

5 On the philosophical foundations of futures research

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1 Introduction

This chapter considers the philosophical foundations upon which futures research is undertaken. It does not consider the views that different philosophies take of the future – that could easily be the subject of an entire series of books. Rather, the interest here is the way that different philosophical positions lead to different ways of undertaking knowledge inquiry, including *inter alia* futures research.

Futurist Willis Harman (1976) succinctly pointed out the central rationale of futures research:

[O]ur view of the future shapes the kind of decisions we make in the present. ... Every action involves some view about the future – as we expect it to be, or as we desire it to be, or as we fear it may be. If our image of the future were different, the decision of today would be different. (p. 1) ... Every action decision involves some assumption about the future; it is the function of futures research to make those assumptions explicit. Since we cannot know the future precisely, we must delineate alternative possibilities so that choices can be tested against various future states that could occur. But which futures are feasible and which are not? That is the central question of futures research (p. 10).

This brief passage from one of the founders of modern futures research highlights the central role that ideas about, or ‘images’ of, the future have in all purposeful future-oriented human activity: these images of the future influence the decisions and actions we make in the present, which in turn have consequences in and for the future which eventuates as reality. There is a feedback loop between present ideas about the future, decisions made in the present, and the ultimate future which eventually emerges. However, this loop

is not entirely closed – ideas about the future, and our decisions based upon them, do not always or entirely condition the future that eventually becomes reality. In other words, the future is *not* pre-determined (cf., e.g., Amara 1981). This indeterminacy with regard to the future is precisely what stops us being merely passive recipients of an unchangeable future, and gives us the latitude to become active agents who are able to shape the way the future unfolds, at least in part.

But how does futures research go about assessing alternative possible futures and generating futures-relevant knowledge? This is a complex question; many of the other chapters in this volume have also addressed it, in their own way, or through their own thematic lens. The purpose of this chapter is to consider the process of knowledge inquiry itself – it sketches some of the broad outlines and discusses some of the philosophical and methodological foundations upon which different approaches to knowledge inquiry rest, and briefly considers how these have historically influenced futures research.

It is considered axiomatic here that knowledge inquiry cannot be properly or even competently undertaken in the absence of an understanding of the philosophical foundations underpinning it. This is simply because any approach to generating knowledge is built upon an assumption base, which latter flows from certain foundational philosophical presuppositions – about the nature of reality, about the nature of knowledge, and so on. Researchers and practitioners need to be fully aware of this assumption base, in order to assess whether it is appropriate to and commensurate with the form, domain and purpose of the inquiry being undertaken.

To this end, a well-known typology of research or inquiry approaches is introduced and outlined as a basis for discussion. While a large number of approaches to inquiry exist, it is possible to conceive of these approaches as belonging to a few broadly-defined classes or categories (rather like the way that the millions of colours in the spectrum of visible light can be considered to inhabit seven or so main ‘bands’). The typology can be considered to be a set of broad-brush-stroke generalisations which look for the overall large-scale structure of the wider landscape of inquiry approaches in general, while at the same time recognising that many gradations and inter-leavings exist between the various forms. From this understanding, we then briefly consider how the typology as defined can be seen reflected in the various forms of and approaches to futures work which have developed over the last few decades, ever since futures research emerged as a distinct field of endeavour in the middle of the twentieth century. This will require us initially to consider the nature and purpose of futures research, as well as the object domain with

which it deals and, before that, to consider the role that philosophical insight has in the process of knowledge inquiry.

2 Why bother with philosophy?

Any approach to knowledge inquiry rests upon certain foundational assumptions and fundamental presuppositions – about the nature of reality; about the nature of the form of knowledge possible about that reality; about the types of methods which can be used to generate that knowledge; about the purpose of carrying out the inquiry; and several others. In other words, any formalised approach to knowledge inquiry (or ‘paradigm’, to use Kuhn’s famous and often-misused term) engenders certain commitments and assumptions which are inherent in and constitutive of the paradigm – including ontological, epistemological, and methodological. Different paradigmatic foundational assumptions give rise to different forms of and approaches to inquiry, and these assumptions condition what are considered to be acceptable, appropriate or valid forms of methodology. Therefore, it is impossible to separate methodological considerations from the associated underpinning philosophical foundations, and to attempt to do so is, to quote Donald Michael (1985), to have “both feet planted firmly in mid-air”.

