

Paper 4:

# Students at the Centre: Non-linear Narratives and Self Conscious Learning

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## Abstract

- This paper reflects on the design and evaluation of a multimedia learning tool developed for students of qualitative research at the University of Derby. This learning tool is intended for use as a networked learning tool supported by additional reading materials, face to face or e-mail tutorial and seminar support. It is situated as the key learning text for one topic in a ten topic module.

I explore two issues pertinent to the introduction of multimedia networked learning tools into existing teaching and learning cultures. First, the concept of the non-linear - in multimedia narratives, in the ethnographic research process, in the learning process and in relation to teaching strategies. In doing so I relate educational theory (in particular discussions of

students' learning strategies and learning cultures) to social and cultural theory relating to subjectivity, identity and new communications technologies. With reference to the learning tool in question I discuss the multilineality of ethnographic research experiences to argue that multimedia offers a format that in combination with other support is a compatible and coherent way to learn about research methodology. Second, drawing from evaluations of the multimedia tool I discuss the idea of self-conscious multilineal learning, and continuities between multimedia hypertext learning and conventional teaching and learning practices. Finally I relate the theoretical and practical implications of these discussions to the question of developing 'student centred learning'.

## Networked Learning and cultural and learning contexts

- The social, cultural, political and economic contexts in which networked learning is developed, implemented and experienced are key to a consideration of new technologies in Higher Education. For some (eg Hawkrigge, 1996) this implies ethical issues relating to power, domination and knowledge. For others, electronic contexts like the internet herald a democratising process. Here I defer from the context of political economy to focus on the cultural and educational context of how new technologies are experienced. New technologies impact on lifestyle and popular culture, they are becoming commodities and instruments for success in the workplace. They both represent and are used to create new social values and meanings (cf. for example, Mitchell, 1995): "a support unit in learning technology is not just a technical or even an academic service, but an agent to effect and underpin cultural change within an institution" (Longstaff, 1996:91). However, a deterministic argument that new technologies are changing the face of teaching and learning is too simplistic. Instead a model that accounts for how technologies are consumed and appropriated in peoples practices and discourses in contemporary culture and society represents this as a more dynamic relationship. As Silverstone and Hirsch (1993) demonstrate, technologies become shaped and become meaningful only in terms of the social relationships and practices in which they are embedded: ie. it is what people and culture do with technologies that matters- rather than what technologies do to culture. Key to understanding the impact of new technologies on teaching and learning is the question of how students construct their self identities in relation to networked learning tools. In terms of contemporary educational discourse this could mean asking if they identify themselves as 'active learners', or as the recipients of teaching. Below I explore theoretical and applied aspects of how individuals may situate themselves in relation to an explicitly non lineal learning context: a networked multimedia learning tool. Through the student led interface with networked learning materials and technology, meanings and knowledge are produced:

learning takes place. By situating networked learning at this intersection between human, learning materials and technology part of the dynamic by which 'learning' occurs can be appreciated. Other connections are similarly important; the student's contact with training, the technology and funding, the tool and its author, and how these are related to wider institutional and individual teaching and learning process and structures.

## The project

### Genesis

- In October 1996 I was asked to design a multimedia simulation, initially on CD Rom later to be accessible on the campus network. My project was a multimedia tool to be used by undergraduate and postgraduate students to learn about the use of photography in ethnographic research. The theme was inspired by my research and teaching interests in methodological, social and cultural implications and appropriations of new technologies (see Pink, forthcoming, a.), my previous use of textual and visual research materials to teach visual research methods, and is interlinked with a publication project on visual images in ethnographic research (Pink, forthcoming, b.). The resulting product *The Bullfighter's Braid*, produced with the skilled support and advice of the multimedia production staff at the Centre for Educational Development and Media is described below.

### The Bullfighter's Braid

*The Bullfighter's Braid* is a multimedia learning tool developed for students of qualitative research at the University of Derby. It is intended for use as networked learning tool supported by additional reading materials, face to face or e-mail tutorial and seminar support. It is situated as the key learning text for one topic in a ten topic module: *Media, Images and Representation*. Therefore it is linked to the assessment of students in their final end of module examination. However assessment is not integrated into the structure of the learning tool itself.

