

A Case Study of a Community of Practice in the New Media Industries – Wired Wessex

Introduction

This piece of research will try to bring together a number of different strands of analysis in relation to Wired Wessex, a network of some 600 new media companies in the Hampshire and Dorset area. These companies are all engaged in software design, games design, webpage design, and database production; they are all in the main small companies with at most two to three employees and they are all working independently. Wired Wessex has been funded by the South East England Regional Development Agency and the European Union to try to bring the individuals working in these various companies together so that they can exchange ideas, learn from each other and develop themselves and their workplaces creatively, technologically and economically.

The research, which will take some three years, will use Wired Wessex as a case study: looking at what learning might take place within such a technologically networked community of practice; looking at what economic development such a community might undergo; and looking at the way the technology itself might enable both the learning and the economic development.

The work is envisaged in two stages; an initial mapping and data collection element, which will be essentially quantitative, will take the first year; followed by a more detailed ethnographically based qualitative study which will take a further two years. This Case Study approach using both quantitative and qualitative data collection processes is well documented in the literature [Wolcott

1994, Silverman 2001, Flyvberg 2001] and the methodological processes of this particular piece of work have been discussed elsewhere [Turner 2002].

This particular Paper will discuss three things: the justification for the research topic, the epistemological issues arising from the project and some thoughts on the ethical processes of undertaking research within such an organisation. It also includes an Annotated Bibliography of items either cited in this paper or supporting this paper by way of context and background.

A justification of the choice of Research

This research project will bring together three separate but overlapping strands of my professional practice. These strands: professional development and learning; the impact of technology on society and the learning process; and the issue of economic development and economic growth have all been close to my areas of work, research and managerial interests for some two decades or so. They are also areas of critical importance to the developing structures of higher education and indeed raise questions about the very concept of what a University is and what it is for, the ways that higher education is moving into a more distributive fashion and, finally, the ways that educators are starting to look at communities of practice and communities of learning as critical parts of their didactic thinking.

Learning and learners

Stephen Billett [2002] has suggested that “given the need to understand how individuals participate in and learn at work, the relations between and among individuals, teams and key interest groups become a central concern for understanding how learning at work proceeds.” Whilst this is clearly becoming

more important for communities of practice in work, it is also very obvious that this thinking on learning processes amongst teams in employment has critical relevance for similar conversations and discourses about learning experiences amongst undergraduates and postgraduates studying either full-time or part-time in higher education. It is fairly clear that the traditional barriers between full-time and part-time students working on campuses and off campuses are now disappearing. Mary Lea and Kathy Nicoll [2002 p1] suggest that “this can result in an eclectic mix of ideas and perspectives which at the end of the day need to be translated into real grounded practices”. This piece of research will try to bring together some of this eclectic mix of ideas on communities and practice in work, the impact of technology and the economic effects of such clusters by way of the particular case study based on Wired Wessex.

Michael Eraut [2000] and Toby Becher [2002] have already done much work on the professional development of groups of individuals such as pharmacists, nurses, solicitors and teachers. Indeed, healthcare is a field more analysed than most in this respect [Multidisciplinary teams 2001, A Health Service 2000]. This work is already exposing gaps in the traditional practices of both initial and continuing training of professional groups, and raising interesting questions about the training and development of emerging ‘professional’ groups such as new-media workers, whose initial qualifications may be very different from the subject in which they now are practising. Sally Wyatt [2002] and colleagues, working on the impact of the Internet, and on the issues of access, intermediaries and producers, are sceptical of the development of an information society and make clear that “the whole field is undergoing an uneven professionalisation” [Wyatt

2002 p 24]. They suggest that “many of the people who entered this new industry did so out of a desire to escape traditional working environments”; and one of her research teams also suggests that “a gendered separation between soft and hard skills has also re-established a division of labour that early Internet apologists rejected” [Terranova 2000].

I am clearly interested in how much of this can be evidenced in the Wired Wessex case study. Of course the very idea of a ‘professional’ is fairly contested [Middlehurst 1997, Nixon 1997] and I do have an interest in how far new groups in the workforce see themselves as ‘professional’ and how far they see themselves as merely part of a workforce like any other industry.

Jean Lave and Etienne Wenger [1991] have developed one particular concept of a community of practice – legitimate peripheral participation - to describe groups that interact to achieve a shared purpose or enterprise. They suggest that “the development of practice takes time, but what defines a community of practice in its temporal dimension is not just a matter of a specific minimum of time but sustaining enough mutual engagement in pursuing an enterprise together to share some significant learning... communities of practice can be thought of as shared histories of learning” [Wenger 1998 p 86]. It seems appropriate initially to consider Wired Wessex as a putative community of practice and thus to see if some of the processes of professional support that Becher [2002] and Eraut [2000] have identified can be found or, alternatively, see if the support activities such as seminars and bulletin boards that Wired Wessex is providing its members with are able to fill such a need successfully. Wenger defines communities of practice as

having three major defining components or elements: mutual engagement, the participation in a shared task; joint enterprise, the negotiated interaction with accountability; and finally shared repertoire, the routines, tools, words, processes, concepts, genres, gestures etc through which practices are carried out. It will be interesting to see if a virtual group of some 600 separate small organisations that come together through the shared membership of a new on-line support network can evidence any of these practices of a community.

An alternative model of such practice – zones of proximal development – developed by Vygotsky [1978] and Engeström [1999] has been much analysed and as we shall see later may be a key alternative approach to such professional practice.

However, the evident relationship between a community and its learning necessarily feeds back into the design of the best educational programmes, and at Undergraduate and Masters level Universities often try to mirror the working practices of a particular industry. As Brown and Duguid [1996 p 5] suggest “learning involves inhabiting the streets of a community’s culture. The community may include astrophysicists, architects or acupuncturists, but learning involves experiencing its cultural peculiarities”. Thus some greater sense of how any community learns from within and thus acculturates the programmes for entry or ‘apprenticeship’ into the community has to be of intimate interest to all those involved in university education.

However, as Steve Billett has suggested [2002 p 93] “work places are not only venues where individuals merely engage in tasks; they are also a constituted component of individuals thinking, acting and learning”; they are also clearly places of stress, pressure and contestation. Indeed, he goes on to say that “contestation is an enduring feature of work practice” [2002 p 87]. It is of course for some of these reasons that this piece of research will have a qualitative ethnographic strand to it. However, it would seem very likely that these issues of stress and contestation are not merely issues of the work place but are also issues for full-time undergraduate students studying on a campus or part-time students working at home. There is a whole range of pressures and contestations in learners’ lives and it will be important to find an epistemology that can recognise the multiplicity of arenas in which each individual operates.

These issues of epistemology will be discussed in more detail later in this Paper but an important underlying strand here will most certainly be Wittgenstein’s [1953 p 105] performative epistemology that conceives *knowing as making, doing and acting* and the way that Toulmin [1999] has brought Vygotsky [1978] and Wittgenstein’s thinking closer together in his re-focussing of Activity Theory as what seems to be both a research methodology and an epistemology.

From some of this thinking and analysis may come a very different view of the university *qua* University: learning as a community activity, the differing communities which all learners inhabit, the increasing needs for students in higher education to both learn and work, the differing pressures that this sort of distributed work based learning puts on the research activity of a university all

seem to point to a potentially different university from either the *mittel-european* Humboldtian ideal or Newman's liberal arts institution of the late 19th century. Indeed, the postmodern university [Smith 1997] despite the protestations of many [Barnet 2000, Delanty 2001], may well be here already. These are all issues close to my own personal development and an underlying rationale and justification of this piece of work.

Technology, Society and Learning

To this set of emerging ideas around communities of practice and communities of learning, we must now add a further dimension of the new technological processes that support learning. There has been much analysis of the impact of technology and particularly information technology on society, and what has been tentatively called the information society or post-industrial society. Jean-François-Lyotard [1984 p 3] suggests that “the status of knowledge is altered as societies enter what is known the postindustrial age and cultures enter what is known as the postmodern age”. Much of Lyotard's thinking on issues of post modernism is deeply contested but writers as diverse as Manuel Castells [1996] and Nicholas Negroponte [1995] make clear that information technology is making major and dramatic changes to our cultures and thus our learning. Colin Lankshear and others suggest that “as educationists we neglect investigating the possible epistemological significance and implications of practices involving new information and communication technologies at our peril” [2003 p 19]. Indeed, he goes on to say that “traditional epistemological concepts, criteria and practices – particularly those adhered to by knowledge professionals like academics – are put under considerable strain here [Lankshear 2002 p 26].

Steve Woolgar suggests that “all aspects of social, cultural, economic, and political life thus stand to be affected by the continued massive growth in electronic technologies.” [Woolgar 2002 p 1]. However, he goes on to make clear that “the early enthusiasm has given way to a realisation that discussions about virtual community often embodied some confused ideals about what community entails” [Woolgar 2002 p 3]. He goes on to identify five rules of virtuality: i) the uptake and use of the new technologies depend crucially on local social context; ii) the fears and risks associated with new technologies are unevenly socially distributed; iii) virtual technology supplement rather than substitute for real activities; iv) the more virtual the more real; v) the more global the more local. Thus he suggests that “the new technologies are not being used to the extent we imagined, by the people anticipated, nor in the ways that we expected” [Woolgar 2002 p 21]. This does not mean to say that not much is happening, merely to suggest that that which is happening is at times counter-intuitive.

David Russell reinforces this awareness of counter-intuitive outcomes with his confirmation that “learning is therefore not a neat transfer of information but a complex and often messy network of tool mediated human relationships that must be explored in terms of the social and cultural practices which people bring to their uses of the tools they share” [Russell 2002 p 73]. Thus if we are to look at Wired Wessex as a case study of learning within a community of practice that makes use of new technology, we have to be aware of unexpected and possibly surprising outcomes. Susan Watt suggests that “the relative ease with which group interaction can take place on the Internet is emerging as one of the most important impacts of this new medium on contemporary social life” [Watt 2002 p

61] and, at the same time, Andreas Wittel and colleagues researching on the real and virtual collectivity of new media industries in London suggest that “production through connectivity is characterised by *interdependence*” [my italics] [Wittel 2002 p 190] and that heterarchic organisations are emerging [Wittel 2002 p 190]. These heterarchic organisations are non-linear, they are open, they are reflexive and they have underdetermined organisational structures. They are essentially about distributed intelligence. Thus there seems to be growing evidence of information technology affecting organisation structures and the learning that takes place within such new structures. This Wired Wessex case study will, *inter alia*, explore some of these issues.