It is useful here to recall an observation of Einstein’s to a younger colleague concerning the need for philosophical insight in the scientific enterprise (Einstein 1944; Howard 2004):

I fully agree with you about the significance and educational value of methodology as well as history and philosophy of science. So many people today – and even professional scientists – seem to me like someone who has seen thousands of trees but has never seen a forest. A knowledge of the historic and philosophical background gives that kind of independence from prejudices of his generation from which most scientists are suffering. This independence created by philosophical insight is – in my opinion – the mark of distinction between a mere artisan or specialist and a real seeker after truth (emphasis added).

In Einstein’s view, therefore, philosophical insight – a deep understanding of the philosophical background and underpinnings of the search for truth and knowledge – is essential to avoid becoming merely an artisan or specialist – i.e., someone who is able to perform skilful actions, but without any understanding or ability to see beyond the prejudices of training, technique and historical epoch. This view will be taken as axiomatic here.

The contention here, therefore, is that methodological interventions cannot be properly or even competently undertaken in the absence of a solid understanding of the philosophical foundations underpinning them. This is because every methodological approach is founded upon a more-or-less implicit philosophical basis. It is therefore necessary for inquirers, researchers and practitioners to be fully aware of just what this basis is and whether it is appropriate to the form, domain and purpose of the inquiry. This is true for *any* researchers, and it is equally true for futures researchers. For, without such an understanding, we may easily become mere actor-artisans mechanically performing methodological activities that generate data, absent any real understanding of what those data are, mean, or how they may be contextualised in any larger framework of knowledge. Therefore, we must explicitly and consciously consider the philosophical foundations upon which futures research may be built. And to do that we must consider both the object domain as well as the objective of futures research: 'the future', and informed action.

3 Futures research as an 'action science' using 'images of the future'

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Although a recognisable 'futures field' has existed since the 1960s (see, e.g., Amara 1974, 1981; Bell 2005; Linstone & Simmonds 1977), there is still some contention and debate over whether or not futures research can properly be called a 'discipline'. The push to do so may perhaps be fuelled by a desire to give futures research some sort of 'home' within the still-compartmentalised and largely discipline-based structures of modern schools and universities, and in the modes of thinking which are engendered by education based on this model of organising knowledge. There are influential and respected futurists on different sides of this 'discipline' debate (e.g., Bell 2002a, 2002b; Marien 2002a, 2002b). Michel Godet (2000) has even suggested that futures work is an "intellectual *undiscipline*". In any event, one wonders whether a field which attempts to be consciously multi-disciplinary will ever find a comfortable home within a discipline-based model of academia. We can to some degree bypass this so-far fruitless debate by instead asking what futures research *does*, rather than asking whether it is a 'discipline' in the sense of a branch of knowledge with a defined object domain.

Futures research, by its very nature, is not and cannot ever be an empirical undertaking in the literal sense of the terms 'futures research' or 'futures studies'. As James Dator (2005) reminds us in his First Law of the Future:

'the future' cannot be 'studied' because 'the future' does not exist. Futures studies does not – or should not – pretend to study the future. It studies ideas about the future (what I usually call 'images of the future').

Thus, it is not the (non-evidential and non-existent) *future* which is the object of inquiry in futures research – rather, it is the plurality of ideas about or images of the future which human beings have *in the present* which constitutes the object domain of futures inquiry. This is a subtle and frequently-overlooked distinction. As Wendell Bell has extensively argued (1997, vol. 1, p. 76), present possibilities, 'dispositionals', probabilities, beliefs about what is a desirable future, or any of a range of other ideas about the future, all exist *now*, in the present, and so therefore *can* be the subject of 'empirical' inquiry, even if the future itself cannot.¹

Even a brief look through the futures literature reveals that the concept of 'the image of the future' is one of, if not the, key defining aspects of futures research. From the seminal work of Polak (1955; 1961; 1973; van der Helm 2005), to the related work of Boulding (1956; 1964), to the perspectives on social change of Bell and Mau (1970; 1971) and Massé (1972), to the commentary of Huber (1978), to the views of Slaughter (1991), Nandy (1996), Masini (1999), and Dator (1998; 2002), to the recent work of Rubin and collaborators (2005; 1999; 2001) – to name just a few – it seems that, if almost nothing else, one thing which most futurists would agree upon is the importance of the 'image of the future'.

