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Undergraduate essay production as cultural practice

Technological, social and institutional mediation

by

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Abstract

Coursework essay production plays central roles in the learning and assessment of many undergraduates. This investigation is concerned with how students accomplish essay production through engagements with documents and other resources. Unlike more traditional psychological approaches, 'cultural psychology' (Cole, 1996) sees such resources as intrinsic to cognition and action. Cultural psychology is adopted as the theoretical framework for this investigation. Three empirical studies are conducted. They comprise a set of complementary lenses, focusing upon different 'levels' of activity and different aspects of context.

In the first study, participants use self-report diaries to record temporal patterns of authentic coursework activity, with particular emphasis on document mediation. The diaries also ground interviews that address participants' perspectives and their histories of essay production. Essay production is found to be richly mediated and appears inherently improvised. Participants' personal histories heavily resource their improvisation. They spend much of their working time alone and report idiosyncratic uses of documents, which they enact routinely and with little conscious reflection.

The second study focuses on finer-grained temporal patterns of action and their relation to the material properties of documents. Employing direct observation under conditions of controlled comparison, it explores how material characteristics of paper and online documents shape action. Consistent with the view that artefacts do not have inherent 'effects', individuals differ in their use of these documents.

The third study investigates social and institutional contexts of essay production. Data are collected using highly portable dictaphones, on which participants make frequent recordings for a period of one week. The study highlights the benefits to students of rich access to relevant communities of practice, and illuminates how this access is shaped by institutional contexts, particularly arrangements of time and space.

Taken together, the three studies form a coherent single-site investigation, revealing essay production as temporally structured, richly mediated, historic practice. Implications are discussed for supporting essay production and for theoretical approaches to cognition and action.
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Chapter 1 Introduction

This chapter is comprised of three main sections. In section 1.1, I will outline the important role of the coursework essay in many undergraduate degree programmes. It often occupies a central place in assessment and promises much in terms of undergraduate learning. It is heavily implicated in; developing students' written communication skills, engaging them with disciplinary knowledge, and in involving students in 'modes of thought' valued by their discipline. The production of coursework essays then, constitutes a significant portion of many students' experience of study.

In section 1.2, I will describe the challenges that coursework essay production presents for research. Both pedagogues and students have a heavy investment in what happens between the setting of an essay and its submission. Students' efforts in this period: produce the text through which they are assessed, are a key constituent of their academic efforts, and a key locus of their academic learning. What occurs in this period needs to be understood. What students do to produce an essay is, very clearly, a cognitive achievement. It also involves processes of engagement, organised in time, with various 'resources', such as libraries, documents and computers. Bringing these aspects together is a central challenge for investigations in undergraduate essay production.

In section 1.3, I will present the motivation for this thesis. I will preview the argument, developed in this thesis, that cultural psychology (Cole, 1996) provides a unique opportunity to investigate and describe essay production as both a cognitive process and richly resourced, temporally-structured action. It is an approach that refuses to separate cognition from action. Having briefly sketched my criticisms of prevalent approaches to cognition and to literacy (presented fully in chapters 2 and 3), I will preview my own investigations into undergraduate essay production - inspired by the perspective of cultural psychology. These investigations have implications for essay production, for related forms of cognition and action, and for how we think about cognition and action more generally.
1.1 The importance of undergraduate coursework essays

1.1.1 Their role in undergraduate assessment

The coursework essay has become a prevalent form of assessment in many undergraduate degrees. Essays are now an accepted part of evaluating a student's final degree (Norton, 1990) and "efficient production of good quality argumentative and descriptive text is at the heart of successful completion of the majority of undergraduate degree programs." (Torrance, Thomas and Robinson, 2000, p. 181). With the increasing prevalence of 'continuous assessment', many modules in universities across Britain and the rest of the world are assessed entirely or in part through some coursework assignment. Very often, especially in the arts, humanities and social sciences, these coursework assignments take the form of an essay.