These debates about the emerging new structures stimulated by Information Technology are of critical interest in higher education. Deeply contested arguments about managerialism [Fullan 1999, 2000] and the old ‘collegiality’ of the academy have been a key part of the literature over the past decade [Deem 1998, Watson 2000]; this has been followed of late by a growing critique of what Parker [2000] has called ‘culturalism’ the “breathlessly enthusiastic works that use the term ‘culture’ to suggest a prescriptive analysis of management in organisations”; it is possible that the new post-modern university will be far more a collection of loosely coupled heterarchies [Newsom 1998] than the centralist managerialist structures of the past.

It is not just the exogenous impact of information technology that is of interest. Wendy Morgan [2002] and others reinforce the deeply complex mix that literacy, learning and technology practices have upon each other. She and her colleagues

suggest that literacy, technology and learning are always plural, they are always embedded in particular context, they are always entangled with one another, they are always unpredictable and interestingly they are often invisible. These concepts that are emerging in the literature of information technology and learning will need to be teased out in the Wired Wessex case study if we are to identify any relationships between Wired Wessex as a community of learners and the technology which those learners are using as part of their normal day to day working activities. For, as Stephen Billett makes clear [2002 p 93] “work places are not only venues where individuals merely engage in tasks they are also a constituted component of individual’s thinking, acting and learning”. Thus if we are to take the view that work places are by definition learning environments then our understanding of how that learning is effected must have implications for our understanding of learning taking place in other environments. The physicality of these other environments, and indeed the work place environments, have to be studied and identified with care [Cornford and Pollock 2002 p 177]. Theodor Porter [1994 p 221] stresses that a “local site where skill and intimate familiarity with people and things provide the most promising route to success” and John Seely Brown and Paul Duguid [2000] identify a group of photocopier machine repair engineers in the Xerox corporation who were primarily working within a very IT rich environment with structured knowledge management databases and yet still “in practice the engineers were meeting for breakfast before starting work and swapping a vast store of practical knowledge about fixing photocopiers”. Thus even within a highly technology orientated environment the physicality of space and intermingling of personal discourses becomes important; although communities of practice can be very varied, it may be that the lack of any

temporal or spatial gathering is problematic. The Wired Wessex case study will again try to draw out some of these issues.

Economic Development and Growth

The third strand in a justification and explanation of the Wired Wessex case study is the matter of economic growth. There are a multiplicity of models of economic development and growth, although Halsey suggested that there were “two contending political agendas inherited from the nineteenth century - two competing projects for the transformation of society along the lines of prosperity and progress. They were Liberalism and Marxism” [Brown 2001]. It seems clear from work by Porter [1980] and Jacobs [1962] that the coming together of industries into economic clusters is both evident and essential for growth. These clusters can range from medieval Florence, [Johnson 1999], modern American cities [Jacobs 1962], Victorian Manchester [Johnson 1999] and modern Manchester [Agar 2002 page 264]. The analysis of economic clusters suggests that there are a whole range of economic reasons for supply chains to develop within a spatial grouping but there is a likelihood that the existence of a trained workforce is at least one factor; indeed, there may well be a relationship between communities of practice and economic clusters. Brown and Lauder [2001] suggest, pace Paritosh Patel, that “the inputs of knowledge and information in relation to innovation are essentially embodied in individuals and, with a high degree of uncertainty surrounding successful innovation, frequent and personal communication is desirable”. At the same time they suggest that “much of the knowledge generated in the search for innovation is tacit knowledge” [Brown 2001 p271]. Jean François Lyotard suggests that “knowledge is and will be produced in

order to be sold and it is and will be consumed in order to be valorised in a new production: in both cases the goal is exchange” [Lyotard 1984 p 4].

Vygotsky defined [1978] “zones of proximal development” as the difference between what one could do alone and what one could do with assistance. David Russell suggests that “people change and learn as they expand their involvement with others in a community, and the tools that community uses in certain ways” [Russell 2002 p 73]. Thus learning and innovation seems to be social. Although the traditional measures of innovation activity tend to focus on the production of artefacts [Amabile 1983], newer methods of analysis are emerging such as personal biographical inventories [Amabile 1996]

Recent work in Japan on knowledge creating companies and the role of innovation [Nonaka and Takeuchi 1995] makes a strong relationship between Japanese companies creating a dynamic of innovation and the role of innovative learning as part of that knowledge creation. Although this work has been critiqued on methodological grounds [Engeström 1999 p 377] the work itself is indicative of a growing awareness of the relationship between learning and economic growth and development. Indeed, the setting up of Wired Wessex by the South East England Development Agency and the research undertaken by the Agency on the relationship between economic clusters and economic development [Creative Industries 2000] reinforces the potentiality of this relationship and the value of a case study that attempts to measure that potential.

Thus this initial Section of this Paper suggests that there is a value in a detailed case study that can bring together the professional development that could take place within a community of learners, the information technology that might be a key part of that professional development and the economic growth that might emerge from a community of practice that can become a learning community. Clearly, there are epistemological issues and methodological issues that emerge from such a case study and the next Section of this Paper attempts to address some of these issues.

An Epistemological Paradigm for the Wired Wessex Case Study

It is difficult to start a Section on the epistemological underpinnings of a piece of research without returning to the positivist debate epitomised by Karl Popper and Thomas Kuhn. Imre Lakatos [1970] suggests that “the clash between Popper and Kuhn is not about a mere technical point of epistemology, it concerns our central intellectual values, and has implications not only for theoretical physics but also for the undeveloped social sciences and even moral and political philosophy”. It is interesting how the very concept of positivism is now seen in pejorative terms amongst the social scientists by whom it is posited as a model of ruthless deterministic hard science which brooks no alternatives. And yet it is clear looking back at the work of Popper [1959] that he saw his work as innovative and liberating. The logical positivists in their original incarnation between the wars were part of a clear agenda of public accountability and open knowledge. Thomas Kuhn’s *Structure of Scientific Resolutions* [1970] was seized upon by the social

scientists as a way of escaping the constraints imposed by the positivist agenda and yet it is very clear from Steve Fullers' work [2003] that Thomas Kuhn's analysis of the paradigmatic nature of the sciences, and its opportunities for the social sciences, has been part of that "epistemic demotion of scientific theories by casting them as flexible rhetorics that can be deployed to suit the occasion." [Fuller 2003]

It is clearly of interest that it is the work of Jean François-Lyotard [1984], whose analysis – surprisingly prescient – of the emerging postindustrialist society was also a critique of the failure of enlightenment meta-narratives concerning truth and meaning, which started the very move towards a post-modern relativism which Thomas Kuhn's multiplicity of paradigms in differing disciplines has allowed and even stimulated. Stephen Fuller has called this "a return to a pre-modern sensibility" [Fuller 2003 p 67].

It does seem important that abstract categorical principles can be derived from various forms of knowledge; that pieces of research encourage alternative hypotheses and then face stiff cross-examination by standards that command universal assent. It seems intuitive that research must in the end be about making the world a better place and that thus a Popperian, positive view of the world has to be more attractive than a Kuhnian one of mere puzzle-solving paradigms, where truth is merely consistent within each of the paradigms. Thus if research is to have value and make the world a better place then a positivist discourse that tries to fit facts into some sort of theory which can then be tested over time, must

be a more exciting proposition than the mere romance of post modernity [Appignanesi 1999].

Stephen Toulmin [1999 p 53] takes this analysis to an interesting further stage. Whilst Popper had eschewed what he saw as Ludwig Wittgenstein's shifting of the whole debate about knowledge and truth into a matter of language games, they had both grappled with one of the key issues which Stephen Toulmin defines as the 20th Century crisis. This is the issue of the relationship between knowledge as the possession of individuals and knowledge as the collective property of communities of knowers [Toulmin 1999 page 54]. Popper proposed a world of "objective knowledge" [1972] or 'World three' which resided in the libraries and museums of a society, and Wittgenstein [1953] had postulated that all units of understanding obtain their meaning by entering language not via the minds of single individuals but within the forms of life that are essentially collective. Thus we seem to move towards a view of knowledge as a collective enterprise. It is this collective enterprise that creates meaning and knowledge and on which and within which individuals master and then grow their more sophisticated enterprises [Toulmin 1999 page 55]. Willmott [2002 p45] suggests that this Popperian 'World Three' is more or less co-terminous with the culture-systems of the morphogenetic approach of Critical Realism. It is clear that Critical Realism has an important role to play in this research as it seems to allow the analysis of both structure and agency at one and the same time, whilst retaining their duality; Margaret Archer [1995] has stressed "Society is not a simple cybernetic system, which presupposes a particular structure capable of carrying out goal directed, feedback regulated error-correction...it is open, and is open because it is peopled,

and being peopled can always be reshaped through human innovativeness”. The existence of both events and the underlying mechanisms that generate them implies a stratified structure that Bhaskar [1998] differentiates into the real, the actual and the empirical and which Archer [1995] describes as morphogenesis “morpho indicating shape and genesis signalling that the shaping is the product of social relations”. Willmott [2002] has used this morphogenetic approach in his case-study of two schools and it clearly has resonances with the Wired Wessex project.