Different futurists tend to focus on different aspects of images of the future – that is, not only on their nature, causes, and the consequences which stem from these images (e.g., Bell 1997, vol. I, pp. 81-6), which may include strategy formation, planning, or social and political change – but also on their deeper origins, formation, content, types, and even the role of consciousness in their characteristics. With this in mind, it would seem that a useful concise working conception of futures research might simply be that it is inquiry into (among other things, but most especially) 'images of the future' and the wide variety of inputs into, outputs from, and consequences which flow from these images of the future, in human activity and decision-making. Futurists, therefore, as those who undertake inquiry into images of the future and their many above-mentioned aspects – be it as researchers or practitioners – will of course make use of a variety of different inquiry approaches, each of which will have

¹ It is of interest to note, in this regard, that empirical brain-imaging techniques have recently been used to examine the 'objective' neuro-physiological correlates of 'subjective' interior conscious experiences of forming images of the future (see Szpunar, Watson & McDermott 2007, and references therein).

fundamental philosophical assumptions and methodological commitments. This will be further explored below.

Bell has argued (1997, Ch. 1, p. 181) that, since one the main purposes of futures research is to inform decision-making and action, it can therefore “be considered an action science in the fullest sense of the term” as used in the well-known work of Argyris, Putnam and Smith (1985). Niiniluoto (2001) used the term ‘design science’ to capture the same idea, and other futurists have also stressed the ‘action’ or ‘design’ element of futures research (e.g., Rubin & Kaivo-Oja 1999). In short, futures research cannot be regarded as simply a pure academic conceptual exercise, disconnected from practical action in the world. Rather, it is intimately involved in the creation of the very futures which it attempts to profile through the study of images. Since images of the future influence our decision-making in the present, they are therefore complicit in the creation of the future which ultimately eventuates, and thus the study of them is also related to undertaking better-informed action. This is the ‘continuous feedback loop’ of future-creation, which loops ‘forward’ into the future as images which guide actions ‘back here’ in the present, and ultimately ‘returns’ to the future when the future becomes the present, cycling endlessly. This self-altering quality automatically distinguishes futures research (as an ‘action’ or ‘design science’) as a different class of knowledge from older and better-known sciences such as physics or chemistry. Futurist and historian Warren Wagar (1993) even argued that futures inquiry is a form of “applied history”. Of course, knowledge about how the past has led to the present, how the present influences the future, how our ideas of cause and effect condition our decision-making, and how all these and other factors interplay to create the future which ultimately eventuates are also involved in human decision-making and action, and so these, too, also need to be considered alongside images of the future. A detailed “cybernetic-decisional” model of social change incorporating all of these elements was described decades ago by Bell and Mau (1970; 1971).

Because the products or outputs of futures research may have major implications for the conduct of human affairs, futures research must be undertaken as rigorously and as carefully as it possibly can be. A key part of this rigour is the conscious recognition of the extent and limits to not only the methodological approaches used, but also their philosophical bases. It is important for this reason to examine the philosophical bases upon which our statements and knowledge claims are made, including knowledge claims about the future. And it is therefore important to consider different paradigms of knowledge creation, to see what, if anything, these may illuminate about the foundations of futures research and how it has been, is, and can be, carried out.

4 A classification schema for inquiry paradigms

There are many classification schemas for inquiry paradigms, and a look at almost any book dealing with the conduct of research will reveal some sort of typology. One of the better-known classification systems is the one developed by Guba and Lincoln in various editions of the very influential *Handbook of Qualitative Research* (Denzin & Lincoln 1994; 2000; 2005). According to Guba and Lincoln (1994, p. 107):

A paradigm may be viewed as a set of basic beliefs (or metaphysics) that deals with ultimates or first principles. It represents a worldview that defines, for its holder, the nature of "the world", the individual's place in it, and the range of possible relationships to that world and its parts The beliefs are basic in the sense that they must be accepted simply on faith (however well argued); there is no way to establish their ultimate truthfulness. If there were, the philosophical debates ... would have been resolved millennia ago.