So, what do I mean by 'coursework essay'? For my purposes here, 'coursework' is a form of study that takes place outside of direct instruction and is conducted in students' own time, in (part) fulfilment of their course. There may be considerable differences between formal features that pedagogues expect of 'essays', the sort of texts that students aim for, and the sort of texts that they finally produce. In view of this, we can consider essay production in terms of the expectations of pedagogues, defining it as any text that a student submits in response to a pedagogue's request for 'an essay'. For my purposes, a tutor or lecturer that requests an essay will expect some coherent, unified piece of text - such as an argument, discussion, or some other treatment of an issue. They will expect the text will also be based to some extent on source materials. This, somewhat fuzzy, definition allows that some essay assignments are more typical than others. Although it excludes certain written products, such as reports of practical investigations, these documents and the processes of producing them may overlap in certain respects with essays and essay production. The definition then, points to the relatedness of essay production to other forms of study.

As a method of 'continual assessment', the coursework essay offers certain strengths. It provides an alternative to the stress of the exam situation. It also holds the potential of a richer and more reliable measure of academic performance. Setting a number of coursework assignments over the duration of a course or module, as an alternative or complement to an examination, offers the potential of increased reliability. Perhaps more
importantly, the coursework essay may provide a clearer 'window on learning' than the exam script. Coursework essays may be longer and more complex texts, produced over an expanded time scale that allows time for reflection and for intellectual engagement with source materials.

1.1.2 Their role in undergraduate learning

Coursework essays are not only important as a tool for assessment, but also as a vehicle of learning. It is intended that students learn through the process of producing assessed coursework essays. In this section I consider specifically what is learned.

In the first instance, the production of coursework essays may be considered a vehicle for the development of undergraduates' written communication skills. Arguably, the ability to produce well-written text is one of the more 'transferable skills' of many undergraduate degree programmes. Writing ability is one of the qualities most sought after by employers of graduates (Bulmer, McKenell and Schonhardt-Bailey, 1994). Producing coursework essays may be a key vehicle of this learning. But producing coursework essays undoubtedly involves learning more than transferable writing skills.

Coursework essays are also a vehicle for learning about topics. For example, by setting the coursework essay title, "Why do we sleep?" a biological psychology tutor can expect to ensure that her students reach a level of knowledge of leading theories and research findings on the functions of sleep. Hence coursework essays involve students in learning disciplinary 'content'. However, the potential for learning from essay writing also goes beyond the simple comprehension of a topic.

Essay writing is valued for not just simply engaging students with topics, but for promoting particularly rich forms of engagement. Writing a good quality essay will typically involve digesting sources, weighing up their relevance, and bringing together information into some coherent, meaningful, and communicative structure - such as an argument or cogent treatment of an issue (Hounsell, 1984a). Literature on 'learning approaches' (Marton and Saljo, 1984) and 'learning outcomes' (Biggs and Collis, 1982) focus upon distinctions between learning as storing discrete isolated elements, and learning as actively integrating and transforming knowledge into something personally meaningful. This latter process echoes John Dewey's (Dewey and Dewey, 1915) notion
of 'enquiry', as active engagement in learning. One of the potential strengths of essay production, in stark contrast to, say, multiple choice tests, is that it seems to promote this kind of active constructive learning. Freedman and Pringle (1984) for example, argued that the writing of argumentative texts is an extremely demanding cognitive achievement, involving the formation of what Vygotsky (1962) calls 'true concepts'. Accordingly, "the essay has long been regarded ... as a valuable means of promoting conceptual learning which is a prime goal of higher education" (Campbell, Smith and Brooker, 1998, p.449).

The connection between writing and thought may be pursued further in order to appreciate more fully relations between essay writing and learning. Literacy and thought have long been considered as closely related (Ong, 1982; Havelock, 1982; Goody and Watt, 1968), and there is an increasing appreciation that ways of using language are ways of constructing knowledge (Mercer, 1995). When writing in a discipline, students are doing more than expressing thoughts in the particular ways that happen to be valued by their discipline: they are engaging in disciplinary modes of thought. "Language and associated literacy practices actually construct and constitute knowledge in specific ways...Learning at university involves adapting to new ways of knowing: new ways of understanding, interpreting, and organising knowledge. Practices of academic literacy are central processes through which students learn new subjects and develop their knowledge about new areas of study." (Lea, 1999, p. 105-6). This emerging view then, is one that blurs distinctions between academic literacy and academic learning. It is a view that emphasises the high stakes invested in the academic essay.

