, as indeed postpositivist colleagues who critique our work continually remind us! Our categorising framework is offered to show the positivist antecedents of postpositivism in order to support our argument that the latter remains within the general worldview of the former.

[Insert Table 1]

Table 1 summarises the continuities and discontinuities between the key philosophical assumptions of positivism and those of postpositivism. A core fundamental positivist assumption is that of determinism, the belief that effects have a determinable cause and actions have predictable outcomes. Postpositivists maintain this assumption in a modified form: rather than assuming a linear process of cause and effect, they perceive outcomes as the result of a complex array of causative factors that are in interaction with their outcomes. Postpositivists also maintain the positivist assumption of reductionism, the belief that

experience can be reduced to a discrete set of ideas or concepts, which can be described and tested. Again, however, this assumption is modified: postpositivists factor in the unpredictable and contradictory nature of human experience. Another key positivist assumption, objectivism, is the belief that reality exists out in the world and can be observed, measured, and understood. On this point, however, postpositivists diverge from positivists significantly: they tend to argue that reality is socially and culturally constructed and researcher objectivity is impossible. Different postpositivist researchers, though, take a range of stances on this issue: at the most positivist-inflected end of the spectrum, they argue that the researcher must strive to be as neutral as possible while at the other end they argue that the researcher cannot be neutral because she is in relationship with what she is researching.

Postpositivist divergence from 'pure' positivism is found in yet other key assumptions: postpositivists maintain the assumption of theory verification (the belief that laws and theories can explain various realities but that they need to remain open to verification to establish 'truth'), but tend to talk about 'supporting' rather than 'proving' hypotheses. The role of evidence is to establish a high degree of probability, rather than certainty, that something is 'true', hence the term "probabilistic evidence" [19(p.14)]. This represents a critical shift in thinking away from the positivist assumption that theory can be universal and generalisable. Postpositivists also maintain the positivist assumption that the scientific method is best; however, they believe that choice of method is guided by the research question and that research can incorporate multiple methods, including non-traditional ones, especially for triangulation. Tashakkori and Teddlie define triangulation as the "combination and comparisons of multiple data sources, data collection and analysis procedures, research methods, and/or inferences that occur at the end of a study" [6(p.717)]. In other words, triangulation offers ways to verify and confirm findings so the researcher has confidence and some certainty in the conclusions made. While methods are still the processes

by which 'truth' can be established, they are always open to challenge. The research process needs to show evidence of control for bias, with reliability and validity standards used to ensure rigour. This represents another critical shift in thinking away from the positivist assumption that the traditional scientific method is *the* way to establish truth: indeed, the belief that qualitative methods have something to add to the findings of quantitative ones underpins the postpositivist uptake of mixed methods research.

In spite of these challenges to some of positivism's basic tenets, postpositivism is fundamentally an extension of rather than a break from the positivist paradigm. Scientific methods and principles are still accepted as the best ways for discovering true knowledge and solving problems. However, like their positivist kin, postpositivist researchers rarely acknowledge the philosophical and theoretical underpinnings of their research. A recent survey of around 140 mixed methods research articles featuring in nursing journals between 1998 and July 2005 showed the majority of them take an implicit rather than explicit postpositivist orientation towards mixed methods [20]. We have already remarked that such an omission can be understood as characteristic of a dominant culture that does not need to explain itself: the absence of reflexivity about deeply-held assumptions further serves to maintain the dominance of the positivist worldview in the health and social sciences. It is in this sense that mixed methods can be understood as a Trojan Horse for positivism.

What is 'Mixed' in Mixed Methods Research?

The lack of explicitness about paradigmatic positioning extends to other aspects of mixed methods practice – in particular there is often a lack of clear understanding of just what is mixed, methods or methodologies. Our attention now turns to this arena of theoretical and political confusion.