These 'basic beliefs', which are central to the different paradigms, may be found from the answers they would give to several fundamental questions. These questions are (Guba & Lincoln 1994, p. 108):

1. the ontological question: what is the nature of 'reality' and therefore what is there that can be known?
2. the epistemological question: what is the nature of knowledge, the relationship between the would-be knower and what can be known? And,
3. the methodological question: how can the would-be knower or inquirer go about finding out whatever can be known?

To this set of three basic questions, they later added a fourth (Lincoln & Guba 2000, pp. 168-9), in response to some commentary upon and extension to their work (Heron & Reason 1997):

4. the axiological question: what is intrinsically worthwhile?

In addition, they define and examine several issues or themes which run across and through all of the classes of inquiry paradigms they consider. These themes include: the aim or purpose of the inquiry; assumptions about the nature of how knowledge accumulates; the 'voice' or 'posture' of the inquirer; the roles of values in inquiry; the criteria for assessing the quality of work; and so on. (See Table 6.2 in each of Guba & Lincoln (1994) and Lincoln & Guba (2000), and Tables 8.1-8.4 in Guba & Lincoln (2005). For convenience, some elements of these tables have been adapted and reproduced in the Appendix to this chapter, in Tables 1 and 2.)

In their view, the different answers which are given to the basic fundamental questions actually *define* an inquiry paradigm, and thence characterise the

stances taken on each of the main themes or issues. They then note (Guba & Lincoln 1994, p. 112) that

differences in paradigm assumptions cannot be dismissed as mere 'philosophical' differences; implicitly or explicitly, these positions have important consequences for the practical conduct of inquiry, as well as for the interpretations of findings.

In other words, paradigmatic assumptions affect, as a result, the overall methodological approach taken, the types of methods, techniques and tools that are considered valid, and the meanings and interpretations which are assigned to the results or data that have been generated by these practices.

Guba and Lincoln considered only Western approaches to knowledge inquiry, and initially (1994) posited four major classes of inquiry paradigm which they later expanded to five (Lincoln & Guba 2000) in response to the commentary from Heron and Reason (1997) who, as mentioned above, also suggested the explicit consideration of the axiological question as foundational to paradigm definition. What is centrally important in the discussion here is not the specific details of how many inquiry paradigms there are (in the various authors' opinions), or whether they are 'Western' or 'non-Western' or of a different kind, but rather the very observation *itself* – that there *are* different inquiry paradigms, which have fundamental distinctions and differences – and that variations between them are apparent when the paradigms are examined side by side. This has many implications for understanding how the human knowledge quest has been undertaken over the course of history. It is also important for understanding how futures research has evolved over time. Other schema or typologies of forms of knowledge inquiry could equally well be used, but the overall broad shape and direction of the argument would be essentially similar, even as specific details might vary.

The five main classes of paradigm which these authors consider are:

1. positivism
2. post-positivism
3. Critical Theory and its variants, or 'criticalism'
4. constructivism, and
5. the 'participatory' paradigm

and their major features are summarised in Tables 1 and 2 in the Appendix. The commentary presented here is based on a distillation of the positions taken and observations made in the above-cited works. Drawing upon an idea of Reason and Torbert (2001), it is also sometimes useful to consider this five-part typology as consisting of three main classes: *positivistic* (positivism and post-positivism); *interpretivistic* (criticalism and constructivism); and *action/participatory*.

The first of these paradigms, positivism, represents the so-called 'received view' of scientific inquiry over the last few centuries and nowadays it most often functions primarily as the foil against which other paradigms are compared. Post-positivism arose as a result of attempts to address some of the key weaknesses which have been identified in the pure positivist viewpoint. Criticalism arose as part of the post-modernist movement of the 20th century and, to a greater or lesser degree, in opposition to the earlier positivistic paradigms. Constructivism has some features in common with criticalism, although there are significant differences between the two paradigms (see Schwandt 1994, 2000, for a detailed comparison of these positions), and the participatory paradigm introduces new assumptions, most especially about ontology and epistemology, but also in respect of almost all other foundational assumptions and issues (see Heron & Reason (1997), Reason (1994), and Reason & Bradbury (2001) for more details, and see Lincoln (2001) for a comparison between the constructivist and participatory paradigms.) What is of most interest and use to us here is to note the essential differences in the various foundational positions of the different classes of paradigm (Table 1), as well as very briefly noting in passing some of their different stances on certain issues related to knowledge inquiry (Table 2).