1.1.3 Their role in undergraduates' experiences of study

Having already seen that the coursework essay often has a central role in the pedagogic functions of learning and assessment, it should come as no surprise that producing essays constitutes a large component of many undergraduates' experiences of study. Dai Hounsell puts this poetically; "In the arts and social sciences essay writing is the undergraduates amazon. Throughout a degree course the processes of studying often proceed along a river of coursework essays" (Hounsell, 1997, p. 106). Students' investment of time and effort into coursework essay production is often large. One of the history students in Hounsell's research remarks, "I mean, basically I am a full time essay writer" (Hounsell, 1997, p.110).
Such large investment in essay production may be to the exclusion of other forms of study. Another student remarks, "[The School of History emphasises] that you shouldn't concentrate on essays, and you don't do yourself any good by concentrating on them. But everyone finds that, I mean, you've just got to do your essays. And they're the ones that get marked... and that certainly doesn't give you enough time for general reading." (Hounsell, 1997, p.110). That students' academic efforts and experiences of study may be constituted in such large part by essay production compounds their importance as a topic for investigation.

1.1.4 Summary of the importance of undergraduate coursework essays

I have considered the importance of coursework essays in undergraduate education. They are often a central focus of student assessment. Furthermore, the production of essays is often a central vehicle for student learning. It is heavily implicated in; developing students' written communication skills, engaging them with disciplinary knowledge, and in involving students in 'modes of thought' valued by their discipline. In addition, the production of coursework essays is often a key focus of students' academic efforts, such that it can make up a very large proportion of their experiences of study.

1.2 Undergraduate essay production as a challenge for research

Despite such heavy investment in coursework essays as means of assessment, as vehicles of learning, and as forms of study, a certain fogginess surrounds the processes of producing them. It is in the nature of coursework that it is usually produced out of the sight of the lecturers and tutors that assign and mark it. Although the processes of essay production - rather than the finished texts themselves - appear to be key loci of the learning that essays are assigned to promote, pedagogues' access to these processes is almost exclusively through the finished product. Even if highly motivated by the noblest of pedagogic aspirations, when faced with a pile of coursework scripts and no direct knowledge of the processes that produced them, a lecturer has little option but to adopt the working assumption that the essays reflect fairly well the learning they engendered. Accordingly the lecturer will set about marking the essays, not the learning (processes) that produced them. Lecturers' lack of knowledge about their students' essay production processes causes difficulties beyond assessment. For example, the lack of a fully developed argument in an essay might be the result of misconstruing the lecturer's
expectations, or of preparing the essay in too short a period of time, yet what guidance is appropriate depends heavily on which situation is true. Similarly, a well-constructed argument might be carefully crafted through a student's rich engagement with a topic, or it might be heavily borrowed directly from a source text.

For students too, essay production writing is somewhat mysterious. Advice about the products of essay writing is readily available. Study guides offer tips on style and grammar. Departmental guidelines frequently attempt also to outline the characteristics of good essays — although fully comprehending these can be highly problematic (Campbell, Smith and Brooker, 1998). But this product-based advice does little to address essay writing as a creative process. As such, essay writing resists simple procedural description. Even where study-guide opinion tends to converge on matters of process - such as on the merits of making a plan (Orr, 1988; Thackray and Thackray 1989; Fletcher, 1987; Burnett, 1979) - empirical findings are more equivocal (Norton, 1990; Mahalski, 1992). There is no single 'correct' method for the creation of essays, yet students are required to produce them time and time again.

Despite the fog surrounding essay production, we can be sure that it incorporates both cognitive achievement, and extended processes of engagements with various resources. As I discussed in section 1.1.2, essay production is heavily implicated in learning. Much faith is invested by pedagogues in the learning that occurs between the assigning and the submission of an essay. Accordingly, it is imperative that we understand essay production as a cognitive achievement. Simultaneously, producing an essay involves enacting some process. As I outline below, this process is far from straightforward, and involves engagements with various resources.

In producing essays, students may come into contact with a wide variety of resources. In producing an essay a student might come into contact with various institutional resources. For example, she might make use of libraries, and of lectures and tutorials. Various other people might also have a role in producing her essay. A lecturer or tutor will presumably set and mark her essay, and she might also consult this person at other times. She may also get some help from classmates, other friends, or family. She will also deal with numerous documents. She will read source texts such as textbooks, journal articles, or even web pages. She might also take notes, or make an outline or draft of her essay before writing it. In dealing with these documents she will certainly
make use of some technologies. These could be relatively new technologies, like computer keyboards and screens, or they might be more 'traditional' technologies, such as pens, pencils and paper. In sum, institutional arrangements, people and material artefacts are all resources available to her in essay writing. Often these resources are so much a part of everyday life that we risk taking them for granted. However, they each have roles to play in essay production.