The project was developed from existing materials: my academic article that students had found useful; prepared texts and selected photographic narratives and video clips; a series of learning activities that interlinked between these different narratives and were based on previously tested classroom activities developed for seminars in *Media, Images and Representation* and qualitative research methods modules. The visual materials were all derived from my ethnographic fieldwork in Southern Spain.

*The Bullfighter's Braid* is structured as follows. The user first encounters the title page and a series of five introductory pages. These serve the following purposes: to inform the user about what he/she should expect to learn from the materials, to introduce the main characters that figure in the project—the researcher, the woman bullfighter, and the central photograph, also named *The Bullfighter's Braid*. These five pages contain hyper text links to photographic images, video clips and further written text that explains these three elements in more depth. The fifth of the introductory pages takes the user to the main menu where he/she will be presented with the following choices, each of which represent one of the routes through which the learning tool can be approached.

- Academic article
- Images as material culture
- The bullfighter's braid
- Meeting the bullfighter
- Learning activities

The titles are preceded by the following passage that is intended to guide the student in his/her use of the learning tool:

‘This project contains a set of interconnected strands. You may begin to explore the text from any one of their starting points. Find the route through which you feel most comfortable learning. As you explore the different strands you will start to see how they are interlinked and draw

from the same images, contexts and concepts. They are, ultimately all part of the same story.’

Whilst each route can be accessed independently the different narratives are linked through hyper text and draw from the same resource of photographic and moving image links. Thus students were intended to be able to situate their understanding of one narrative in relation to others either through their linked commentaries on the different photographs or through the hyper text links between the narratives themselves (this is particularly the case for the connections between the academic article and the learning activities). The rationale for this design is that it allows students of different levels to approach the project from the angle that most suits their own study skills, strategies and knowledge of ethnographic research methods. Some routes are predominantly visual (eg meeting the bullfighter), others are predominantly textual with visual images accessed through hyper text links (eg academic article).

### Critical evaluation

The two foci of the design were content and learning. Assessment was not incorporated because, first, the umbrella project under which it was produced was to make ‘free floating’ simulations; and second the project was not designed at subject level but was an individual project. The absence of assessment in the present version of the learning tool will impact on the utility of the learning exercises. My experience from students participation in programme committees indicates their resentfulness of and sometimes resistance to undertaking unassessed activities. Cox and Gibbs recommend that “learning activities can be generated through the assessment system. Activities which are unrelated to the assessment, class contact or peer pressure are less likely to be taken seriously. Students have a habit of bypassing author’s intentions...” (Cox, and Gibbs 1994: 23). In this sense, without an approach that supports content and learning with outcomes and assessment *The Bullfighter's Braid* does not fulfill its potential. Without a ‘learning outcomes’ (‘objectives first’) approach the learning tool does not state the learning tasks clearly: it reads as a case study rather than a study guide; it functions as an enhanced academic article, but does not necessarily

encourage critical thinking. Thus it serves as a useful learning resource but not necessarily as a situated learning tool. With reference to the issue of assessment, if students are to be active learners and if their learning is to be student centred, then their intentionality must be accounted for.

## Nonlinear experiences, self conscious learning, and multimedia narratives

- Two areas are key to this discussion. First, concepts of nonlinearity or multilinearity. These form a significant theme in: cultural theories of how individual experience and identities are constructed in relation to new technologies in a 'post' or 'late' modern context (eg Poster, 1995); anthropological theories concerning how anthropological knowledge is produced and the narratives of ethnographic research (eg Hastrup, 1995; Stoller, 1997; Willson, 1995); and educational theory of student learning strategies (eg Jaques, D, G. Gibbs and C. Rust). Second, concepts of self consciousness and individual agency, as developed primarily in recent work in anthropology (eg Cohen, 1994).

New communications technologies have rapidly emerged as a theme in social science, generating a large number of recent publications (see for example the Sage Publications catalogues).