The performative epistemology of Wittgenstein [1953] seems very different from the Kuhnian paradigm of puzzle-solving within a domain of increasingly agreed data and recognises the importance of social and cultural factors in language and learning. This is not in any sense relativism; it is merely recognising that “shared procedures are neither the exclusive property of collective professions nor the exclusive property of individual agents. Rather “the rational history of a human discipline involves a continuing interchange between the innovations of creative individuals and their acceptance or rejection by the professional community.” [Toulmin 1999 page 60]

Activity theory

This brief discourse leads us to the usefulness of Activity Theory for studying and understanding just what is going on in any particular process or activity. Activity theory was developed out of the work of the Russian psychologist Vygotsky [1994] and sees learning “not as the internalisation of discrete information or skills by individuals but rather as expanding involvement over time – social as well as intellectual – with other people and the tools available in their culture”

[Russell 2002 p 65]. Activity theory assumes that “individuals are active agents in their own development but do not act in settings entirely of their own choosing” [Cole 1996 p 104]. As a set of theories it is clearly close to and very similar to the work identified earlier by Lave and Wenger [Lave and Wenger 1999] which postulated a community of learners. Yrjö Engeström, one of the leading researchers and gurus in the area of activity theory has a view that Lave and Wenger’s situated learning is decidedly broader than the individual actions inherent in activity theory. He believes that ‘communities of practice’ is a wider and more encompassing unit of analysis and criticises legitimate peripheral participation as a one way movement from the periphery occupied by the novice learner to the centre inhabited by experienced masters of the given practice [Engeström 1999 p 12]. He suggests that instability and inner contradictions of practice are not present or are insufficiently present in Lave and Wenger’s model; although Charles Tolman [1999 p83] does say that “Jean Lave and Etienne Wenger have elaborated a theory of appropriation that is in keeping with the societal and historical spirit of Leont’ev’s activity theory and *that in significant ways may surpass it*” [my italics]. Engeström suggests that “the study of an activity system becomes a collective multi-voiced construction of its past, present, and future zones of proximal development.” [1999 p 10]

Activity theory recognises two basic processes operating continuously at every level of human activity: internalised reproductions of culture and externalised creation of new artefacts that make possible the transformation of culture. These two intertwined processes are inseparable and interestingly seem to mirror the thinking of Roy Bhaskar [1989] whose Critical Realism, as evidenced earlier by

Archer[1995] and Willmott [2002], seems to offer a powerful alternative to the post-modernity of Lyotard whilst retaining the positivism espoused by Karl Popper. Indeed, it is the possibility of using Activity Theory as a set of methodological processes that underpin an epistemology of multi-layered internality and externality that can work with the Critical Realism of Roy Bhaskar that makes it so attractive. However, as Margaret Archer has stressed, “there is an impossibility in ‘perspectivism’ - having the best of all theoretical worlds by combining the insights from different approaches. One of the main arguments is that ‘theory’, ‘investigation’ and ‘findings’ cannot be treated in isolation from one another.” Thus this attempt to blend Activity Theory within an epistemology of Critical Realism might be over ambitious.

Activity Theory “rejects cause and effect, stimulus response, explanatory science in favour of a science that emphasises the emergent nature of mind in activity and that acknowledges a central role for interpretation in its explanatory framework” [Cole 1996 p 104] and thus draws upon methodologies from the humanities as well as from the social and biological sciences. Activity Theory studies often combine traditional comparison group studies with case studies, ethnographic observation, discourse analysis and rhetorical analysis to make sense of – rather than control for – the complexity of human learning mediated by telecommunication networks [Russell 2002 p 67]. Again it is the apparent ability of Activity Theory to allow a multiplicity of sophisticated views of a set of processes, with data collected from a variety of different viewpoints and yet placed within an analytical diagrammatic triangle that brings together the subjects, mediating tools, rules, community, division of labour and object that each

individual activity is constrained by, that makes it a useful epistemological device for studying the multiplicity of tasks and individuals that make up the Wired Wessex community of practice.

Data and Information

Harry Wolcott talks of description, analysis and interpretation as ways of transforming qualitative data [Wolcott 1994]. The sources of information that this research project aims to produce in some way mirrors the ‘bricolage’ or ‘collage’ approach that post-modernists use for their key data presentation. Walter Benjamin’s Arcades Project [1991] built up a picture of a particular time and a place by such methods, presented in a very post-modern fashion. Activity Theory analysis would allow such differing collection devices but would attempt to fit them within the Vygotskian triangle of analysis. At the same we must be continuously aware of Margaret Archer’s strictures on social ontology and explanatory methodology “In any field of study, the nature of what exists cannot be unrelated to how it is studied. What social reality is deemed to consist of (and what is deemed non-existent) must affect how its explanation is approached”.

Description

The research project will make use of a quantitative data mapping exercise so that the 600 small organisations that are members of Wired Wessex can be mapped by size, location, type of industry, turnover, number of staff etc. This data will need to be manipulated using SPSS to generate a range of data maps.

There will then need to be some ethnographic qualitative research that will take a number of different tacks and be my Research Based Thesis. Wired Wessex members meet on a monthly basis around the region for informal conversations,

presentations from individuals and Master classes. These meetings will allow observation of the interchanges between individuals, the questions asked by individual members and the relationship between different sorts of members. Some individuals are very experienced ‘Masters’ whilst others are ‘novices’ in their practice. Observation of these meetings will be written up and become important parts of the research project.

Individuals will be interviewed and the detailed interview notes become a further part of the assembled bricolage. The relationship between the observed meetings and any master/novice hierarchies will be matched by the individual interviews attempting to get a sense of self and peer views of such relationships. The hierarchies of status evident amongst these individuals can be tested against the Wittel [2002] heterarchies identified in London.

Much Wired Wessex activity is also by e-mail and bulletin board. Bulletin boards are publicly available and accessible data sources that can be studied over time to see how individuals become part of a community and the exchanges between the individuals as part of their heterarchy and community of practice and learning.

E-mail exchanges and flows between members of the community are less easy to monitor but given permission from some key individuals, there will be some analysis of Master/novice heterarchic learning relationships.

The data mapping exercises at the beginning of the project and then at the end of the project will allow some correlation between the observations, the interviews

and the bulletin board analysis that can be correlated with economic growth, company survival and turnover.

Analysis

Activity theory suggests that there is a triangular relationship between subjects, objects and the mediating cultural and community tools that individuals use in their activities. The analysis of discourses in the observed meetings, the analysis of the interviews and the analysis of the bulletin board information flows into the Vygotskian factors may allow some measure of the efficacy of any learning processes taking place, indeed the existence of any learning processes. Many of the members will have come into their community of practice with qualifications that are only marginally relevant or backgrounds that are entirely experiential. It will be important to map the developmental trajectories of individuals as a way of testing the community of learning paradigm and the impact of the technology on that paradigm. As we know, Vygotsky suggested that because the activity systems that form our lives are dynamic they constantly present opportunities for learning; these opportunities - “zones of proximal development” - he defined as the difference between what one could do alone and what one could do with assistance. Wired Wessex is, in a sense, a centrally managed zone of proximal development posited on the belief that the opportunities for learning will result in increased economic competitiveness.

Interestingly, Wired Wessex can be seen to be bringing together Lyotard’s model of knowledge as a commodity by using Vygotsky’s zone of proximal development as a centrally constructed device. This is, of course, a fairly

contested process. Contested both economically, in the sense that artificially constructed economic clusters have yet to have a proven efficacy, and contested morally and ethically in the sense that people may react in a counter-intuitive fashion. This counter-intuition is evidenced by Steve Woolgar in his ESRC Virtual Society project [2002 p 21] and specific research in the ESRC project by David Mason [2002 p137] and David Knight [2002 p 99].

Ethical and Moral Issues of the Wired Wessex Case Study Research Project

It is to the ethical and moral issues of researching within my own organisation that I would now like to turn. Wired Wessex is a company with a membership of some 600 individual organisations and a Board of Directors. It is funded jointly by King Alfred's College, Hampshire County Council, the Local Authorities and the South East England Regional Development Agency. It received substantial start up funding from the European Union under its European Social Fund programme.

As a Board member of Wired Wessex I am clearly intimately involved in its day to day operations and as a senior manager of King Alfred's College I am responsible for the funding decisions into Wired Wessex. Thus there are clearly issues of methodology and outcomes which need to be identified at an early stage in this project.

However, both Wolcott [1994] and David Silverman [2001] make it clear that there is a legitimacy in researching within one's own organisation or organisations

close to oneself as long as time is spent identifying potential risks and assets in the process.

There are clearly two major constraints: i) I am too close to the working operations to collect credible data because relationships with individuals in the research preclude the critical processes being evidenced; ii) I am too keen for the operation to be a success because of a senior management role.

On the first point, the issue of tainted data because of closeness to the operation and inter-relationships with the people concerned, this has always been one of the critical factors in both action research and ethno-methodology. Whilst it is true that processes identified by Harry Wolcott [1994] in his ethnographical research allow important separation devices to be built into the research, there is always a closeness between the research process and the researcher in such highly qualitative areas. Wolcott's own research on the roles of an Elementary School Principal in America involved a whole year of close relationship with a senior manager in a School and the need to distance himself from the process through his writing up, his notes and his regular reporting back to colleagues both within and without the research team were important tools in his armoury as "the critical researcher".

Action Research has a long tradition of close relationships between the researcher as a facilitator, mediator and even stimulator of the research processes. Interestingly Engeström [1999] actually suggests that activity theory is "best developed when researchers enter actual activity systems undergoing such

transformations.” He goes on to say that “I am not suggesting a return to naïve forms of action research, idealising so called spontaneous ideas or efforts coming from practitioners” and indeed makes clear that on the contrary he wants to put activity theory to the “acid test of practical validity and relevance in interventions that aim at the construction of new models of activity jointly with the local participants.” [Engeström 1999 p 35].

Thus it seems clear that if the epistemological underpinnings of activity theory are to be pushed to the limit some involvement of the researcher in the process needs to be accepted. David Russell suggests that ethnographic observation, discourse analysis and rhetorical analysis are parts of the armoury to make sense of the complexity of human learning in activity theory studies. [Russell 2002 p 67].

I have a sense that as a Board member of Wired Wessex I will be seen as having a key part in the common enterprise of the project and thus an ethnographic approach with the formal constraints suggested and used by Wolcott would seem to be both appropriate and offer sufficient protection to both the research process and the researcher.

On the other matter, that of my commitment to the success of the project and thus a possible tainting of the research methodology through that enthusiastic commitment, I would suggest that as a Board member of Wired Wessex rather than as an employee or member of staff my role as both researcher and a strategic leader are coterminous. My role as a Board member is about ensuring success, but at the same time being well aware of the constraints and funding implications.

My need to have a strategic overview of Wired Wessex as an operation that is funded by public sector Government and European sources requires that as a Board member I am an “honest broker” in the operation. I have an desire and need to make sure that I know precisely what is going on deep within Wired Wessex so that my ability to find more funding and assist the other Board members in strategic directions is based on credible evidence.

Conclusion

In the 1920s John Dewey [1929] discussed the complexity of “the quest for certainty” that much intellectual research embodied. This project is most certainly not a quest for certainty; it is what Engeström [1999 p 10] calls a “collective, multi-voiced construction of its past, present, and future zones of proximal development.” Thus “the analysis constructs the activity system as if looking at it from above. At the same time the analyst must select a subject, a member (or better yet, multiple different members) of the local activity, through whose eyes and interpretations the activity is constructed” [Engeström 1999 p 10]. This process of constructing voices and thus articulating and evidencing change and development is one that can perhaps only be done by someone who is both an analyst and an interpreter, a member of the Board of the enterprise with a commitment to it but also with a need to ensure credibility.