The student has great freedom in how she manages her engagements with these resources. Each of the many diverse resources mentioned above may be approached or used in a variety of ways. She may; attend relevant lecturers with rapt attention and frequent questions, simply not attend them, or doze though them content to take away a hand out. She may collaborate closely with her classmates, they may merely distract her from her work, or they may provide her with the occasional useful word of advice. She might skim read journal articles using a word processor to take verbatim notes, or she might read only assigned textbooks, jotting down key words into an evolving spider-diagram. She must of course appropriately structure her engagements with these resources in time. Constrained by a deadline, she will nevertheless have considerable freedom in; how much time and effort she expends, when, and in what forms of engagement, and with what resources.

It behoves us to seek rich descriptions and explanations of essay production. By unveiling the processes of essay production in which pedagogues invest so much hope for students' learning, and which make up so much of students' experience of study, we may empower both pedagogues and students. We might allow pedagogues richer insights into how and what their students are learning, enabling them, perhaps, to adjust how they set, assess and resource coursework. A deeper understanding of essay production might also allow students to reflect with greater understanding on how they organise, and how they might develop, their own approaches to study - including the implications of these approaches for their own learning and assessment.

Allow me to summarise this section. Although much is invested in what students do between receiving coursework essay assignments and submitting them, this activity takes place out of the sight of pedagogues, and is somewhat mysterious even to students. We can be sure however, that what occurs between the setting and submission of coursework essays includes both cognitive achievement and temporally structured engagements with
various resources. If we could understand essay production in ways that incorporate both of these aspects, they might usefully equip the various stakeholders in this process. This is a principle aim of the present thesis, and - as we shall see in the following section - it is not a trivial ambition.

1.3 Overview of this thesis

In Chapter 2, I compare two frameworks from psychology that might be used to investigate essay production. The first, traditional cognitive psychology, is the dominant paradigm for investigating human cognition. It places heavy emphasis on cognition as an in-the-head phenomenon employing context independent structures and processes. My preferred alternative - cultural psychology - sees cognition as context embedded. Cognition is seen as occurring through engagements with contextual resources. Under this view, we do harm to our understanding of cognition if we attempt, as does traditional cognitive psychology, to separate cognition and action. Cultural psychology also emphasises history: a single instance of essay production may be understood both as a temporally unfolding process and, at the level of personal history, as a part of practice developing across instances. Cultural psychology then, not only appears to offer a framework more suited to investigating essay production as both cognitive process and well-resourced action, but challenges the principles of the more dominant cognitive paradigm. Using cultural psychology to investigate essay production as cognition and action then, also provides a way to assess the credibility of the cultural psychological approach.

In Chapter 3, I will review the relevant literature on essay production. Five alternative theoretical orientations will be described. These can be distinguished, in part, by their approaches to context. We shall see that, consistent with general criticisms of cognitive psychology, cognitive perspectives on literacy and essay writing suffer from neglecting context. Existing studies provide insights into essay production as making meaning through language in social and institutional contexts. However, they reveal relatively little about the roles of material contexts. Cultural psychology has apparent potential to build upon existing understandings of essay production by bringing these contexts into focus. I will outline a cultural psychological agenda for researching essay production as shaped: through engagements with material technological resources, through
engagements with other people, and through engagements with institutional resources arrangements. The investigation will address essay production as processes organised in time, and as a practice developing across instances.

I will present - in chapters 4, 5 and 6 - three of my own investigations into essay production. These will form a mutually complementary set of studies, based upon cultural psychological principles. The first study will use self-report diaries and interview data to examine essay production in terms of temporally organised engagements with resources. This will focus on how participants make use of documents to produce their essays, and on the overall temporal organisation of their activity. The second study will use direct observation and methods of controlled comparison to develop credible claims about the importance of documents' specifically material properties. The third study will investigate the social and institutional contexts in which essay production is embedded.