Theorists have focused on the development of a 'cyber society', others have examined on line social relations and practices; for instance, 'cyber sex', 'disembodiment' and the construction of self identity. Poster has argued that we are living in the "second media age" (1995: 4) in which electronically mediated communication

"... enacts a radical reconfiguration of language, one which constitutes subjects outside the pattern of the rational, autonomous individual. This familiar modern subject is displaced by the mode of information in favour of one that is multiple, disseminated and decentered, continuously interpellated as an unstable identity" (1995: 57)

Poster's words are disturbing if one imagines his description of a postmodern technological society as the reality in which the Dearing report envisages students will study structured courses, access concrete bodies of knowledge and information and meet defined learning outcomes. Such theories of the self draw convincingly from the critique of modernity, where grand narratives, modern truths and objective realities no longer hold. Whilst Poster's theory represents a significant perspective on the experience of self in an electronic domain, it is, in keeping with its post modern outlook, not a truth, but simply one way of structuring reality. When the focus is turned to individual experience and a sense of self, the uneven patterning of the impact of this destabilising force and critique becomes more evident. Whilst in Poster's theory of society self experience tends to become lost in its own plurality, a more useful theory is proposed by the anthropologist, Cohen (1994) who grounds the self in the individual's sense of experience and creativity. Thus conceptualising the individual as 'self driven' and purposeful, rather than as multiple, fragmented and unstable. Whilst an individual may perform different identities in the course of everyday life, these different representations of self are interconnected through the individual's sense of self. How, then do individuals operate in 'cyber space', the domain where networked learning is located? Mitchell's description of part of his on line life is a useful example of how this experience may be represented:

"The keyboard is my café. Each morning I turn to some nearby machine - my modest personal computer at home, a more powerful work station in one of the offices or laboratories that I frequent, or a laptop in a hotel room - to log into electronic mail. I click on an icon to open an 'inbox' filled with messages from round the world - replies to technical questions, queries for me to answer, drafts of papers, submissions of student work, appointments, travel and meeting arrangements, bits of business, greetings, reminders, chit chat, gossip, complaints, tips, jokes, flirtation. I type replies immediately and then drop them into an 'outbox'...If I have time before I finish gulping my coffee, I also check the wire services and

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a couple of specialised news services to which I subscribe, then glance at the latest weather report. This ritual is repeated whenever I have a spare moment during the day" (1995: 7)

Mitchell's "I" remains central to his experience of new communications technology. It is in relation to this centrality of the self as seam of continuity amongst the multiple strands of an on line or hyper text experience that I develop my perspective of student centred learning. This theory combines a critical response to the modern projects of positivism, observation, objectification and scientism. It argues that the observable reality that was at the core of the "scopic regime of modernity" (Hastrup 1995: 69) was only one version of truth. It argues that rather than being 'out there' and observable or visible, reality is experienced, sensed and subjective. Simultaneously it acknowledges that the self is not necessarily experienced as free floating and multi-stranded. An emphasis on the experiential dimension of new technologies combined with Cohen's ideas of the "self driven" self conscious individual, implies an interweaving rather than a dispersal: it is the individual, his/her sense of self and self conscious continuity of identity that holds the multilinearity of the experience of new technologies together. If one applies this to student learning, learning and knowledge are thus produced through the student's ability to interweave and make sense of the information represented and experienced on line. This entails an ethnographic approach to an understanding of student learning, and is based on recent anthropological considerations of the production of knowledge in ethnographic research and representation. This approach rejects modern anthropology's "valorization of experimental knowledge over experiential or tacit knowledge, and the prevalence of scientism" (Nichols 1994:62) and recognises that "the theoretical project [of anthropology] is based in concrete experience" (Hastrup 1995: x). In addition to the recent emphasis in anthropology on experience and subjectivity, the non-linearity of ethnographic narratives has also been stressed, for example by Okely's (1996: 149) notion of retrospective fieldwork whereby a previous personal experience may later be analysed as a fieldwork event, the rejection of the observational project of anthropology, thus reducing the distance between the anthropologist

and the people 'studied' and acknowledging the interwovenness of their lives and experiences and their negations in the production of knowledge.

The above themes also form an important part of the academic content of *The Bullfighter's Braid*. It is about situating the researcher and informants in the ethnographic research process and allowing the user to explore a range of anthropological theories, visual and textual representations of the process by which the fieldwork was carried out. In this way the user can reconstruct a whole series of different aspects of the research, theory and practices in a variety of different temporal, historical, thematic and visual sequences. Therefore the student learner practices a student centred learning that is given continuity through the student's construction of his/her narrative through the multimedia text: the student in this sense is at the centre of the learning in a philosophical sense as well as in terms of his/her experience as an agent.

