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## *Paradigm Lost: Thomas Kuhn and educational research*

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In recent years the notion of 'paradigm' has been introduced into the language of educational research and curriculum evaluation. The genesis of its adoption by educationists can be established fairly accurately. In 1972 Parlett & Hamilton wrote the mimeographed version of their seminal paper (henceforth Parlett & Hamilton, 1977) which contrasted the 'agricultural-botany' and 'illuminative paradigms' of educational evaluation. In the same year Esland (1972) made a distinction between the 'psychometric' and 'phenomenological' paradigms in an Open University course unit, *Pedagogy and the Teacher's Presentation of Self* [1]. As is so often the case in education, the term 'paradigm' was taken up from another field of academic endeavour and the authors mentioned above cite specifically their source as *The Structure of Scientific Revolutions* (Kuhn, 1970), a central text in the philosophy of science (see Parlett & Hamilton, 1977, p. 7; Esland, 1972, p. 18). It is surprising how rapidly the notion of 'paradigm' originally developed by Kuhn in a quite different context has become part of the technical vocabulary of educational researchers, especially curriculum evaluators. It is now a well-worn phrase used in professional conversation, conference discussions and published accounts [2].

In this paper I argue that the introduction of the term 'paradigm' into educational research is based upon a misunderstanding or inaccurate representation of Kuhn's work and that it can lead to muddled and unclear thinking among educationists, especially those involved with curriculum evaluation. Its invocation may lead to unproductive debate and misrepresent the educational research enterprise. It has become a shorthand word that we use too easily; it must be either used more precisely or purged.

I begin by describing how Kuhn used his notion of paradigm in its original context and how the central qualities of his definition have been lost in its transfer to education. I then ask whether it is in fact feasible to apply an analysis seeking to explain the work of the community of natural scientists to the very different circumstances of the community of educational researchers. I then examine the dangers attached to the too easy acceptance of Kuhn's ideas by educational researchers.

### **Kuhn's Concept of Paradigm**

It is difficult to provide a brief and accurate account of Kuhn's use of the term paradigm and much of the subsequent academic discussion about his work focuses

on the various ways in which it is defined. As Wisdom (1974, p. 832) says, "This is a nice idea; but it is not easy to say just what it means." In response to his critics Kuhn, himself, refers to one author who distinguishes over 20 uses of the term 'paradigm' (Kuhn, 1970, p. 174ff).

In *The Structure of Scientific Revolutions* Kuhn is concerned with the way in which scientific knowledge is acquired and the process by which an older theory is replaced by an incompatible new one. Crucial to his analysis are paradigms which are initially defined as "recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners" (Kuhn, 1970, p. viii). For the most part scientists are involved in 'normal science' which for Kuhn is research based firmly upon past scientific achievements which supply the foundations for its further practice. Typically such knowledge is organised and contained in text-books (Kuhn, 1970, p. 10ff). The unprecedented achievements of outstanding thinkers in a scientific field, for example Copernicus or Newton, have provided the context for the day to day scientific research of the next generations and their theories are sufficiently open ended to leave a variety of puzzles and problems to be explored. The achievement of a paradigm lies in its promise of success in still incomplete examples and normal science consists in the actualisation of this promise (Kuhn, 1970, p. 24ff). Normal science is concerned with solving puzzles and a non-cumulative paradigm shift, which Kuhn calls a revolution, occurs in response to a crisis when theory and nature cannot be fitted to each other and puzzles can no longer be solved (Kuhn, 1970, p. 135ff). As a consequence of a paradigm revolution a community of scientists come to see the natural world and their scientific endeavour quite differently as exemplified by the shift from Newton's to Einstein's theories about the natural world.

Kuhn's notion of paradigm has two central qualities which it is salutary to bear in mind when considering how the term has been used in educational contexts. The first is that a paradigm is a theory which provides scientists with a means of explaining and understanding the natural world. A paradigm may well indicate accepted ways of procedure and experimental method, but foremost it is a *theory*. The second is that a community of scientists researching within a paradigm are engaged in work which is cumulative in that they seek to develop knowledge and apply it within an established theoretical context.

An examination of educationists' use of the notion of paradigm indicates that these two central qualities have evaporated. First, in evaluation research the emphasis is on *method* rather than theory. For example Parlett & Hamilton's (1977) description of the 'agricultural-botany' paradigm reads as a precis of the 'pretest-post-test' methodology advocated in many educational research text-books. Of course it is true that if such a methodology is used *per se* and unthinkingly then the methodology contains covert theoretical assumptions. Also their description of the illuminative paradigm reads as a precis of a sociology text-book account of how to undertake field work with an emphasis on participant observation within educational settings. Again the emphasis is on method. The burden of their paper is on ways of undertaking research rather than on the theories which would inform such an undertaking. To provide a possibly appropriate illustration of the way in which educational research exemplifies Kuhn's ideas it would be necessary to refer to, say, Piaget whose work provides a theoretical context for a sustained research programme.