I will conclude, in Chapter 7, by bringing together the findings from these studies and drawing out some implications of this thesis. It provides a rich description of essay production - making visible aspects of cognition and action that constitute an important, but mysterious, part of students’ learning experiences. The thesis will also have implications for broader forms of cognition and action. Should the present findings prove consistent with cultural psychological theory, they would bolster the case for cultural psychological theory, and for its refusal to separate cognition from action.
Chapter 2 Approaches to cognition and action

We have seen that undergraduate essay production is both an important and challenging area for research. It is important in that it frequently occupies a key role in undergraduate assessment, learning, and experiences of study. Central to the challenging nature of essay production as a research topic is that it involves both cognitive achievement and temporally structured engagements with various resources. It is both a process of thinking and a process of action. In this chapter I will consider and contrast two psychological perspectives on cognition and action. I will argue that, despite its more dominant place in the discipline of psychology, traditional cognitive psychology offers a less adequate theoretical framework for understanding cognition and action than does my preferred alternative, cultural psychology. Cultural psychology then, not only appears to offer a framework more suited to investigating essay production as both cognitive process and well-resourced action, but also challenges the theoretical underpinning of the more dominant cognitive paradigm.

In section 2.1, I will present a critique of the approach that ‘traditional’ cognitive psychology takes to cognition and action. I argue that cognitive psychology’s attempts to separate cognition from context are theoretically questionable, and misrepresent cognition. This approach also misrepresents the person’s relation to context, and hence the role of material and social contexts in cognition and action. Regardless of theoretical validity, cognitive psychology places social and material contexts outside of the phenomena of direct interest and as a consequence has little to say on these matters.

In section 2.2, I will present an overview of a ‘cultural psychological’ approach to cognition and action. In cultural psychology social and material contexts are not considered separable from cognition: they mediate cognition and are therefore constitutive of it. Rooted in materialism, a cultural approach provides a more adequate perspective of the intimate relation between cognition and action. It therefore provides a more adequate theoretical platform for the present investigation.

2.1 Traditional cognitive psychology as neglecting context

In this section, I will suggest that, despite its successes, cognitive psychology provides too impoverished an approach to human activity to make it suitable for addressing my
research questions. In assuming that mind has an inside and an outside, it separates ideal from material, and person from context. It treats the material world, and context more generally, as something separable from cognition. It tends to assume context-independent cognitive structures or processes that are located within the head of the individual. It also tends to assume a straightforward relation between activity and this conception of cognition. Activity in the world is often reduced to the mental manipulation of symbols: it is assumed that the structure of activity is derived from symbolic representations or plans that precede and determine it.

I will argue that the assumption of 'mind as container' inherited by cognitive psychology leads to theoretical and methodological commitments that hinder progress in the research questions I ask in this thesis. By viewing cognition as separable from material and social contexts (and thereby focusing on the individual) cognitive psychology places these factors outside of the phenomenon of interest. Material and social contexts become 'inputs' to cognitive processes; knowledge (Lave, 1988) and artefacts (Cole and Griffin, 1980) become 'tools' of context-independent, internal, cognitive processes; and activity is predetermined by symbolic representations. Consistent with such assumptions, the methods of cognitive psychology typically involve studying cognition as removed from everyday contexts.

### 2.1.1 Mind as container: separating cognition and context

One of cognitive psychology's chief contributions was to place emphasis on processes of mind rather than the stimulus-response relations considered by behaviourism. Karl Lashley (1951) for example "argued in the face of behaviorist orthodoxy, that the chaining of stimuli and responses could not account for complex human behavioural phenomena such as fluent speech. Instead, he argued, it was necessary to postulate some kind of centralised processing..." (Agre, 1997, p. 142). Attention to processes of mind will be invaluable to the present attempt to characterise essay writing activity.

Despite its advantages, the cognitive approach inherited a problematic assumption about mind, which can be traced back to Descartes and to Plato (Derrida, 1981). This is the assumption that the mind is 'container-like' in that it has an inside and outside (Lakoff and Johnson, 1980). Frustrated with behaviourism's focus on the 'external' phenomena of stimuli and responses, cognitive psychology sought to look 'inside' what behaviourism
treated as a black box: it attended to the complexity of mental activity taking place between stimuli (inputs) and responses (outputs). Cognitivism then, can be seen as a pendulum swing reaction to behaviourism - from focus on the external to focus on the internal:

"Lashley's paper established a pattern for later cognitive research in its tendency to resist behaviourism by shifting to an opposite extreme. Whereas the behaviourists portrayed behaviour as driven entirely by successive stimuli, Lashley placed his principle emphasis on the predetermination of action by mental processing. While certainly not denying that this processing had inputs, Lashley gave these inputs no clear role in his story." (Agre, 1997, p. 142-3).