There is a distinction between self conscious intentional non lineal learning and haphazard non lineal learning; the former is a learning centred practice that the student actively engages in by acknowledging that he/she is at the centre of the learning process and learning is thus 'student driven'. The latter is a lecturer centred practice whereby the student looks to the lecturer to drive the learning process. Here the student may not learn in a cumulative way, building knowledge as the lecture sequence progresses; absorbing knowledge on a weekly basis, but that rather as Jaques, Gibbs and Rust note

"many students found that ideas come together in a more haphazard way, sometimes after a lot of mulling over and sometimes by going backwards and forward, using later information to help in grasping something they were puzzled about earlier or even had not realised they had misunderstood"

(Jaques, Gibbs and Rust n.d: 19)

They suggest that the disparity between this student strategy and the linear fashion in which teaching is 'traditionally' organised "indicates a

need for some kind of course guide to enable the students to see where they are going and some special sessions devoted to repetition and review" (op.cit). This approach entails a retrospective acknowledgment of the nonlinearity of student learning- both on the part of the students evaluations and in recommending revision and review sessions. In contrast, electronic learning tools with hypertext links can be designed as multilineal materials by tutors. These may be conceptualised self consciously by students as multilineal, and thus become part of self conscious multilineal learning strategies.

The above themes are particularly relevant to learning about visual aspects of ethnographic research methodology. First, the concept of nonlinear narratives is also an important academic theme. Therefore the interweaving of different strands and the multiple nonlinear narratives that multimedia and hypertext enable is especially suitable for learning about ethnography. Second, in the ethnographic process the detail and experience of the negotiations between researcher and informant are considered to be the site at which knowledge is produced. Like student learning the process by which knowledge is produced can involve the researcher in simultaneously following multiple threads, moving between different interconnected contexts and drawing together what initially appear disparate themes. Moreover the researcher produces his/her knowledge about local cultures in a range of different ways. The challenge to the ethnographer is the question of how to represent these knowledges to his/her audience and which styles and formats to use. Stoller (1997) has stressed the importance of representing the sensuous nature of ethnographic learning, and being able to make intellectual leaps between this sensuous dimension of knowledge and the analytical 'intelligible' dimensions of it. An important theme of the learning tool is the question of the relationship between researcher and informant, between ethnographic experience and ethnographic representation and between visual, aural, and textual formats in both the research process and the learning process. Multimedia and hypertext offer a format that in combination with other support is a compatible and coherent way to learn about research methodology through the representation of the research process.

## An ethnography of user experiences: researching through evaluation

- Course evaluation is integral to the design process: a course is never complete and should be flexible to the demands of evaluations and redesign. In this project the evaluation process was introduced as a research exercise to explore the effectiveness of *The Bullfighter's Braid*. Much course evaluation is problematically 'teacher centred' rather than 'learner centred' (Jaques, Gibbs Rust n.d: 27). Given my intention to produce a student centred, 'democratic' multimedia tool, my questionnaire (see Appendix) focuses on users' experiences and their critical comments on its design and content. The questionnaires and interviews thus focuses on the experiential aspects of the use of the learning tool. This, like new approaches to ethnography (see for example Stoller 1997, Nichols 1994), rejects the scientism of positivist approaches that have dominated this field until the last decade (cf Okely 1996; James, Hockey and Dawson, 1997).

The research has taken two forms. Responses to and discussion of demonstrations of *The Bullfighter's Braid* were articulated at two exhibitions at the University of Derby in 1997. This research was foregrounded by the detailed evaluation of the learning tool by eleven respondents. The evaluation entailed the completion of the questionnaire, indepth interviews and informal discussion. The group was selected to include multimedia experts, experienced and new lecturers, information professionals and students. Due to the limited access to suitable multimedia technology, and the limited amount of respondent's time available it was impossible to extend the sample group further within the timescale for writing this report. However at the time of writing the research process is continuing and includes a cohort of undergraduate students. Below I focus on the responses most relevant to the issues in question- nonlinear learning and learning about visual research methods.