5 Comparison of inquiry paradigms

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Looking across Table 1, we can trace a shift in the ontological positions of the five inquiry paradigms. The stances move from: a 'real', objective, external but nonetheless knowable reality in positivism; to an external objective reality which is only imperfectly knowable in post-positivism; to an historically-contingent reality in criticalism which has formed over time through the reification of initially-plastic social structures; to multiple realities in constructivism which are dependent upon the relative specifics of the particular inquiry group; to a subjective-objective participative reality literally co-created by the interaction of the inquiring consciousness and the cosmos. In the two positivistic paradigms, reality remains external to the subjectivity of the inquirer but, in the other three, reality becomes increasingly contingent upon inquirer subjectivity so that, ultimately, in the participatory paradigm, the inquirer's own subjectivity is considered to be literally *formative* of it.

We see a similar shift in the stances taken with respect to epistemology, axiology, methodology, the role of values, inquirer 'posture', and so on, and a careful reading of Tables 1 and 2 will reward the reader with many insights

into these basic issues and paradigmatic commitments. Here, for reasons of space, we shall focus most on epistemology and methodology.

The shifts in epistemological positions are especially interesting, as these of course form the basis for any knowledge claims which are produced by methodological interventions. We can see a change from the objectivist stances in the two positivistic paradigms – a view that the inquirer or would-be knower is separate and distinct from the object of knowledge ('dualism') – to the subjectivist stance taken in criticalism and constructivism – whereby knowledge is no longer considered 'objective' and therefore allegedly independent of the observer, but rather is influenced by the transaction between the would-be knower(s) and the object(s) of inquiry. In the criticalist view the findings are mediated (or 'coloured') by the value systems in operation, while constructivism takes a stronger stance and holds that the findings are *co-created* by the inquirer and the object of inquiry through the very act of inquiry itself. Both of these views assume knowledge is primarily a function of mind – knowledge claims are expressed as propositions, which latter are mental constructs (as indeed they are in the two positivistic views). In the participatory paradigm, however, this 'propositional' form of knowledge is considered only one of *four* main types of knowledge: direct 'experiential' knowledge is prior to the propositional form, as is the 'presentational' form. These three forms of knowledge are considered useful insofar as they lead to the fourth, 'practical' knowing – knowing how to *do* something, which is considered the highest form of knowledge – hence the participatory paradigm's emphasis on the primacy of 'practical knowing' (Table 2). In this view, my direct experience of the rain on my upturned face during a rain shower is also a form of knowledge, even in the absence of a theory of rainfall or climate, and is prior to any conceptual propositional knowledge I might convey to you about the experience, or any presentational form I might use to represent (i.e., 're-present') it to you, such as through metaphor, song, dance, poetry, and so on. (By way of an example: earlier in my career I was sometimes asked what it was like to do theoretical physics research. The only answer I could give which ever came close to feeling satisfactory on my part was this: "it is like the second movement of Beethoven's Ninth Symphony.")

On closer inspection, we can see in the epistemological positions of the five paradigms a three-part evolution in the emphasis placed on different forms of knowing. Following, for example, Reason and Bradbury (2001, p. xxv), Chandler and Torbert (2003), or Reason and Torbert (2001), these forms of knowledge inquiry may be termed 'first-person', 'second-person' and 'third-person', and in a similar vein, Wilber (2000, p. 70) calls them 'I' (firstperson), 'we/us' (second