However, it can be argued that to do this is to shift from the domain of educational research to that of psychology and that the relevance of this branch of psychology to education is problematic (cf. Brown & Desforges, 1977).

Secondly, because of the emphasis on method it is very difficult to envisage how the paradigms described by Parlett & Hamilton can facilitate the accumulation of knowledge. Methods and techniques are tools employed by individual investigators or teams researching various substantive problems from different perspectives. For instance sets of evaluation reports (such as Hamilton *et al.* 1977, Section 5; The Schools Council, 1973; Collier, 1978) provide various types of data and information of variable quality about a range of curriculum projects. To those familiar with and interested in particular projects such information may well be useful and interesting. But such reports cannot be construed as contributing to or being part of the systematic growth of theoretically based knowledge. Parlett & Hamilton have performed a worthwhile task in reminding us that there are alternative methods and procedures and that the unreflective acceptance of methods is dangerous. It is also useful to be reminded that certain methods are more appropriate for the collection of certain types of information than others and that none of the forms of educational research are immune from prejudice, experimenter effect and human error. But to claim the status of paradigm for method is to claim too much and to invest method with too great an importance. Method ought to be the servant of theory or paradigm and when we wish to talk about methods in educational research we need to do no more than use the word 'method'.

### **From Natural Science to Educational Research**

Kuhn is interested in the process by which scientific knowledge is acquired and the dynamics of change within the *natural* sciences. In his work he insists that the analysis of the development of scientific knowledge must take into account the way in which natural science has been and is actually practiced (e.g. Kuhn, 1974, p. 800). Given Kuhn's explicit aim of providing an account in one area of scientific activity it is necessary to consider how similar that type of scientific work is to educational research. Unless human activity and behaviour are roughly comparable in two substantive areas it is problematic whether ideas purporting to explain phenomena in one sphere can be readily transferred to the other and the application of Kuhn's analysis to the social sciences in general (cf. Urry, 1973) and education in particular (Shipman, 1976, p. 147) has been questioned. It is not necessary to become entwined in the 'is educational research a science?' debate. What is required is to ask whether a community of natural scientists, as understood and described by Kuhn, go about their work in a roughly similar way to the community of educational researchers.

It is suggested that the conditions within natural science—as described by Kuhn—are quite different from those within educational research. Kuhn asserts that a community of natural scientists (in physics, astronomy or whatever) will be doing normal science, i.e. working within a dominant paradigm until such times as a condition of crisis requires the rejection of an established paradigm and its replacement by an alternative. The circumstances in educational research are quite different. There is hardly ever (never?) a sustained endeavour by a community of researchers investigating a specific issue within the context of a dominant theoretical perspective. There is no group of researchers working in similar fields and ready to replicate each other's research—even if replication were possible. There is no series of classic experiments or exercises which students must practice in laboratory like settings. (As indicated previously one would have to move to the interface with psychology to approach such conditions.) It is more appropriate to characterise the research enterprise in education as a community of small teams or individuals investigating a range of issues and

problems from a variety of points of view and theoretical perspectives and, especially within evaluation research, these are likely to be issues of topical interest or fashion. They will not, in the first instance, have emerged from theory or arise from attempts to solve puzzles derived from theory.

It is the case that there are within the educational research community persons or groups who may be tenuously united by a commitment to, say, psychometric methodology or illuminative evaluation research and that such groups eventually congregate in one institution rather than another and that publishing outlets will accept the products of one group rather than the other. But the central quality which defines such groups is their commitment to a way of doing educational research. In such circumstances research becomes phenomena driven (cf. Desforges & McNamara, 1977). This is not to criticise educational research but to point out that to use Kuhn's notion of paradigm in this case is quite inappropriate because for him the research of scientists working within a paradigm is theory driven. An allegiance to or rejection of, say, multivariate statistical models or direct observation is not a criterion which can be used to delineate natural scientists working within an established paradigm and it cannot be so used within educational research.

It is also true that in educational research there can be a number of researchers investigating the same substantive problem. For example in the past couple of years there has been considerable interest in teaching and children's learning within the primary school. Again it would be quite misleading to suggest that these researchers are undertaking normal science. The only thing which unites them is their substantive focus. A common theoretical orientation does not inform their work. Compare, for example, the phenomenology and participant observation of Sharpe & Green (1975), the survey methodology and multivariate models of Bennett (1976) and Bock *et al.* (1977), and the impressions gained from one day visits to schools by the inspectorate (DES, 1978). Again this illustrates the way in which the educational research community operates. People from different 'discipline' backgrounds adopt individual methods and approaches in a somewhat eclectic way.