### Experiencing structure: Structuring experience

Half of the respondents experienced the structure in the most lineal way possible. Rather than inventing their own routes they followed the order set out in the main choice pages. Whilst some theories of student learning suggest that students do not learn in a lineal progression, the data implies that in order for students to self-consciously learn multilinearly, preparatory work may be required. These respondents assumed that the structure of the options listed in the choice pages indicated the order in which they were intended to be approached. Whilst this was the case for the sections of the academic article it was not intended to be so for the main options. Those respondents who followed the structure set on the choice pages explained their routes as follows:

" I suppose that the author has chosen this structure for some special reason"

" convention"

" It seemed logical"

" it's set up that way"

Those who explored *The Bullfighter's Braid* in a nonlineal fashion expressed their self-conscious motives to engage with its plural narratives. One did not choose to follow the learning exercise narrative first because he "wanted to do something interactive first- rather than just reading". Two, both experienced lecturers suggested to me that the flexibility which is inherent to it is not however obvious. One stressed the importance of pointing out to students that they can revisit sites and construct their own learning routes: "students will use it in a lineal fashion if they aren't told that they don't have to". He suggested that students should be encouraged to take their own personalised routes through the learning tool and that the links and options of referring back to other narratives should be signposted at key points in the text, such as the learning activities. Two students did however actively engage in exploring the linkages between the strands. An undergraduate student saw an opportunity to: "see how the strands were interconnected and to see if I could understand the information adequately without following the

chronological order". This exercise has interesting implications not only for the design of learning tools with hypertext links but also makes a contribution as study of how students learn. It may be correct to argue that students learn better interactively, and that many students already tend to learn in nonlineal ways. Some students purposefully learn actively, self-consciously and independently in this way. For others self-conscious multilineal learning entails engaging with learning materials in new ways. These latter respondents tended to experience what they perceived as the dominant structure of the learning tool, rather than departing from this to creatively structure their own experiences. Defined as an issue of agency, this implies students ought to be encouraged to resituate themselves in relation to the text as creative, motivated agents: 'active learners'.

### Image, text and self-conscious learning

Respondents agreed that in general *The Bullfighter's Braid* offered a satisfactory means of learning about visual research. They found its visual layout attractive and interesting. Some respondents felt the multimedia text was insufficiently 'user friendly', preferring more instructions, easier access to the options, clearer signposting and a statement of the time allocated to it. Respondents were generally happy with the academic content and the text/image relationship, identifying learning with images as "more interesting". In recent years visual imagery has become increasingly acceptable in the social sciences. The breaking down of the subjectivity/objectivity distinction to recognise that subjectivity is key to understanding has created a space in academic discourse for greater use of images and thus for the introduction of multimedia. The issue of subjectivity/objectivity was integral to *The Bullfighter's Braid* itself, and therefore gives the user a perspective on the contemporary academic discourses (regarding the use of images) that have facilitated the development of multimedia in the social sciences. The research indicated that students and staff valued the opportunity to learn through images. Whilst most felt the image/text balance was good, some wanted more images and all felt that the use of images had supported their learning:

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" the combination of visual and written texts made it more interesting: learning takes place without noticing"

" there is less work than in the traditional approach"

" we tend to learn more from seeing than reading- the visual learning stays in the mind longer: it has more impact"

These comments offer an insight into how respondents regarded the contribution of the images to their learning. Whilst their reviews of the experience are positive, they also reveal that respondents felt that learning with images required less effort on their part. This is worrying because it implies they associated learning with images as passive rather than interactive learning. I suggest that these perspectives are embedded in contemporary patterns of consumption and discourses on images. Such attitudes are reminiscent of moments when I have screened films as part of lecture slots: when the film goes on the note books and pens have already been put away in students bags. Future research could follow up this issue and explore ways to help students to learn actively and self consciously with images.

## Networked learning tools in existing learning structures

Respondents indicated that they would like networked learning to be part of a 'traditional' learning context, combined with a facility to print off hard copies of the article, face to face contact and contextualised by other topics. This indicates the importance of not presenting networked learning as a departure from existing teaching and learning. Constructing such continuities as hard copy printing and links to face to face teaching allow multimedia to be a recognisable, but also novel, way of learning.