person) and 'it/its' (third person, singular and plural). As noted above, one can simplify discussions of inquiry paradigms into three main types – positivistic, interpretivistic, and action/participatory – and this maps very suggestively to what Reason and Torbert (2001) consider third-person, second-person and first-person modes of inquiry, respectively. (See also Torbert 2000, for another view of social science paradigms and first-, second- and third-person research/practice.) In the positivistic paradigms, the emphasis is on 'objective', propositional knowledge; this is 'third-person' knowledge – the knowledge developed is about objectively-measurable qualities of material 'objects', things or 'its' (even when they are people). In the interpretivistic paradigms, the emphasis is placed on the subjective knowledge developed by a group of inquirers about some theme, issue or domain of inquiry; this is 'second-person' knowledge, as it is concerned with the shared, inter-subjective forms of knowledge which groups of people develop when they meet in a 'we' or 'us' space of discussion, dialogue, dialectic or hermeneutical meaning-making. While these two forms of knowing are also present in the participatory paradigm, it also adds the distinctly 'first-person' knowing of *direct experience*, a type of knowledge that cannot be transmitted via the mental-level constructs of propositional knowing, which latter is the basis of knowledge in the other paradigms, nor even via the 're-presentational' forms mentioned earlier. Some of the different participatory approaches, such as 'action inquiry' (Reason 1994; Torbert 2001), focus squarely on the subjectivity of the individual inquirer in the midst of action, while others, such as 'co-operative inquiry' and 'action research' (Heron & Reason 2001; Reason 1994), are more usually conducted with larger groups of people. Nonetheless the key addition to epistemological validity in this paradigm is the admission of forms of knowing which are not based solely in mental-level, conceptual propositional knowing, but which could emanate from other aspects or levels of first-person subjective human experience. And what is more, this knowing can itself be subject to critical self-reflexive inquiry ('critical subjectivity') to ensure that it is well grounded in the experiential reality upon which it is based, as well as ensuring congruence of all of the different accepted modes of knowing.

There is also a similar progression of methodologies. The positivistic paradigms undertake experimental manipulation of the exterior objective ('third-person') world in order to examine the causal dependencies of the different factors under consideration, positivism using mostly quantitative methods, post-positivism also admitting some qualitative. The emphasis moves from naïve verification of hypotheses as 'true' in the former, to attempts at falsification of hypotheses in the latter – which hypotheses must of course survive all

attempts at falsification to be admitted as ‘probably true’ findings. In the interpretivistic paradigms, the methods are grounded in the inter-subjective (second-person) ‘world’ of shared subjective experience, hence the dialogical/dialectical methods of criticalism, and the hermeneutical/dialectical methods of constructivism. In the participatory paradigm, the methods involve direct participation of the (first-person) ‘subjects’ of the inquiry in the very process of inquiry itself, granting equal-power status (i.e. ‘*political*’ participation) to the participants, and this participation is conducted through the exchange of information via language constructs grounded in a direct, shared, first-person experiential context. Heron and Reason (2001) have therefore called this approach “research ‘with’, rather than ‘on’, people”.

In the case of the axiological stance, we see how propositional knowledge as an end in itself in the two positivistic paradigms shifts to propositional knowledge becoming simply a tool for social emancipation in the two interpretivistic paradigms. In the participatory paradigm, propositional knowledge is only considered useful insofar as it contributes to *practical* knowledge about how to flourish as human beings in balance with the rest of society and the wider cosmos. Again, we can see a shift in emphasis: a move away from the distanced, ‘objective expert’, ‘disinterested scientist’ stance or posture of the two positivistic paradigms, to a progressively more intimate engagement with the world, as an activist and advocate (criticalism), as a passionate participant/facilitator (constructivism), to a self-reflexive actor-agent engaging with others in multiple forms of knowing, knowledge-creation, and reality-creation (participatory).

6 Futures research methods through the paradigms

As will be clear to anyone who examines it, examples of all of these paradigmatic approaches can be found in the futures literature. Space does not here permit a detailed exposition of how futures methods have been influenced by the above-mentioned paradigms of inquiry. Instead, we can only give a few representative examples, and leave it to the reader to compare the paradigmatic positions described above with the wider futures research literature.

As several commentators have observed, futures research methods have undergone an evolution over the preceding several decades. Slaughter (2002), for example, writes of there having been three or four major phases in the evolution of futures methods. In his view, these have essentially been forecasting, scenarios, social construction, and, most recently, ‘integral’

methods (Slaughter 2004). Inayatullah (2002b) has suggested an analogous change in futures methods which, in his view, have moved from forecasting to anticipatory action learning. The former is expert-based and largely positivistic-empiricist; the latter has, as the name suggests, strong resonances with the action/participatory paradigm. A similar progression from expert-led quantitative methods to more qualitative and participatory methods can also be seen in the futures methods described by Bell (1997, vol. I, ch. 6), and the mix of approaches is discernible in the variety of methods and techniques discussed in the resource collections edited by Glenn and Gordon (2003), and Slaughter, Inayatullah and Ramos (2005).

For example, the (post)positivistic paradigmatic commitment of Olaf Helmer (one of the inventors of Delphi) is apparent in his statement that "most of futures research may be regarded as a subfield of operations research" (Helmer 1983, p. 83), which latter is an archetypal rational-quantitative discipline, although he did allow for definitions of futures research which were broader than this (p. 83).