Annotated Bibliography

South East Media: Research and Recommendations (1999). Human Capital for the Government Office of the South East.

All our Futures: Creativity, Culture and Education (1999). National Advisory Committee on Creativity and Cultural Education.

A health service of all the talents: developing the NHS workforce (2000). Great Britain. Department of Health.

Creative Industries: the regional dimension (2000). Great Britain. Department for Culture, Media and Sport.

Creative industries mapping document (2001). Great Britain. Department of Culture Media and Sport.

Multi-disciplinary teams: lessons learned (2001). Canada. Government of Alberta. Umbrella Alberta Primary Health Care Project.

one particular area of professional activity that has been exploring the issues of teams, learning, and multi-disciplinarity successfully

each team member both retains their own traditional professional role but at the same time develops a new role or range of roles and is able to 'think a little more broadly about how they can participate in the team'

Creative and Cultural Industries: an economic impact study for South East England (2002). David Powell Associates for South East England Cultural Consortium and South East England Development Agency.

detail of research undertaken by the Agency on the relationship between economic clusters and economic development

Abelson, R. (1995). Statistics as Principled Argument. Hillsdale, Lawrence Erlbaum.

Agar, J., S. Green, et al. (2002). Cotton to Computers: From Industrial to Information Revolutions. Distributed learning: Social and cultural approaches to practice. M. Lea and K. Nicholl. London and New York, RoutledgeFalmer and Open University: 264-285.

Agar, M. (1986). Speaking of Ethnography, London: Sage.

reckons there is a received view of science that necessitates an hypothesis, a measurement, a sample and a pre-test. He rejects this received view and ripostes with "you need to learn about a world you understand by first encountering it firsthand and making some sense of it".

Agarwal, R. and J. Prasad (1998). "A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology." Information systems research 9(2): 204-215.

look at the extent that creativity equals innovation.

Alderman, G. (2001). Opinion. Guardian: 14.

However, it seems clear to Geoffrey Alderman that 'online delivery promises a new access route for millions of qualified, motivated students

At the heart of this revolution is a completely new pedagogy, for which the current generation of university and college lecturers is not trained and which for the most part their managers do not understand '.

Alvesson, M. and K. Sköldbberg (2001). Reflexive Methodology: New Vistas for Qualitative Research. London, Sage.

"it is not methods but ontology and epistemology which are the determinants of good social science"

critical analysis is non-trivial and requires the same careful interpretation and reflection as the initial research itself; recognising that "an assumption of a simple mirroring thesis of the relationship between 'reality' or 'empirical facts' and research results(text) has to be rejected" p8

Alvesson, M. and H. Willmott (1996). Making Sense of Management: A Critical Introduction. London, Sage.

Amabile , T. M. (1983). "The Social Psychology of Creativity: A Componential Conceptualization." Journal of Personality and Social Psychology 50.

due to the complexity of the creative process and the stability of personal creative abilities, the majority of creativity literature focuses on the product as the practical measurer of creativity

Amabile, T. M. (1996). Creativity in Context. Boulder, Colorado, Harper.

Creativity could be measured by three assessment techniques: creativity tests (such as personality inventories, biographical inventories, behavioural test, etc.), objective analysis of products, and subjective judgments

Appignanesi, R. and C. Garratt (1999). Introducing Postmodernism. Cambridge, Icon.

overly emotional evidence that 'the only cure for postmodernism is the incurable illness of romanticism'

Apter, M. J. (1989). Reversal Theory: motivation, emotion and personality. London, Routledge.

Archer, M. (1995). Realist social theory: the morphogenetic approach. Cambridge, Cambridge University Press.

Society is not a simple cybernetic system, which presupposes a particular structure capable of carrying out goal directed, feedback regulated error-correction...it is open and is open because it is peopled and being peopled can always be reshaped through human innovativeness" p165-6

Archer, M. (1998). Realism in the Social Sciences. Critical Realism: Essential Readings. M. Archer, R. Bhaskar, A. Collier, T. Lawson and A. Norrie. London, Routledge.

Archer, M., R. Bhaskar, et al., Eds. (1998). Critical Realism: Essential Readings. London, Routledge.

Barnett, R. (2000). Realizing the University in an age of supercomplexity, SRHE and Open University.

There has been a spate of analyses of the future of the university. Some of these analyses, particularly those by Barnett and Delanty, raise important issues concerning the future of higher education.

"postmodernism is a dangerous road to go down"

*The Humboldtian ideal of a university whose role is the formation of personality and the transmission of culture as a received body of values - the whole person or *bildung* - is one of the great grand narratives that the post-modernists have rejected. The development of a new sort of higher education that 'eschews romantic nostalgia' is clearly a driving force in the work of Barnett and Delanty*

Bassey, M. (1999). Case Study Research in Educational Settings. Buckingham, Open University Press.

Becher, T. (1999). Professional Practice: Commitments and Capability in a Changing Environment. New York and London, Transaction Publishers.

identified professional groups that are hostile toward the idea of professional development, considering their professional work to have a strongly practical bias unsuited to conventional methods of teaching and learning, but understanding the importance of informal learning and making a strong case for the non-formal learning and 'communities of practice' advocated by Brown et al

makes clear that "the strategies for informal learning ...all involve some form of personal contact with fellow professionals, leading to the acquisition of new information or the establishment of potential means of doing so".

Bell, D. (1973). The Coming of Post-industrial society: A Venture in Social Forecasting. New York, Basic Books.

in 1956 for the first time there were more white-collar workers in the United States than there were blue-collar

Benjamin, W. (1999). The Arcades Project. Cambridge, Mass, Harvard University Press.

The postmodernists have a methodology that allows this approach of equally possible but different solutions - bricolage - the ad hoc assemblage of miscellaneous materials and signifying structures, suggested by Levi-Strauss and offering some powerful outcomes if used creatively. Typical postmodern views of the world, of which Walter Benjamin's Arcades Project is an interesting example, give a sense of these multiple views of differing but equally possible realities.

Bhaskar, R. (1998). Philosophy and scientific realism. Critical Realism: Essential Readings. M. Archer, R. Bhaskar, A. Collier, T. Lawson and A. Norrie. London, Routledge: 16-47.

Bhaskar, R. and A. Callinicos (2003). "Marxism and critical realism." Journal of Critical Realism 1(2).

Billett, S. (2002). Workplace, communities and pedagogy. Distributed learning: social and cultural approaches to practice. M. Lea and K. Nicoll. London, RoutledgeFalmer: 83-97.

suggested that "given the need to understand how individuals participate in and learn at work, the relations between and among individuals, teams and key interest groups become a central concern for understanding how learning at work proceeds."

suggested [page 93] "work places are not only venues where individuals merely engage in tasks; they are also a constituted component of individuals thinking, acting and learning." However,

they are also clearly places of stress, pressure and contestation. Indeed, Billett has suggested that " contestation is an enduring feature of work practice" [page 87].

Bloome, D. and J. Green (1996). Ethnography and ethnographers of and in education: a situated perspective. A handbook for Literacy educators. J. Flood. New York, Macmillan.

"indicate a set of research procedures, usually involving intensive qualitative study of small groups through participant observation" and " a melange of strategies aimed at producing an accurate model of the behaviours of particular people"

Bogdan, R. C. and S. K. Bilkin (1982). Qualitative research for education: an introduction to theory and methods. Boston, MA, Allyn and Bacon.

Traditionally, there were two distinct parts to the process - the interview and the transcribed text. The latter is analysed almost as if it were quantitative data, sometimes using software packages; the former is merely a 'purposeful conversation' This no longer makes sense from any sort of scientific realist or postmodern epistemology

Bourdieu, P. (1984). Distinction:A social critique of the judgement of taste. London, Routledge.

Brassey, M. (1999). Case-study research in educational settings. Buckingham, OUP.British Education Research Association.

suggests that there are two kinds of arena for empirical educational research: studies of singularities and studies of samples. The former embrace experiments, action researches and case studies; the latter surveys.

Brockbank, A. and I. McGill (1998). Facilitating Reflective Learning in Higher Education, SRHE.

identifying a taxonomy of new skills for those involved in higher education. They include understanding the asymmetry of learning and teaching; the needs of individual students as opposed to the demands of the group; the very varying roles of the 'discipline' in this process, with a post-modern perception of the relationship of individual disciplines to generic problems that can be usefully situated in a post-industrial society; and some deep sense of the ways that variously designed teaching methodologies impact on the learning patterns of different students in different discipline areas.

Brown, J. S., A. Collins, et al. (1989). "Situated cognition and the culture of learning." Educational Researcher **18**(1): 32-42.

Brown, J. S. and P. Duguid (1996). "Universities in the Digital Age." Change **28**(4): 11-20.

suggest "learning involves inhabiting the streets of a community's culture. The community may include astrophysicists, architects or acupuncturists, but learning involves experiencing its cultural peculiarities

Brown, J. S. and P. Duguid (2000). The social life of information. Boston, Massachusetts, Harvard Business School Press.

identify a group of photocopier machine repair engineers in the Xerox corporation who were primarily working within a very IT rich environment with structured knowledge management databases and yet still "in practice the engineers were meeting for breakfast before starting work and swapping a vast store of practical knowledge about fixing photocopiers"

Brown, P. and H. Lauder (2001). Capitalism and Social Progress. Basingstoke, Palgrave.

"two contending political agendas inherited from the nineteenth century - two competing projects for the transformation of society along the lines of prosperity and progress. They were

Liberalism and Marxism"

suggest, pace Pari Patel, that "the inputs of knowledge and information in relation to innovation are essentially embodied in individuals and, with a high degree of uncertainty surrounding successful innovation, frequent and personal communication is desirable".

At the same time they suggest that "much of the knowledge generated in the search for innovation is tacit knowledge"[p271]

Bryman, A. and D. Cramer (1999). Quantitative data analysis with SPSS Release 8 for Windows : a guide for social scientists. London, Routledge.
stress that "concepts form the linchpin of social research"

suggest that "the search for dimensions can provide an important aid to understanding the nature of concepts and...can be an important step in moving from the complexity and abstractness of many concepts to possible measure of them"

Burgess, R. G. (1985). Issues in educational research : Qualitative methods. London, Falmer Press.