The ingredient that is most commonly mixed in mixed methods research is the methods, not the methodologies, and the methods are mixed in the quite specific sense that

both qualitative and quantitative ones are used. Because of this, some proponents of mixed methods research argue that this approach to research represents the 'best of both worlds', usually understood as the two worldviews of positivism/quantitative research and interpretivism/qualitative research. This claim arises from two critical and persistent confusions: the first is a misunderstanding over the difference between the ideas of methodology and method and the second is that over the status of the terms qualitative and quantitative.

First, the methodology/method pair. The more abstract of the two terms, methodology, refers to the theoretical assumptions and values that underpin a particular research approach. For this reason methodologies *belong within certain paradigms* although they can be adapted to work in others – for example, ethnography was originally an interpretivist methodology but has since been adapted for use within the critical/radical paradigm as 'critical ethnography'. Moreover, particular methodologies are often associated with specific disciplines – for example, although ethnography is characteristic of social anthropology, nursing has subsequently developed and applied it within certain practice contexts. Likewise nursing research has taken up the methodologies of phenomenology and grounded theory that originally developed within other disciplines. Distinctively, methodology is a *thinking tool* that guides how a researcher frames her research question and how she decides on what methods and forms of data analysis to use.

Methods, in contrast, are much more concrete and practical – they are the *doing tools* for collecting and analysing data. To illustrate, one method used commonly in ethnography is 'participant observation' whereby the researcher gathers information by spending time in the community under study. In contrast, a phenomenologist is more likely to use in-depth 'conversations' with a small sample (6-8) of participants to explore the meanings of a particular phenomenon. As tools, methods are almost always a-paradigmatic and therefore

any given method may be used in the service of any paradigm. In practice, however, some methods are closely identified with particular methodologies within certain paradigms. For example, the open-ended interview method is closely associated with many of the methodologies of the interpretivist paradigm, and the survey method with those of the positivist/postpositivist paradigm.

Inability to distinguish between methodology and method can lead to confused thinking and practice on the part of many mixed methods researchers. This in turn has given rise to charges of methodological 'slurring' [21] [22] and internal inconsistency within research design. Moreover sometimes there are claims of methodological triangulation in the literature [23] – that is researchers who say they are bringing together the findings of two or more methodologies in order to strengthen their study and, indeed, often to access funding opportunities. While mixed methodologies research does offer the advantage of approaching a phenomenon from different angles, more often than not such research turns out to be mixing the methods rather than the methodologies. Where methodologies are mixed inside one research project, there are often problems with the commensurability of the findings. This problem is particularly fraught when those methodologies also cross paradigm boundaries because then the underlying assumptions and values are usually contradictory. To give an example of this difficulty: Jennifer Greene and Valerie Caracelli assert the value of a "dialectic mixed methods" stance that intentionally includes different paradigms in order to reach "better understanding" in research via an engagement with the tensions that are invoked between paradigms [12(p.97)]. Yet discussion of their illustrative case culminates in this way: "the dialogues in this evaluation were not actualised as intended, and the reasons were largely related to values and politics" [12(p.98)]. This unsatisfactory outcome is what we would predict from mixed methodology research across paradigms, because the significant differences between paradigms are usually irresolvable, depending as they do on deeply different

assumptions and values about the nature of the world, the people within it, and the relations between them.

Despite these difficulties, successful mixed methodology research is possible under certain circumstances – for example when both methodologies lie within the *same* paradigm the underlying assumptions and values are likely to be coherent and so the different findings are less likely to be in tension with one another. Methodological mixing across paradigms can also be effective where one methodology is in the service of another. In such a case, and in contrast to the example given above, one set of assumptions predominates and the contradictions can be dealt with openly. Feminist grounded theory, critical hermeneutics and critical ethnography are examples of such mixing: in all these cases, methodologies from the interpretive paradigm are framed by theoretical assumptions from the radical/critical paradigm, so that the way the research is carried out from the framing of the question to the presentation of the findings reflects the transformative assumptions typical of the latter. Judith Wuest and colleagues explain one version of this: "When grounded theory and feminist theory are used together, theoretical sensitivity is influenced by feminism: investigators are responsive to the ways that gender, culture, class, ability, age, and sexual orientation are revealed in the data and influence the variation in emerging theoretical concepts" [24(p.258)].