It was recognised by the mid 1970s that strongly positivistic approaches to futures research were on shaky methodological grounds, as pointed out by Ida Hoos (1978), as well as Roy Amara (1978), who noted: "the familiar tools of scientific investigation can be applied only in their most primitive forms" (p. 41). The limitations of positivistic approaches to futures research forms the essential core theme of the book edited by Linstone and Simmonds (1977), wherein the role of worldviews in futures research is seen to come to the fore. These editors succinctly characterised the crisis they perceived in futures research at that time as (p. xv):

No longer are we just dealing with methodological issues but with challenges to long-accepted paradigms. ... [There is a] growing awareness of the influence of the personality, experience, and character of those doing futures work, those requesting futures work, and the organizational and institutional environment in the selection of issues chosen to study. ... The heart of the matter is the perceptual change in the research worker himself.

The 'prospective' approach of Gaston Berger (Cournand & Lévy 1973) emphasised the role of discussion and dialogue to determine what futures could be created and which of these were worth creating, which clearly demonstrates some of the paradigmatic commitments of both criticalism and constructivism, including the explicit consideration of values as intrinsic to inquiry. The idea that reality is 'socially constructed' (Berger & Luckmann 1966) also lies at the heart of Bertrand de Jouvenel's perspective on futures inquiry and informed political action (de Jouvenel 1967; Gamba 2003). One can find this

interpretivist commitment to inquiry in a good deal of the Western European tradition of futures research (see, e.g., Masini 1993, 1999).

The issue of dissent and the use of dialectic is a central element of criticalist and constructivist approaches, and a special issue of the journal *Futures* focussed explicitly on the role of dissent in futures studies (Sardar 1999a) while the book edited by Sardar (1999b) is similarly dissenting and dialectical in tone and timbre. More recently, the use of action/participative methods in futures inquiry, in particular 'action research', has also been the subject of a special issue of *Futures* (Ramos 2006).

If we recall that both positivist and post-positivist approaches share the same basic aim (cf. Table 2), then we can consider there to be four main purposes of the five main classes of inquiry paradigm described above: prediction and control; critique and transformation (leading to emancipation); understanding and insight (leading to re-construction of prior constructions); and human flourishing (through political participation). Given this, we can see strong resonances of these four inquiry aims in the four types of futures approaches discussed by Inayatullah (2002a, ch.1): predictive; critical; interpretive; and anticipatory action learning.

Finally, it is worth mentioning very briefly that another approach to futures research has begun forming in recent times, based upon the principle of seeking to integrate the many different – and indeed, competing and sometimes even antagonistic – approaches to futures research which have gone before into an overall 'integrating' or 'integral' approach (see, e.g., Hines 2004; Slaughter 2004). This type of approach is not bound to any single paradigm-based perspective, but rather seeks to use the best and most appropriate aspects of all existing paradigms, depending on the nature and domain of any particular inquiry being undertaken. At the time of writing, a special issue of *Futures* dedicated to 'Integral Futures' is in press, and shows a snapshot of the current state of development and thinking in this newly-emerging approach to futures research.

The purpose of this very brief review was to highlight that all of the inquiry paradigms described above have been used to undertake futures research over the past few decades. In all such work, however, the choice of inquiry paradigm must be appropriate to the domain of inquiry. As Linstone and Simmonds (1977) found, to use just one example, the empiricist-positivistic approaches of conventional science – perfect for third-person, objective, 'it' knowledge – cannot be used to properly study the second-person, inter-subjective, 'we' realm of meaning-making and worldviews in a future-creating social system of conscious agents. To do so is a category error. And it is precisely this ability

to notice such category errors, in knowledge inquiry in general and in futures research in particular, which was the main point of undertaking our careful study of the philosophical and paradigmatic foundations of knowledge inquiry and futures research.