"researchers who have utilised a qualitative approach in their investigations have tended to use a range of methods, styles and strategies based upon social interactions with those whom they study, observation of people, situations and events, formal and informal interviewing, and the collection of documentary material" . piv

Burgess, R. G. (1988). Researching Education. Developments in Sociology. Ormskirk:, Causeway Press. 4.

Burgess, T. (2000). "The logic of learning and its implications for higher education." Higher Education Review 32(2): 63.

Interestingly, this is less a debate about content but about process. It is a concern for the way that a professional teacher in higher education should present subject disciplines as useful parts of solutions to students' problems. It is a determination that Universities must indeed offer a store of knowledge, understanding and skill through which students might solve their learning problems

what students still need is 'access to what is' and to 'face the rigour of subject disciplines as part of an agreed educational programme which has its own coherence beyond the subjects'

Bush, T., L. Bell, et al., Eds. (1999). Educational Management: Redefining Theory, Policy and Practice. London, Paul Chapman.

Castells, M. (1996). The Rise of the Network Society. London, Blackwell.

The birth and development of a post-industrial society has been much analysed , The Rise of the Network Society gives a sense of the impact of the changes

'we are living through one of those rare intervals in history. An interval characterised by the transformation of our material culture by the works of a new technological paradigm organised around information technologies'

suggests that the rise of the network society cannot be understood without understanding the interaction of information technology and the old societies attempt to retool itself and that this interaction depends on the relationships between an excessive number of independent variables

Clark, B. (1998). Creating Entrepreneurial Universities: Organizational Pathways of Transformation. Oxford, Pergamon.

considers two British universities in his detailed study of successful university transformation. Clark's analysis suggests five elements in the transformation process: a strengthened core, an expanded development periphery, a diversified funding base, a stimulated

academic heartland and an integrated entrepreneurial culture; interestingly, he stresses the need to embrace both managerial groups and academic departments and that 'the heartland is where traditional academic values are most firmly rooted

far from the 'ruined institution' that Readings identifies, it is possible that collective entrepreneurship overcomes the scattered nature of higher education and leads to greater integration. Academics see themselves in common groups with common problems on the way to a common culture. Indeed, Clark finds a collective form of entrepreneurship that puts a new spin on collegiality 'an entrepreneurial achievement of distinctiveness serves internally to unify an identity and therefore, ironically, to rebuild a sense of community'

Clarke, J. and J. Newman (1997). A change for the better? The tyranny of transformation. The managerial state. London, Sage: Ch 3.

The literature of organisational structures and organisational development suggests a number of forms for public sector organisations in an age of 'new managerialism' . Clarke and Newman suggests three forms. One such form, the competitive public sector organisation, has some or all of its parts exposed to external competition or has internal competitive markets imposed on it and there is an emphasis on entrepreneurial activity and income generation; the ex-Polytechnic Universities are often seen to fit this model, along with some of the more energetic New Universities. There still remains a traditional public sector organisation, with values and cultures very different from industry; the old Universities show some of these elements. There is a third model, the transformative form, with flat hierarchies, team based approaches and an interest and emphasis on cultures

critically dissects the reconstruction of the state under the two ideologies of the New Right and New Managerialism and articulates the horrors of change and the way that the discourse of change has become hegemonic. Such analysis is passionate

Cohen, L. and L. Manion (1980). Research methods in education. London, Routledge.

suggest that if designed well, with some form of pre-test and a follow up, validity through high response rates is reasonable.

Cole, M. (1996). Cultural Psychology. Cambridge, MA, Harvard University Press.

activity theory "rejects cause and effect, stimulus response, explanatory science in favour of a science that emphasises the emergent nature of mind inactivity and that acknowledges a central role for interpretation in its explanatory framework [page 104].

Thus it draws upon methodologies from the humanities as well as from the social and biological sciences

Conway, M. (2000). "Defining administrators and new professionals." Perspectives 4(1).

suggesting that academic and other work may be converging and may no longer be all that different

Cook, R. (2001). "Have things got this much better? An analysis of Subject Review 1998-2000." Higher Education Review 33(3): 3-11.

Of the six areas of measurement - curriculum design content and organisation, teaching learning and assessment, student progression and achievement, student support and guidance, learning resources, and quality management and enhancement - only two focussed entirely on academic staff. The other four brought in librarians, IT specialists, quality assurance offices, student services and counselling and even estates officers. The spread of the academic enterprise was seen as a whole - and was not generally found wanting

Cornford, J. and N. Pollock (2002). The university campus as a resourceful constraint. Process and practice in the construction of the virtual university. Distributed learning: Social and cultural approaches to practice. M. Lea and K.

Nicholl. London and New York, RoutledgeFalmer and Open University: 170-181.

Cribb, A. (1998). Re-Shaping Welfare Professional Ethics. Markets, Managers and Public Service? Professional Ethics in the New Welfare State. London, Kings College.

Much of the pressure for these changes - which have affected many professional groups in the public sector - revolve around accountability and quality and reasserting the power of funders and consumers. The outcomes have been 'both more fundamental and more far reaching than mere derision or loss of respect'

De Solla Price, D. (1963). Little Science, Big Science. NY, Columbia University Press.

Deem, R. (1998). "New Managerialism and Higher Education: the management of performances and cultures in universities in the United Kingdom." International Studies in Sociology of Education 8(1): 47-70.

professional academics - legitimately professionalised with national or international reputations in their own disciplines as, for example, historians, psychologists or engineers - feel that they are being berated to re-professionalise with a new and different body of knowledge in relation to learning and teaching. This is at a time when their existing professional autonomy as academics working together with minimal hierarchy and maximum trust and discretion has been eroded

feels that there are few signs that the transformative model has yet been adopted by universities in the United Kingdom,

Delanty, G. (2001). Challenging Knowledge. The University in the Knowledge Society. Buckingham, SRHE and the Open University.

There has been a spate of analyses of the future of the university. Some of these analyses, particularly those by Barnett and Delanty, raise important issues concerning the future of higher education.

The Humboldtian ideal of a university whose role is the formation of personality and the transmission of culture as a received body of values - the whole person or bildung - is one of the great grand narratives that the post-modernists have rejected. The development of a new sort of higher education that 'eschews romantic nostalgia' is clearly a driving force in the work of Barnett and Delanty

the implication is a move of research out of the academy and into industry, with research centres linked by information technology networks. The university is 'forced to occupy the ground of reflexivity' and thus some colleagues will have to move back to reflection on professional practice and scholarship by way of learning, teaching and assessment p102

Denzin, N. and Y. Lincoln, Eds. (2000). Handbook of qualitative research. Thousand Oaks, CA, Sage.

"change the world in a positive way" .px

Dreyfus, H. L., : . (1999). "Anonymity versus commitment: the dangers of education on the internet." Ethics and Information Technology 1: 15-21.

Engeström, Y. (1999). Activity theory and individual and social transformation. Perspectives on activity theory. Y. Engestrom, R. Miettinen and R.-L. Punamaki. Cambridge, CUP: 19-38.

activity theory is "best developed when researchers enter actual activity systems undergoing such transformations." He goes on to say that "I am not suggesting a return to naïve forms of action research, idealising so called spontaneous ideas or efforts coming from practitioners" and indeed makes clear that on the contrary he wants to put activity theory to the

"acid test of practical validity and relevance in interventions that aim at the construction of new models of activity jointly with the local participants." [page 35].

Engeström, Y. (1999). Innovative learning in work teams: analysing cycles of knowledge creation. Perspectives on activity theory. Y. Engeström, R. Miettinen and R.-L. Punamäki. Cambridge, Cambridge University Press: 377-406.

Engeström, Y., R. Miettinen, et al., Eds. (1999). Perspectives on activity theory. Learning in Doing: Social, cognitive and computational perspectives. Cambridge, Cambridge University Press.

a "collective, multi-voiced construction of its past, present, and future zones of proximal development." Thus "the analysis constructs the activity system as if looking at it from above. At the same time the analyst must select a subject, a member (or better yet, multiple different members) of the local activity, through whose eyes and interpretations the activity is constructed" [page 10]

Entwistle, N. J. (1983). Styles of learning and teaching: an integrated outline of educational psychology. Chichester, Wiley.

identifying a taxonomy of new skills for those involved in higher education. They include understanding the asymmetry of learning and teaching; the needs of individual students as opposed to the demands of the group; the very varying roles of the 'discipline' in this process, with a post-modern perception of the relationship of individual disciplines to generic problems that can be usefully situated in a post-industrial society; and some deep sense of the ways that variously designed teaching methodologies impact on the learning patterns of different students in different discipline areas.

Eraut, M. (2000). "Non-formal learning in and tacit knowledge in professional work." British Journal of Educational Psychology **70**: 113-136.

did find that the capability to tell was linked to people's prior experience of talking about what they knew and that talking about what they knew at work was more likely to occur when there was a climate of regular consultation and when there was some continuing education in the form of serious reading. This gives some hope and a model for development.

suggests that we have not fully grasped the learning inherent in being and doing

Evers, C. W. and G. Lakomski (1991). Knowing educational administration: Contemporary methodological controversies in educational administration. Oxford, Pergamon.

Feyerabend, P. (1975). Against method: outline of an anarchistic theory of knowledge. London, Verso.

passionate plea for creativity and the clear mirroring of 'science' with 'organised crime'

Flyvberg, B. (2001). Making Social Science Matter: Why social enquiry fails and how it can succeed again. Cambridge, CUP.

structure the research along both quantitative and qualitative lines, using different methods to develop particular strands of investigation with a view to bringing the totality together as a particular case, which I hope will be in one sense paradigmatic

in his support of the case study approach, suggests that "context dependent knowledge and experience is at the very heart of expert activity"; this is of course absolutely the focus of this particular research and makes this approach very appropriate.p71

regards case studies as ideal for generalising using the type of test which Karl Popper called 'falsification'...one of the most rigorous tests to which a scientific proposition can be subjected.

stress that "in the study of human affairs there exists only context-dependent knowledge"

Hans Eysenk suggested that "sometimes we simply have to keep our eyes open and look carefully at individual cases - not in the hope of proving anything but rather in the hope of learning something" . p73

Foster, W. (1986). Paradigms and Promises. Buffalo, NY, Prometheus Books.