Respondents felt the learning activities worked and one found that the helped establish links between the different narratives:

"They make you reflect about the image, their context and participants. The exercises helped to give a practical understanding of academic work- in this case the academic article. Through doing the exercises you get a greater awareness of the theoretical issues"

*(student)*

Respondents also stressed that interactivity could be enhanced by: an e-mail address to send answers to; self test exercises; submission deadlines for the practical learning activities; extended learning activities to explored in further detail. Some felt the learning outcomes should be formalised- thus clarifying what was expected of the student and setting networked learning within the same learning context as other course materials. In combination these three issues (learning activities, interactivity and learning outcomes) highlight the importance of assessment. For instance the development of a nonlineal approach could be represented as a learning outcome and assessed by asking students, through a series of learning activities, to construct conceptual links between the different narratives set up in the design of the multimedia text. An emphasis on assessed learning outcomes achieved by working through the learning activities would create greater coherence in the learning tool as a whole whilst also offering students a purposeful means of exploring and constructing narratives and routes through it - seeking outcomes. When situated in the wider course design process learning outcomes link networked learning tools to other elements of a course. Clearly stated they let everyone know where they stand: course team members and students.



## Networked learning materials, course design and students' learning

### Networked learning as an element of an existing course

- My personal experience and *The Teaching and Learning Support Network*, case studies (III, cases 1-3) indicate that in the past networked learning tools have been designed with little attention to the established design principles routinely applied to the design of validated courses. Current course design criteria should not be simply transplanted and implemented for networked materials. However a systematic approach compatible with design procedures already applied within a subject or department would allow for networked learning tools to be designed in ways that integrate them satisfactorily with existing teaching and learning as well as with established evaluation procedures. Therefore the first stage of design should develop an appropriate framework for incorporating these new tools and technologies into existing teaching and learning, skills bases and needs. A review of the courses into which they are to be integrated may indicate that electronic learning could resolve existing problems, thus catalysing an innovation "...led by educational imperative and not by technology" (Dearing report Ch 13 p1). For instance, as the discussion above indicates, multimedia tools with hyper text links potentially resolve problems inherent to the linear style of teaching that "is traditionally planned as a succession of evolving presentations of subject matter and assumes a steadily accumulating understanding. It is too readily assumed that students learn in harmony with the sequence of a course and that each lecture has been 'digested' fully at the time (Jaques, Gibbs and Rust n.d:19). Whilst both teachers and students tend to approach course content in a lineal structure neither learning nor subjects taught in courses are necessarily experienced or exist in a lineal fashion. The very multilineal nature of multimedia productions can support this. Explicit links between the various different narratives of multimedia (eg. in *The Bullfighter's Braid*) can help students to self consciously forge those very connections that may aid their learning.

Significantly the metaphors students have employed to express how they "grasped" information are reminiscent of terms used to describe electronic media contexts, eg.: "multifarious threads"; "winding in on itself" (Jaques, Gibbs and Rust n.d:19). In addition to being adaptable to learning strategies, multimedia texts can support the achievement of learning outcomes by facilitating new ways of understanding course content. Although some research methods can be taught in large lectures (see Pennington, 1997), often other interactive learning processes are more effective (Cox, and Gibbs, 1994:7). In *The Bullfighter's Braid* I aimed to address problems specific to lecturing on visual research; it was difficult to demonstrate and allow students to explore a research process individually through a linear lecture. Ethnography itself is a process of learning through subjective experience (see Cohen, 1994; Okely and Callaway, 1992). New ethnographic research narratives are conceptualised as multistranded: research itself has been defined as a multilineal process (as I have discussed elsewhere, see Pink, 1997). Respondents' comments indicated that they had found multimedia an appropriate format from which to learn about visual research. Thus some aspects of research practice are better learnt through resources, small groups and tutorials where experience can become the focus of student centred knowledge production, focusing on students' personal narratives rather than the lecturer's 'grand narrative' dictated in an overcrowded lecture theatre (see Perera and Hartley, 1997).

In general however, the implications appear to be that the design and introduction of networked learning alters the teaching and learning practices of staff and students and impacts on the design of degree programmes. The coherence of networked learning design with the degree programme as a whole should be prioritised, thus maintaining consistency between the networked and other elements.