Finally on this matter of methodology and method, a related source of confusion is that mixed methods research is sometimes referred to itself *as a methodology*. In our view, in order to have the status of a methodology, mixed methods research design must be described by a larger term that points to the theoretical positioning underpinning it, for example descriptive (explanatory or exploratory) mixed methods, feminist participatory mixed methods, ethnographic mixed methods and so on. In just such a vein, the most recent version of Lather's paradigm chart lists "positivist mixed methods" and "interpretive mixed methods"

as distinctive practices within disparate paradigms [7(p.37)]. Otherwise the term 'mixed methods' simply refers to a particular selection of methods and as an unsituated practice, risks a lack of internal consistency within the research design.

A second and critical confusion is the perceived difference in status between the terms 'qualitative' and 'quantitative'. The two terms are commonly used to describe the methods or methodologies of mixed methods research. Historically, quantitative research has been viewed as synonymous with positivism and qualitative with interpretivism – hence the association with methodology. More radically, some writers consider the terms to refer to two research paradigms in and of themselves [25]. At the other extreme, they are considered to be terms merely descriptive of forms of data: quantitative data being numbers and statistics, and qualitative being words and narratives. However, like Egon Guba and Yvonna Lincoln, we argue that the two terms most usefully describe different "types of methods" [26(p.105)] that may be used for data collection and analysis, and that methods in this sense are "a-theoretical and a-methodological" [27(p.33)]. As a-theoretical (or a-paradigmatic) *doing tools*, the methods of research can be mixed without contradiction although, as we have remarked above, without methodological awareness they may well be used in ways that at odds with each other and one (usually quantitative) will then come to dominate.

The likely dominance of quantitative data is an outcome of the politics associated with research paradigms. In this landscape positivist science still holds the high ground. For example, scrutinising the available mixed methods research literature, the reader may gain the impression that qualitative research is only exploratory to, or supportive of, quantitative research data. This intimates that qualitative research cannot stand on its own and is only validated by being attached to a scientific, quantitative, evidence-based methodology. This status difference is compounded by another, deeper misunderstanding. Novice and even well established postpositivist researchers may misconstrue the inclusion of a qualitative method

into their research design as ‘doing qualitative research’. This reinforces the classic ‘talking past each other’ that occurs so often between researchers from different paradigms. For example, a postpositivist researcher who has used a qualitative inductive process to analyse her data may dismiss the complexity and rigour of the work of a Heideggerian hermeneutic phenomenologist as unnecessarily complicating things [20]. Such a dismissal overlooks the distinctive underlying assumptions that differentiate the paradigms and guide their disparate methodologies. In this way, the increasing popularity of mixed methods research further muddies the waters around the significant differences between research paradigms and reasserts the dominance of the positivist/postpositivist one.

Going Forward with Mixed Methods Research

Messiness occurs when researchers do not acknowledge their paradigmatic positioning. Moreover the use of qualitative methods with a dusting of interpretive (qualitative) concepts in a research report does not make a positivist/scientific study inclusive of the interpretive paradigm (the ‘best of both worlds’). If paradigmatic assumptions are not made explicit by a researcher, the ensuing analysis may contain unprocessed contradictions. In a review of 141 journal articles [20] , Giddings and Williams (in process) found that where there was a lack of goodness of fit between findings, the qualitative ones took the back seat in order to preserve the ‘integrity’ of the study’s conclusions. In effect the qualitative findings are all too easily relegated to the position as “handmaiden” of quantitative ones [7(p.49)]. A contrasting response would be to address the disparity between the findings as a way to refocus the research question and/or the underlying researcher assumptions and values concerning the topic or construct.