Foucault, M. (1971). Language, Counter-memory, Practice. Ithaca, Cornell UP.

Fullan, M. G. (1999). Change Forces: The Sequel. London, Falmer Press.

Fullan, M. G. (2001). The New Meaning of Educational Change. London, RoutledgeFalmer.

Fullan, M. G. (2001). Leading in a Culture of Change. San Francisco, LA, Jossey-Bass.

Fuller, S. (2003). Kuhn Vs Popper. Cambridge, Icon Books.

Gibbons, M., C. Limoges, et al. (1984). The new production of knowledge. London, Sage.

The move of 'Big Science' research out of the academy, whether for intellectual reasons to do with a view of scientific knowledge being no different from any other pace Feyerabend, or for reasons to do with an increasingly reflexive, transdisciplinary, and heterogeneous postmodern view of research often labelled Mode 2 identified by Gibbons et al, is still unclear

Glaser, B. G. and A. L. Strauss (1967). The discovery of grounded theory. Strategies for qualitative research. Chicago, Aldine.

Gornall, L. (1999). "New professionals." Perspectives 3(3).
Academic administrators see themselves as 'new professionals'

Hall, R. H. (1968). "Professionalization and bureaucratization." American Sociological Review 33: 92-104.

Hammersley, M. (1990). Reading ethnographic research: a critical guide. London, Longmans.

By validity Hammersley meant truth: interpreted as the extent to which an account accurately represents the social phenomena to which it refers

Hargreaves, D. F. (1967). Social Relations in a Secondary School. London, Routledge.

House, E. R. (1991). "Realism in research." Educational Researcher 20(6): 2-9.
suggests that "a realist conception of causation might see events as being produced by the interaction of a multitude of underlying causal entities operating at different levels" and "knowledge is a social and historical product" but that " a body of knowledge can be developed that describes the complex and stratified world". This, to some postmodernists, still implies a 'one-best solution' rather than the range of equally possible but different descriptions that they would prefer.

Jacobs, J. (1961). The Death and Life of Great American Cities. New York, Vintage.

suggests an 'organised complexity' which brings about "an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole".

Jarvis, P. (2000). "The changing university: meeting a need and needing to change." Higher Education Quarterly 54(1): 55.

Undergraduate higher education is no longer a leisurely preparation for the governing elite; it is a route for many into the knowledge based workforce

With some 30% of the workforce entering the knowledge industries in the next generation there needs to be both greater access to higher education and clearer thinking over the issues of skills for an information society

Johnson, R. (2001). "Lessons for learndirect." People Management,(November): 7.

Johnson, S. (2001). Emergence: the connected lives of ants, brains, cities and software. London, Penguin.

goes on to suggest that "Neighbours learn from each other because they pass each other...Sidewalks allow relatively high bandwidth communication between total strangers and they mix large numbers of individuals in random configurations"

Kerr, C. (1963). The uses of the university. Cambridge:MA, Harvard University Press.

Kirkup, G. (2002). Identity, community and distributed learning. Distributed learning: social and cultural approaches to practice. M. Lea and K. Nicoll. London, RoutledgeFalmer: 182-195.

makes clear that there is a very significant difference between networks and communities , with a key question "what is the nature of a learning community and what role does ICT play in it?"

Knight, P. (2001). "Review of Tony Becher. Professional Practices (1999)." Higher Education Quarterly 55(1): 100-102.

"we have tended to misrepresent learning by not taking seriously the learning inherent in being and doing "

Kuhn, T. (1970). The Structure of Scientific Revolutions. Chicago, University of Chicago Press.

puzzle solving normal science and revolutionary paradigm shifts

seized upon by the social scientists as a way of escaping the constraints imposed by the positivist agenda and yet it is very clear from Steve Fullers' work [2003] that Thomas Kuhn's paradigmatic analysis of the sciences and its opportunities for the social sciences has been part of that "epistemic demotion of scientific theories by casting them as flexible rhetorics that can be deployed to suit the occasion."

Kvale, S. (1996). InterViews: an introduction to qualitative research interviewing. London, Sage.

Lacey, C. (1970). Hightown Grammar. Manchester, Manchester University Press.

Lakatos, I. (1970). Falsification and the methodology of Scientific research programmes. Criticism and the Growth of Knowledge. I. Lakatos and A. Musgrave. Cambridge, CUP.

suggests that "the clash between Popper and Kuhn is not about a mere technical pointed epistemology it concerns our central intellectual values, and has implications not only for theoretical physics but also for the undeveloped social sciences and even moral and political philosophy"

Lakatos, I. and A. Musgrave, Eds. (1970). Criticism and the Growth of Knowledge. Cambridge, CUP.

Lankshear, C., M. Peters, et al. (2002). Information, knowledge and learning. Some issues facing epistemology and education in a digital age. Distributed learning: Social and cultural approaches to practice. M. Lea and K. Nicholl. London and New York, RoutledgeFalmer and Open University: 16-37.

suggest that "as educationists we neglect investigating the possible epistemological significance and implications of practices involving new information and communication technologies at our peril" [page 19]. Indeed, he goes on to say that "traditional epistemological concepts, criteria and practices - particularly those adhered to by knowledge professionals like academics - are put under considerable strain here [2002 page 26].

Laurillard, D. (1993). Rethinking University Teaching, Routledge.

recognises absolutely that 'we cannot defend a mode of operation that actively undermines a professional approach to teaching' and that 'academics are facing an unprecedented challenge to the traditions and values of the profession'

starts to posit the sort of new professionalism that will be required for a higher education academic in a post-modern and post-industrial environment. Indeed, her 'idea is to find an infrastructure that enables university teachers to be as professional in their teaching as they try to be in their research

There is still a deep romanticism in much of the literature's view of the University and the Academy: 'a community of scholars pursuing their own course towards knowledge and enlightenment, inspired but not directed by their teachers'

Lave, J. and E. Wenger (1991). Situated learning: Legitimate Peripheral Participation. Cambridge, CUP.

focuses on the processes of community participation and identity in learning, in contradistinction to constructivist theory, which concentrates on the learner's mental structures and is concerned with task-orientated activity, or functionalist socialisation theory and activity theory

Lazarsfeld, P. F. (1958). "Evidence and inference in social research." Daedalus **87**: 99-130.

views the search for underlying dimensions as an important ingredient. He suggests that a useful starting point is one of imagery, with the researcher forming an image from a theoretical domain.

Lea, M. and K. Nicholl, Eds. (2002). Distributed learning: Social and cultural approaches to practice. London and New York, RoutledgeFalmer and Open University.

fairly clear that the traditional barriers between full-time and part-time students working on campuses and off campuses are now disappearing. Mary Lea and Kathy Nicoll suggest that "this can result in an eclectic mix of ideas and perspectives which at the end of the day need to be translated into real grounded practices"

Lincoln, Y. S. and E. G. Guba (1985). Naturalistic Enquiry. Beverly Hills, Sage.

Lord, F. M. (1953). "On the statistical treatment of football numbers." American

Psychologist 8: 750-1.

Lyotard, J.-F. (1984). The Post-modern Condition: a report on knowledge. Manchester, MUP.

focussed on the postmodern role of knowledge and information; despite others' views that postmodernism is a dangerous road to go down it is clear that postmodernism will impact on industries that are essentially about knowledge, information and signs

postmodern critiques of the subject, of grand narrative, of sign itself cannot but impact on our thinking about the University as an institution that is essentially about subjects, grand narratives and signs.

page 3] suggests that "the status of knowledge is altered as societies enter what is known the post industrial age and cultures enter what is known as the post modern age".

suggests that "knowledge is and will be produced in order to be sold and it is and will be consumed in order to be valorised in a new production: in both cases the goal is exchange! [page 4].

MacCrimmon, K. R. and C. Wagner (1994). "Stimulating Ideas through Creativity Software." Management Science **40**(11): 1514-1532.

Machlup, F. (1980). Knowledge and knowledge production. Princeton: NJ, Princeton University Press.

Mann, C. and F. Stewart, Eds. (2000). Internet communities and qualitative research: a handbook for researching on-line. London, Sage.

Maskell, D. and I. Robinson (2001). The New Idea of a University. London, Haven Books.

indicate grave concerns about a process that accelerates the move toward the automation and de-professionalisation of university teaching and the de-skilling of the academic workforce. This commitment to a 'Liberal Education' as a good in itself which at the same time provides something useful, and that an education that is its own remuneration will be very remunerative too, is both sophistry and romanticism retaining some romantic nostalgia is a key element in Maskell and Robinson's work

Mcluhan, M. (1964). Understanding the media: the extensions of man. NY, Macmillan.

a key issue of change identified by Mcluhan as far back as the sixties: 'it is the framework that changes with technology and not just the picture within the frame'

McNeill, P. (1985). Research Methods. London, Routledge.

a suggestion from Trow that "let us be done with the arguments and get on with the business of attacking our problems with the widest array of conceptual and methodological tools that we possess and they demand". p7

McNiff, J. and J. Whitehead (2002). Action Research: Principles and Practice. Falmer, Routledge.

A Key text on Action based research; I am confident that I don't want to use an Action based methodology but some of the thinking on Activity Theory can be predicated on parts of Action based research

Action research is a spontaneous self-creating system of enquiry ; Jean McNiff does not see it as sequential or necessarily rational. She reckons that it attempts to develop metaphors that show life and living as a fluid process and aims to find ways of influencing social change through the production of descriptions and explanations by the individual themselves to account for their

educational practices. It is particularly pertinent in educational research as the essential and built-in change and feedback systems in the research are powerful and essential learning tools. As McNiff makes clear "openness to learning is a necessary condition for action research" .

Merton, R. K. (1967). On Theoretical Sociology. New York, Free Press.

a sufficient level of specificity to allow concepts to be identified, variables to emerge and measures to be developed; what Merton [1967] called 'theories of middle range'

Middlehurst, R. and T. Kennie (1997). Leading Professionals: towards new concepts of professionalism. The end of the professions: the restructuring of professional work. B. J, Routledge.

*An excellent text on the changing nature of professionalism in Higher Education particularly the impact of information technology on the professional
The growth of a society in which information technology has a key role to play affects the working environment in a range of fashions but specifically it enables technical expertise previously the sole preserve of the professional to be available to a much wider population
academics often operate as individual entrepreneurs in the various fields of human knowledge' but that this picture has been changing as relationships between knowledge, education, society and the economy have been changing. A growing consensus places Information Technology as the driving force for much professional change with a realisation that 'team working and sharing data concepts and ideas through the medium of information technology is likely to become a much more powerful way for professionals to operate in the future'
identify people relationships but still stress the unique role of the academic member of staff in managing 'support staff'.*

Mishler, E. G. (1986). Research interviewing: context and narrative. Cambridge, MA, Harvard UP.