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## Design issues and multiple authorship

Jaques et. al. conceptualise course design as a collaborative activity: as a 'process' (rather than an end result) best achieved through "team work". They (like TLTSN case studies III 3) advocate a "systematic" "objectives first" approach to course design, where objectives are followed by content and methods and then assessment. Thus criticising the tendency of lecturers to concentrate on content and "lose sight of the need to foster the development of skills and attitudes ", this occurs when the "main vehicle of teaching is the lecture..." and "...the acquisition of knowledge seems to be paramount, to the exclusion of most other objectives" (Jaques, Gibbs and Rust n.d: 11). Networked learning tools, like RBL packages potentially avoid this by focusing on engaging students in learning activities rather than passively writing out course content (Cox and Gibbs 1994: 23).

Design, development and implementation of networked learning packages should form a dynamic between team work and individual authorship. A subject team should develop a shared vision of how networked materials and technological skills based sessions may be integrated into the degree programme. Lecturers who do not employ networked learning would benefit from an awareness of the significance of technological tools for students' learning. Therefore the first stage of the design process (which is also a curriculum issue- see Ryan, et al 1996) where decisions regarding how networked learning should be integrated into degree programmes, requires team participation. Whilst a team approach can design learning outcomes driven course structures, specific content is collated or authored by individual lecturers responsible for imparting modules and who should be specialists in that area: "A mere difference in style between one teacher and another can transform the learning experience of students from the banal to the inspired" (Jaques, Gibbs and Rust n.d: 8). Moreover, for research led teaching 'content' takes on further meanings: it is inextricable from the professional identity of the lecturer or 'author'. Significantly when one of the lecturer respondents was asked how he would introduce The Bullfighter's Braid to students he made authorship central to the introduction: "A multimedia learning tool about visual research methods, by Sarah Pink".

Authorship is a complex area. A lecturer may author a multimedia text (often in collaboration with a multimedia professional), but the authorship of the students experience of that text is not the sole responsibility of the lecturer. Students potentially explore pathways through a multi-stranded text; no two readings are identical. The text should not invite one learning narrative, tell one single story, nor dictate that story's narrative, but provides a series of possibilities. Therefore an multilineal learning tool can become part of the lecturer/author's role as a 'facilitator' of learning: it can ask 'facilitating' questions (see for example Rodgers 1983: 36) and allow students to learn from the angle they find most comfortable by following routes they find most attractive. In this sense it can engender 'student centred learning'. The Bullfighter's Braid intends to be 'student centred' - as opposed to the 'banking' concept of education in which the scope of action allowed to the students extends only as far as receiving, filing and storing the deposits" (Freire 1972: 53). It aims for a "dialectical interaction " through which "students construct their own understanding and interpretation of knowledge" (King and Honeybone 1996: 9); students may self consciously author their own learning.

## Cyber education

- The Dearing committee report believes that

"... for the majority of students, over the next ten years the delivery of some course materials and much of the organisation and communication of course arrangements will be conducted by computer. Just as most people will come to expect to be connected to and to make use of, world communications networks in their daily lives, all students will expect continuous access to the network of the institutions at which they are studying, as a crucial link into the leaning environment."

*(Chapter 13 p1)*

and Lewis (1997: III) predicts that

"In future, students' 'spaces for learning' will depend not on the physical size of a university's campus, but on the electronic capabilities of its network"

This will not entail sending students into a void. Nonetheless they will be asked to practice 'new' forms of engagement with learning materials and activities and their motivation will be constructed and experienced in terms of a transformed set of negotiations with their tutor. Further research will be needed to explore questions of if and why students may be reluctant to self consciously take on nonlineal learning. In some cases this may be due to lack of sufficient confidence to place themselves at the centre of a self driven learning process. In general I propose that the main obstacle of a shift to student centred on line learning in my own subject area will be that it entails a shift from a teaching and learning culture that until now has tended to place the lecturer at the centre. The design of networked learning materials and the tutorial support that is linked to them could be crucial in the development of a culture of student centred learning, which at least in part challenges the student to situate him/herself at the centre of a multilineal plethora of educational information. In this scenario it is through the student's management of this technologically created environment that learning will take place; knowledge will be produced.