Lather argues for the value of the “disjunctive affirmation” [7(p.52)] offered by paradigm (and methodological) proliferation. This is a way of thinking about paradigm incommensurability and disagreement as neither cause for war nor requiring reconciliation

but as itself a virtue: "Layering complexity, foregrounding problems, thinking outside easy intelligibility and transparent understanding, the goal is to move education [social] research in many different directions in the hope that more interesting and useful ways of knowing will emerge"[7(p.53)] . Further to this, Donmoyer points out that paradigmatic incommensurability is not the same as logical incompatibility and therefore a given researcher can "conceivably employ different paradigms in different circumstances and/or to accomplish different goals" [8(p.21)]. This is an argument for the benefits of radical theoretical flexibility, one that Donmoyer thinks is especially relevant to public policy fields like health, social policy and education. In these fields decision-makers must consider and balance a variety of perspectives, some of which may be antithetical, to address "a particular situation or a particular point in time" [8(p.23)].

It follows from these arguments that there may be research strengths to be gained by combining qualitative and quantitative methods: these include a broader research focus and a wider variety of data collection approaches which in turn enable richer descriptions of a phenomenon to be gathered. Although mixed methods research to date primarily reflects postpositivist assumptions [20], it does not have to be confined to this paradigm. It is a research design that can be situated within others. For example, feminist researchers have long shown creative flexibility in their approaches to collecting and analysing data, able to utilise quantitative methods in the service of radical/critical or poststructuralist paradigms. Pamela Ironside's study [28] of implementing and evaluating narrative pedagogy using a sequential mixed methods design is a case in point. Ironside used a pretest-posttest questionnaire followed by semi-structured interviews to gather data from her students in a research design where the data from both methods is treated equally. She first sets out the student responses to various items on the questionnaire giving some of the statistical results in support of conclusions made, then presents the qualitative data presented thematically. In the analysis

Ironside attempts to integrate the findings from the two data sources, although the quantitative findings were in a number of instances incongruent and inconsistent with the qualitative ones. Fruitfully most of the discussion in the article arises from this mismatch. Ironside's work illustrates the rich possibilities of mixed methods design where ultimately new questions can be posed and new ways to explore them are imagined.

Conclusion

As research in nursing, health and social sciences becomes more pragmatically driven and unsituated mixed methods takes the funding high-ground, we anticipate a move away from exploring more philosophical questions or undertaking modes of enquiry that challenge the status quo. Yet researchers need to be aware of and speak to the epistemological breaches that lie between positivism and the paradigms that follow: effacing these breaches forecloses creative possibilities for working more appropriately and wisely with the communities our research seeks to serve. In spurring on such effacement, mixed methods research is a Trojan Horse for positivism, reinstalling it as the most respected form of social research while at the same time – through *inclusion* – neutralising the oppositional potential of other paradigms and methodologies that more commonly use qualitative methods. This tendency may have far-reaching consequences for nursing and nursing research, influencing teaching curricula (in particular the scope and variety of postgraduate research projects), faculty appointments, the kinds of research questions that can be asked, possibilities for publication and, critically, funding decisions. Nursing research has historically led the way in the development of non-positivist methodologies in the health sciences – our warning is that this position is threatened by the mixed methods movement.

Mixed methods research does not need to play this role. Situated mixed methods – that is a research practice conscious of its underlying assumptions, beliefs and politics – may be a powerful form of research inquiry, offering as it does the possibility of rich and

contradictory findings. Such contradictions may in turn shift the ways in which we understand key research constructs and practices as well as remind us of the complexity of the social world that we are attempting to understand and intervene in. More subversively, the currently popularised rubric of 'mixed methods' may offer a Trojan Horse for other, more radical, agendas to win funding from sources that are not usually sympathetic to their cause – if wily researchers play their cards right.

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Table 1. Comparing the philosophical underpinnings of positivism and postpositivism