Mishler, E. G. (1991). "Representing discourse: the rhetoric of transcription." Journal of Narrative and Life History 1(4): 255-80.

Morgan, W., A. Russell, et al. (2002). Informed opportunism. teaching for learning in uncertain contexts of distributed education. Distributed learning: Social and cultural approaches to practice. M. Lea and K. Nicholl. London and New York, RoutledgeFalmer and Open University: 38-55.

reinforce the deeply complex mix that literacy learning and technology practices have upon each other. She and her colleagues suggest that literacy, technology and learning are always plural, they are always embedded in particular context, they are always entangled with one another, they are always unpredictable and interestingly they are often invisible

Mumford, M. D. and S. B. Gustafson (1988). "Creativity Syndrome: Integration, Application, and Innovation." Psychological Bulletin 103(1): 27-43.

list three general criteria that researchers use to measure creativity: the overt production criteria (assessing the frequency with which innovative products are generated); the professional recognition criteria (assessing the awards given to an individual's new ideas or products); and the social recognition criteria (assessing by the judgment of knowledgeable others).

Negroponete, N. (1995). Being digital. London, Hodder and Stoughton.

make clear that information technology is making major and dramatic changes to our cultures and thus our learning

Newman, J. (1995). Gender and cultural change. Gender, Culture and Organisational Change. C. Itzin and J. Newman. London, Routledge.

Newman, J. H. (1957). The idea of a university. Newman: Prose and Poetry.

Reynard: 498.

The place of the University will also be virtual and global; Newman's emphasis on the university as a place of pastoral care and his patrician idea of the university as the spiritual voice of culture no longer sits with a post-industrial and post-modern world.

It is thus a foolish romanticism to postulate some Newmanish view as the only driving force in higher education - despite its attractions: 'But Education is a higher word; it implies an action upon our mental nature, and the formation of a character; it is something individual and permanent and is commonly spoken of in connexion with religion and virtue'

Newsom, J. and H. Buchbinder (1988). The University Means Business. Toronto, Garamond.

Individual academic staff are indeed having their identities redefined and 'through diversification, several categories of academic workers have been created'

Nixon, J. (1997). Regenerating professionalism within the academic workplace. The end of the professions. The restructuring of professional work. B. J., Routledge.

*An excellent chapter on the actual feelings of academic staff on the issues of de-professionalisation and technologising learning
a view that the occupation of university teacher no longer automatically carries the assumption of autonomy and status*

Noble, D. (1998). "Digital Diploma Mills: the automation of higher education." First Monday 3(3).

*A scathing attack on the impact of IT on standards in higher education
indicate grave concerns about a process that accelerates the move toward the automation and de-professionalisation of university teaching and the de-skilling of the academic workforce.*

Nonaka, I. a. T., H. (1995). The knowledge creating company: How Japanes companies create the dynamics of innovation. New York, Oxford University Press.

make a strong relationship between Japanese companies creating a dynamic of innovation and the role of innovative learning as part of that knowledge creation. Although this work has been critiqued on methodological grounds [Engeström 1999 page 377] the work itself is indicative of a growing awareness of the relationship between learning and economic growth and development

Norris, C. (1987). Derrida. Cambridge, Harvard UP.

Parker, M. (2000). Organizational Culture and Identity: Unity and Division at Work. London, Sage.

Popper, K. (1959). The logic of scientific discovery. London, Hutchinson.

Popper, K. (1970). Normal Science and its Dangers. Criticism and the Growth of Knowledge. I. Laskatos and A. Musgrave. Cambridge, CUP: 51-58.

The research paper has also the critical role in the Popperian model of allowing and ensuring criticism and falsification; indeed Popper has this critical refutation of competing frameworks as the sine qua non of 'science' and is thus scathing about the 'spurious sciences' of psychology, sociology or history.p57

Popper, K. (1972). Objective Knowledge. An evolutionary approach. Oxford, Clarendon Press.

postulated a world of "objective knowledge" which resided in the libraries and museums of a society

Porat, M. (1977). The Information Economy: Definition and Measurement. Washington, US Department of Commerce, Office of Telecommunications.

Porter, M. E. (1998). "Clusters and the New Economics of Competition." Harvard Business Review: 357-376.

suggests that clusters are "geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field". They arise because they increase the productivity with which companies can compete. Cluster development initiatives are thus an important direction in economic policy, building on earlier work on market-opening, and reducing the costs of doing business. Clusters foster high levels of productivity and innovation and lays out the implications for competitive strategy and economic policy. In theory, location should no longer be a source of competitive advantage; global markets, rapid transport systems, and high-speed communications should allow any company to source any thing from any place at any time. But, as Porter makes clear [1998], in practice, location remains central to competition.

Porter, T. (1994). Information, power and the view from nowhere. Information acumen: the understanding and use of information in modern business. L. Bud-Frieman. London, Routledge.

page 221 stresses a "local site where skill and intimate familiarity with people and things provide the most promising route to success"

Quinn, J. (1992). The Intelligent Enterprise: a knowledge and service based paradigm for industry. New York, Macmillan: Free Press.

Quinn, J. (1996). "Managing professional intellect: making the most of the best." Harvard Business Review: 71-80.

Ironically, after two decades or more of new managerialism attempting to graft inappropriate corporate models onto academia, those very corporations, according to Quinn, now seem to be seeking, in an unacknowledged fashion, some elements of collegiality. He suggests that the capacity to manage human intellect is fast becoming the executive skill of the age and as a result there has been a flurry of interest in intellectual capital, creativity, innovation and the learning. suggests that whilst professionals may have little respect for those outside their own fields, for virtually all purposes encouraging shared interests, common values and mutually satisfying solutions between and amongst professional teams is essential

Readings, B. (1996). The University in Ruins. Massachusetts, Harvard University Press.

Robson, C. (1993). Real world research: a resource for social scientists and practitioner-researchers. Oxford, Blackwell.

Questionnaires are of course problematic, but they are an efficient method of obtaining a large amount of superficial data. Colin Robson suggests that although efficient there are problems of honesty or seriousness in such self-response approaches. Both he and Cohen and Manion suggest that if designed well, with some form of pre-test and a follow up, validity through high response rates is reasonable.

Rowley, D. J., H. D. Lujan, et al. (1998). Strategic Choices for the Academy. San Francisco, Jossey Bass.

the reality of the change in higher education around the world: 'Businesses need to keep these people competent and current...if universities do not adapt to forces of this magnitude, businesses will not wait. They will initiate their own remedies and the cost to the academy could be very great'

Russell, D. (2002). Looking beyond the interface: activity theory and distributed

learning. Distributed learning: social and cultural approaches to practice. M. Lea and K. Nicoll. London, RoutledgeFalmer: 65-82.

confirmation that "learning is therefore not a neat transfer of information but a complex and often messy network of tool mediated human relationships that must be explored in terms of the social and cultural practices which people bring to their uses of the tools they share" [page 73].

suggests that "people change and learn as they expand their involvement with others in a community, and the tools that community uses in certain ways" [page 73].

Thus activity theory studies often combine traditional comparison group studies with case studies, ethnographic observation, discourse analysis and rhetorical analysis to make sense of - rather than control for - the complexity of human learning mediated by telecommunication networks

suggests that ethnographic observation, discourse analysis and rhetorical analysis are parts of the armoury to make sense of the complexity of human learning in activity theory studies. [page 67].

Ryen, A. and D. Silverman (2000). "Marking Boundaries: culture as category work." Qualitative Enquiry 6(1): 113-136.

The use of email as part of a research methodology is documented by Ryen and Silverman ; they showed the use of email as part of the communication process and detailed the mutual understanding both parties achieved on a turn by turn basis.

Scheurich, J. (1997). Research Methods in the Postmodern. London, Falmer Press.

suggests that "positivism is now seen as a failed attempt to create rigorous scientific rules for mirroring reality"

feels that positivism has now evolved into two main camps - the naïve positivists identified by Mishler, where "the overwhelming preponderance of research in education in general is of this type" perhaps, pace Foster, because they have claimed to be value free and apolitical - and scientific realists, who have tried to adjust the epistemology of science in terms of the criticisms that have been made so that science remains defensible as the preferred method of research reckons that the scientific realists have made the best attempt to date to reconstruct the scientific method but that there is still not yet an "unabashed recognition that all epistemology, and ways of thinking that yield such categories as epistemology and ontology are socially conditioned and historically relative or contextual". He goes on to suggest that "both truth and any kind of postfoundational meta-criteria for establishing truth are socially relative to a particular time and place"

makes clear that "the language out of which the questions are constructed is not bounded or stable; it is persistently slippery, unstable, and ambiguous from person to person, from situation to situation, from time to time" p62

Scott, P. (1997). The postmodern university? The postmodern university? Contested visions of higher education in society. A. Smith and F. Webster. Buckingham, Open Univedrstiy and SRHE: 43.

Seale, C. (1999). Quality of Qualitative Research. London, Sage.

Senge, P. (1990). "The leader's new work: building learning organisations." Sloane management Review 32(1).

postulates a creative tension between vision and current reality in organisations from which individuals explore, learn, and innovate

Shaw, G. B. (1911). Doctors Dilemma.

Thus professions such as health, law and learning - traditionally areas of mystique and privilege and seen as a 'conspiracy against the laity'

Shusterman, R., Ed. (1999). Bourdieu : A critical reader. Oxford, Blackwell.

Silverman, D. (2001). Interpreting qualitative data :methods for analysing talk, text and interaction. London, Sage.