For Kuhn it is a mark of maturity when adherents to a natural science operate within a paradigm. Prior to this time there is variability in fact gathering and interpretation. There is a number of competing schools and subschools each with a comparatively free choice of observation and method (Kuhn, 1970, p. 11). As Kuhn (1970, p. 13) observes this pattern is not unfamiliar in a number of fields today and educational research would seem to be an obvious example of a discipline in its 'pre-paradigmatic' stage. One wonders whether those who have introduced the notion of paradigm to education have read those early pages of *The Structure of Scientific Revolutions*. Esland (1972, p. 21), for example, criticises Kuhn for failing to consider the diversity of paradigms among professional groups such as teachers. He fails to recognise that the fault is his for erroneously attempting to map Kuhn's analysis on to teaching. In sum, from the perspective of Kuhn's work educational research is a young discipline (BERA was founded as recently as 1974) which is in its pre-paradigm stage. Indeed, it may well be preferable that it should for ever remain so. Thus it is singularly inappropriate to apply to it Kuhn's notion of paradigm which is used in the analysis of those natural sciences which have reached his definition of maturity. It must, of course, be remembered that Kuhn's analysis may not accurately reflect the manner in which natural scientists do in fact theorise and undertake research (see, e.g. Wisdom, 1974; Popper, 1974). If this criticism is accepted the adoption of paradigm by educationists is rendered even more speculative.

### **The Insidious Danger**

Education researchers have been eager to use the term paradigm and in a way it has become part of their unexamined vocabulary. So that the notion of paradigm as developed by Kuhn can now be invoked without reference to its matrix (e.g. Gage, 1978, p. 69). The unreflective acceptance and use of paradigm by educationists is potentially dangerous in so far as critical discussion about educational research may be misdirected and even trivialised. Open debate about the research process can become an argument between opposing camps. Individual researchers or university departments may become identified as exemplars of a particular paradigm. Research methods syllabuses are often dominated by a paradigm and another paradigm is included at the end of the course as an alternative. The work of a researcher can be dismissed merely on the grounds that it is couched within an (unapproved of) paradigm since valid argument and procedures are contained within the paradigm [3]. The central problem is that paradigm debates (arguments) force people into camps, place too much emphasis on method in educational research, and constrain our thinking about the research endeavour. Methodology ought to be the underlabourer in the research enterprise, not the tail that wags the dog. Priority ought to be given to theoretical and substantive considerations. In teaching and research, debates about methodology should not become discussions about what is best but what is appropriate. The style of thought which ought to be conveyed in teaching educational research and in planning research programmes is: given a theoretical perspective/model; given a substantive field of interest and research objective; given known resources of money, time and personnel; and, where necessary, given the types of information required by interested parties what are the most appropriate methods to employ? Researchers and evaluators need to be aware of the whole range of research designs and methods and be prepared to make appropriate selections from them. It is probably true that in the past it has been tempting to equate educational research with psychometric type measurement and pretest-treatment-posttest designs and, even worse, the too easy acceptance and application of statistical models (cf. Carver, 1978) as a substitute for scientific method.

It is possible that Parlett & Hamilton have broadened the perspectives of the educational research community and it is clear that in their advocacy of the 'illuminative paradigm' they welcome open and undogmatic thinking. But the danger remains; evaluators who operate within the more traditional paradigms are very much more aware of the complexities and problems inherent within evaluation research than their critics give them credit for. They appreciate many of the issues which are supposedly apparent to the adherents of the illuminative paradigm only (see, e.g. Weiss, 1972). This is probably because most of the issues to do with evaluation research are generated independently of method and arise from thinking about and conceptualising evaluation research. There is always the danger that thinking within the confines of socially constructed categories leads to dogmatism, when we can manage without such categories we should do so.

It is important to remember that for Kuhn scientific knowledge exists within a particular framework of expectation (cf. Jones, 1977) and his work challenges the notion that science is a rational and objective enquiry, standards are relative to paradigms (cf. Keat & Urry, 1975, p. 54ff). Popper in his criticism of Kuhn (Popper, 1974, p. 114ff.) reminds us of the danger of the relativistic thesis that only those who accept the same basic framework can rationally communicate with or understand each other.

It is a dangerous dogma to think that different frameworks are like mutually untranslatable languages. Critical discussion and comparison may be difficult but is always possible and is likely to be fruitful. Educational researchers ought not to seek the protection of frameworks and argue that legitimate criticism of their work is contained within the limits of 'their' paradigm. Rather in the spirit of Popper [4] they ought to be prepared to expose their work to critical examination and be prepared to state the grounds on which their work can be rejected or would fail to convince.

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## NOTES

- [1] This paper develops ideas presented in Esland (1971).
- [2] I stress at the outset that I am concerned with educationists' use of Kuhn's notion of paradigm and not that employed by Gage (1963) which was for a specific purpose and which makes no reference to Kuhn. He defines paradigm in a 'non-Kuhnian' way (Gage, 1963, p. 95).
- [3] The advocates of a paradigm can even see themselves as Walter Mitty-like heroes: cf. Evaluator on the flightdeck: pilot trials of the aesthetic education program (Hamilton *et al.*, 1977, p. 311).
- [4] The relevance of Popper's work to education has been explored by McNamara (1978).

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