7 Conclusion

In this chapter a typology of inquiry paradigms was examined and discussed in order to understand how these paradigms differ in their foundational assumptions, as well as how they have been used as a basis for futures research over the last several decades. It was argued that the philosophical bases of inquiry – the foundational assumptions and fundamental presuppositions about reality, knowledge and method, to name but a few – must be explicitly taken into account in order to ensure that the form and approach of an inquiry is appropriate to the purpose and domain of the inquiry. Futures research – which, as an ‘action science’ form of knowledge inquiry, takes as one of its primary domains the subjective realm of ‘images of the future’, and which seeks to not only make knowledge claims about the future but also to shape it – is especially beholden to demonstrate careful, rigorous and disciplined thinking. If futures researchers can successfully demonstrate this care and rigour with respect to the philosophical and methodological foundations of futures research and the knowledge claims which it attempts to make, then we may find an increasing receptivity to the idea of thinking seriously about the future.

Appendix

The various paradigms’ basic positions on the foundational issues of ontology, epistemology, methodology and axiology are shown in Table 1, while their stances on a variety of other issues are shown in Table 2. These Tables are based on a distillation of the positions taken and observations made in Guba and Lincoln (1994; 2005), Heron and Reason (1997) and Lincoln and Guba (2000).

Table 1 Foundational stances of the five inquiry paradigms.

Adapted and distilled from Guba and Lincoln (1994; 2005), Heron and Reason (1997) and Lincoln and Guba (2000).

	Positivism	Post-positivism	Criticalism	Constructivism	Participatory
Ontology	naïve realism – ‘real’ reality but apprehendable	critical realism – ‘real’ reality but only imperfectly and probabilistically apprehendable	historical realism – virtual reality shaped by social, political, cultural, economic, ethnic and gender values; crystallised over time	relativism – local and specific co-constructed realities	participatory reality – subjective-objective reality, co-created by mind and given cosmos
Epistemology	dualist / objectivist; findings ‘true’	modified dualist / objectivist; critical tradition / community; findings ‘probably true’	transactional / subjectivist; value-mediated findings	transactional / subjectivist; co-created findings	critical subjectivity in participatory transaction with cosmos; extended epistemology of experiential, presentational, propositional, and practical knowing; co-created findings
Methodology	experimental / manipulative; verification of hypotheses; chiefly quantitative methods	modified experimental / manipulative; critical multiplism; falsification of hypotheses; may include qualitative methods	dialogic / dialectical	hermeneutical / dialectical	political participation in collaborative action inquiry; primacy of the practical; use of language grounded in shared experiential context
Axiology	propositional knowing about the world is an end in itself, is intrinsically valuable		propositional, transactional knowing is instrumentally valuable as a means to social emancipation, which is an end in itself, is intrinsically valuable		practical knowing how to flourish with a balance of autonomy, cooperation, and hierarchy in a culture is an end in itself, is intrinsically valuable

Table 2 Paradigm positions on selected issues.

Adapted and distilled from Guba and Lincoln (1994; 2005), Heron and Reason (1997) and Lincoln and Guba (2000).

	Positivism	Post-positivism	Criticalism	Constructivism	Participatory
<i>Inquiry aim</i>	explanation: prediction and control		critique and transformation; restitution and emancipation	understanding; reconstruction	human flourishing
<i>Inquirer posture</i>	'disinterested scientist' as informer of decision makers and change agents		'transformative intellectual' as advocate and activist	'passionate participant' as facilitator of multi-voice reconstruction	primary voice manifest through aware self-reflective action; secondary voices in illuminating theory, narrative, movement, song, dance, and other presentational forms
<i>Nature of knowledge</i>	verified hypotheses established as facts or laws	non-falsified hypotheses that are probable facts or laws	structural / historical insights	individual or collective reconstructions sometimes coalescing around consensus	extended epistemology; primacy of practical knowing; critical subjectivity; living knowledge
<i>Knowledge accumulation</i>	accretion – 'building blocks' adding to 'edifice of knowledge'; generalisations and cause-and-effect linkages		historical revisionism; generalisation by similarity	more informed and sophisticated reconstructions; vicarious experience	in communities of inquiry embedded in communities of practice
<i>Values</i>	excluded – influence denied; considered to be extrinsic to inquiry		included – formative; considered to be intrinsic to inquiry		
<i>Goodness or quality criteria</i>	conventional benchmarks of 'rigour'; internal and external validity, reliability and objectivity		historical situatedness; erosion of ignorance and misapprehensions; action stimulus	trustworthiness and authenticity including catalyst for action	congruence of experiential, presentational, propositional and practical knowing; leads to action to transform the world in the service of human flourishing

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