"it is usually necessary to refuse to allow our research topics to be totally defined in terms of 'social problems' as defined by either professional or community groups" suggesting that many social science disciplines live in fear of being discovered naked, like the Emperor's new clothes, and thus post-modernism barely figures in his work has a strong view that above all else research has to be credible and has to be free from the anarchy that any abandonment of traditional scientific control implies. He feels that negative practical consequences emerge from such implications; it plays into the hands of quantitative critics and it lowers the standing of social scientists in the community. He goes on to stress that "the first goal of scientific research is valid knowledge" and that "while we must respect what postmodernism tells us about representation, this can be treated as an incentive for empirically based description, not as its epitaph" "social theory is not an 'add-on' but is the animating basis of social research" and that a "failure of analytic nerve...as opposed to the attempt to test hypotheses" discomfits him. p x-xi "we must not make too much of the differences between qualitative and other research styles" calls a constant comparative method to ensure some validity checking. will need to integrate quantitative techniques into qualitative ones so that "the reader has a chance to gain a sense of the flavour of the data as a whole" p35 suggests that "the various forms of ethnography...share a single defect. The reader is forced to ponder whether the researcher has selected only those fragments of data which support his argument". This focus on 'experience' and 'authenticity' and the "too readily abandoned reference to the credibility of research findings" ; along with the intensive involvement in the experience, seem to preclude an ethnographic approach to this project.p35 stresses that reliability and validity are important issues in field work, and reckons that the reliability of interview is a central question in quantitative methods text books; in positive models of research it is resolved through rigorous pre-tests, training, fixed choice answers and checks on coding p229. is sceptical about both respondent validation and triangulation, feeling both to be inappropriate in qualitative work but is convinced by the constant comparative method, the comprehensive data treatment and appropriate tabulations

Skeggs, B. (1997). Formations of Class and Gender. London, Sage.

Small, S. and L. Clarke (2002). Developing effective multi-disciplinary/multi-agency teams, NHS Eastern Regional Office. Department of Health.

Multi-disciplinary or multi-professional teams are made up of a variety of providers who work together to meet the needs of a defined population; a number of projects around the United Kingdom suggest that they are effective but depend crucially on team working across professional and organisational boundaries, maximising the contribution of all staff and modernising education and training

Smith, A. and F. Webster, Eds. (1997). The postmodern university? Contested visions of higher education in society. Buckingham, Open University and SRHE.

uncomfortable with any impression of a yearning for an era when the university was confined to an exclusive minority

Strauss, A. and J. Corbin (1990). Basics of qualitative research: grounded theory procedures and techniques. Newbury Park, CA, Sage.

Grounded theory has been criticised for its failure to acknowledge implicit theories at an early stage; using it in this fashion to analyse a model of situated learning in this project will ensure that it is not seen as a "trite and mistaken technique" but will enable it to add value to the interview transcripts.

Terranova, T. (2000). "Free labour: producing culture for the digital economy." Social Text 18(2): 33-58.

Thorpe, M. (2002). From independent learner to collaborative learning: New communities of practice in open, distance and distributed learning. Distributed learning: social and cultural approaches to practice. M. Lea and K. Nicoll. London, RoutledgeFalmer: 131-151.

Tolman, C. (1999). Society versus context in individual development: Does theory make a difference? Perspectives on activity theory. Y. Engestrom, R. Miettinen and R.-L. Punamaki. Cambridge, Cambridge University Press: 70-86.
goes on to say that "Jean Lave and Etienne Wenger have elaborated a theory of appropriation that is in keeping with the societal and historical spirit of Leont'ev's activity theory and that in significant ways may surpass it"

Toulmin, S. (1999). Knowledge as shared procedures. Perspectives on activity theory. Y. Engestrom, R. Miettinen and R.-L. Punamaki. Cambridge, CUP: 53-64.
one of the key issues which Stephen Toulmin defines as the 20th Century crisis. This is the issue of the relationship between knowledge as the possession of individuals and knowledge as the collective property of communities of knowers [page 54].

recognising that "shared procedures are neither the exclusive property of collective professions nor the exclusive property of individual agents. Rather the rational history of a human discipline involves a continuing interchange between the innovations of creative individuals and their acceptance or rejection by the professional community."

Trowler, P. (1998). Academics responding to change: new higher education frameworks and academic cultures. Buckingham, Open University and SRHE.,
Tellingly, little mention is ever made of students in some of the more simplistic versions of the new-managerial critiques

Tukey, J. (1977). Exploratory Data Analysis. Reading, MA, Addison-Wesley.
stresses the importance of the role of exploratory data analysis

Turner, C. M. D. (2002). Communities of learners in the new-media industries. Bristol Business School Teaching & Learning Conference, Bristol.

Veer, V. d. and J. Valsiner, Eds. (1994). The Vygotsky Reader. Oxford, Blackwell.
sees learning "not as the internalisation of discrete information or skills by individuals but rather as expanding involvement over time - social as well as intellectual - with other people and the tools available in their culture"

Vygotsky, L. (1978). Mind in society: the development of higher psychological processes. Cambridge, MA, Harvard University Press.
discusses "zones of proximal development" which he defined as the difference between what one could do alone and what one could do with assistance

Wagner, C. (1996). "Creative Behavior through Basic Inferences: Evidence from Person-Computer Interactions." The Journal of Creative Behavior.

Warren Piper, D. (1992). "Are professors professional?" Higher Education Quarterly **56**(2): 145-56.
raised the issue of the professionalism of professors , identifying their Janus-faced need to 'look to their occupation for their identity as teachers, but outside for their identity as subject specialists'
raised the possibility that academics are not professional at all, recognising that they are more

consistently treated as professionals in their subject work than they are in respect of their teaching and that they are 'not as half as professional about their professing as they are about what they profess'

Watson, D. (2000). "Managing in higher education: the wicked issues." Higher Education Quarterly 54(1): 5-21.

remarks 'the fundamental presupposition is that what has been 'managed' is fundamentally to the detriment of the institutions, their members and society which has supported them, including such sector wide priorities as access and expansion'

Watt, S. E., M. Lea, et al. (2002). How social is internet communication? A reappraisal of bandwidth and anonymity effects. Virtual Society? Technology, Cyberpole, Reality. S. Woolgar. Oxford, Oxford University Press: 61-77.

Wenger, E. (1998). Communities of Practice: Learning, Meaning and Identity. Cambridge, CUP.

developed the concept of a community of practice to describe groups that interact to achieve a shared purpose or enterprise. suggest that "the development of practice takes time, but what defines a community of practice in its temporal dimension is not just a matter of a specific minimum of time but sustaining enough mutual engagement in pursuing an enterprise together to share some significant learning... communities of practice can be thought of as shared histories of learning

Wenger, E. (2000). "Communities of practice and social learning systems." Organization 7(2): 225-246.

defines communities of practice as having three major defining components or elements: mutual engagement, the participation in a shared task; joint enterprise, the negotiated interaction with accountability and finally shared repertoire; the routines, tools, words, processes, concepts, genres, gestures etc through which practices are carried out.

Willmott, R. (2002). Education policy and realist social theory. London and New York, Routledge.

suggests that this Popperian 'World Three' is more or less co-terminous with the 'morphogenetic' approach of Critical Realism p45

used this morphogenetic approach in his case-study of two schools

Wittel, A., C. Lury, et al. (2002). Real and virtual connectivity: new media in London. Virtual Society? Technology, Cyberpole, Reality. Oxford: University Press. S. Woolgar. Oxford, Oxford University Press: 189-208.

researching on the real and virtual collectivity of new media industries in London suggest that "production through con activity is characterised by interdependence" [page 190] and that heterarchic organisations are emerging [page 190]. These heterarchic organisations are non linear, they are open they are reflexive and they have underdetermined organisational structures. They are essentially about distributed intelligence.

Wittgenstein, L. (1953). Philosophical Investigations. Oxford, Blackwell.

performative epistemology that conceives knowing as making, doing and acting.

postulated that all units of understanding obtain their meaning by entering language not via the minds of single individuals but within the forms of life that are essentially collective

Wolcott, H. (1994). Transforming qualitative data: description, analysis and interpretation. London, Sage.

presents some useful questions as a prelude to assembling data - what is going on here? What do people have to know? How are skills transmitted and acquired. He then identifies three

major modes through which qualitative researchers gather their data: participant observation, interviewing and studying materials. His analysis is helpful and the project being proposed here will most certainly make use of these guidelines; on the matter of the ethnographic approach in general the method is less helpful.

suggests that "in the very act of getting data out of experience the qualitative researcher singles out some things as worthy of note and relegates other to the background" and "Qualitative researchers need to be storytellers".

identifies three stages in qualitative research - Description, Analysis and Interpretation.p10

suggests that there should be a balance of interpretation to analysis and description in any research, with interpretation being small in the early stages of a researchers career and increasing as experience allows

Wolcott's own research on principles of colleges in America involved a whole year of close relationship with a senior manager in a College and the need to distance himself from the process through his writing up, his notes and his regular reporting back to colleagues both within and without the research team were important tools in his armoury as "the critical researcher".

Woolgar, S., Ed. (2002). Virtual Society? Technology, Cyberpole, Reality. Oxford, Oxford University Press.

Work on a large ESRC project on the emergence of a 'Virtual Society' [Woolgar, 2002] and in particular work on the new media industries in London [Wittel et al 2001] all point to a convergence of thinking in relation to communities of learners and a role for information technology.

suggests that "all aspects of social, cultural, economic, and political life thus stand to be affected by the continued massive growth in electronic technologies." [page 1]. However, he goes on to make clear that "the early enthusiasm has given way to a realisation that discussions about virtual community often embodied some confused ideals about what community entails [page 3].

He goes on to identify five rules of virtuality: i) the uptake and use of the new technologies depend crucially on local social context; ii) the fears and risks associated with new technologies are unevenly socially distributed; iii) virtual technology supplement rather than substitute for real activities; iv) the more virtual the more real; v) the more global the more local. Thus he suggests that the new technologies are not being used to the extent we imagined, by the people anticipated, nor in the ways that we expected" [page 21]. This does not mean to say that much is not happening merely to suggest that that which is happening is at times counter intuitive.

Wyatt, S., G. Thomas, et al. (2002). They came, they surfed, they went back to the beach: Conceptualising use and non-use of the internet. Virtual Society? Technology, Cyberpole, Reality. S. Woolgar. Oxford, Oxford University Press: 23-40.

working on the impact of the Internet on the issues of access intermediaries and producers are sceptical of the development of an information society and make clear that "the whole field is undergoing an uneven professionalisation"

suggest that "many of the people who entered this new industry did so out of a desire to escape traditional working environments"; also suggests that "a gendered separation between soft and hard skills has also re-established a division of labour that early Internet apologists rejected

suggest that "the relative ease with which group interaction can take place on the Internet is emerging as one of the most important impacts of this new medium on contemporary social life" [page 61]