More recent approaches to cognition suggest that these two extremes can be avoided by rejecting the container metaphor, and modelling cognition as distributed (Hutchins, 1995), or stretched (Lave, 1988), across people and the contexts of their activity.

2.1.2 Context independent cognitive processes and structures?

One consequence of the commitment to a separation between person and context is a tendency to seek explanations in terms of context independent ‘cognitive universals’. Because context is placed outside of cognitive analysis, its role is often perceived as limited to providing inputs to context independent processes. The notion that our abilities can be characterised as abstracted from contexts has a certain appeal. It suggests that experiences in one domain may lead to more general cognitive payoffs since the acquisitions gained in that domain are abstract, domain general and therefore applicable in quite different contexts. It suggests that laboratory investigations can uncover cognitive structures that are constant across contexts. It suggests that context might have limited role in individual development, with cognitive development characterised as basically a biologically predetermined process and with the cultural environment characterised as providing more or less suitable conditions for this pre-structured development (e.g. Piaget, 1952). This notion then, suggests the potential for measuring ‘general’ intelligence.

Actual attempts to find context independent cognitive structures or processes have achieved limited success. For example Newell and Simon (1972) attempted to create a “generalised human problem solver”; a domain general model of expert human problem solving. However, on investigating the reasoning of experts from various domains they
found little evidence of domain independent reasoning processes, and a great deal of
domain dependant reasoning. Expertise in one domain seemed to involve quite different
cognitive processes from those in another.

The notion of cognitive acquisitions in one domain transferring to other domains due to
their abstract nature is also questionable. Lave (1988) reviews a number of influential
studies on ‘learning transfer’ (Reed, Ernst and Banjeji 1974; Hayes and Simon, 1977;
Glick and Holyoak, 1980; Gentner and Gentner, 1983). In the basic procedure, subjects
are introduced to a problem and its solution, and are then faced with another problem
with the same abstract structure but different ‘surface details’. Lave concludes that none
of the experiments led to strong evidence of learning transfer. Despite considerable
efforts to facilitate transfer - such as telling subjects that the problems were analogous -
they had difficulty ‘transferring learning’ from one problem to another.

Understandings of cognition as underpinned by abstract, context-independent, cognitive
structures have also been undermined by other lines of research. Developmental research
(summarised by Donaldson, 1978) has shown that children’s reasoning may exhibit what
seems to be abstract logical characteristics in some problem domains but fail to exhibit
them in others. This research emphasises the importance of problem context relative to
its abstracted computational structure, and also questions whether abstract processes are
the mechanism that underpins cognitive performances. In addition, cross-cultural
research (e.g. Cole et al. 1971) shows that individuals in different cultures will utilise
culture specific cognitive resources in solving identical problems. This too undermines
the notion of problem solving through the application of context independent processes.

All of these observations suggest that attention may profitably be shifted away from
context independent cognitive processes and towards humans’ relations with their
contexts. Lave (1988) argues that ‘contextual continuity’ rather than abstract
computational similarity is what links cognitive activity in one situation to cognitive
activity in another. Crook (1994) similarly argues that the social fabric of classroom
activity is essential for productive linking of children’s classroom experience at, and
away from, computers. He points to the importance of rich activity settings that embed
authentic goals and purposes, and explicit integration of experiences at computers with
other experiences.
2.1.3 The role of 'Problem Solving' in human activity

In traditional cognitive psychology the assumption is pervasive that something akin to 'problem solving' (of the kind that takes place in laboratory settings) can yield insights into, and reasonably approximates, the cognitive activity of everyday life (Lave, 1988; Agre, 1997). Put another way, the cognitive view assumes that problem solving is both ubiquitous (outside the laboratory) and representative (of cognition outside the laboratory). The 'representativeness' assumption is underpinned in part by the view that cognitive processes are independent of context implying that cognition inside and outside of laboratory contexts are roughly identical. The assumption of context independent processes has been challenged in the preceding paragraphs.

Careful consideration of the relations between individuals and the contexts of their everyday activity suggests that people rarely encounter in ordinary circumstances anything like the problem solving tasks encountered in the laboratory. Views that separate the person from the environment tend to see the world as throwing up a series of problems to be solved. Philosophical theories of practice (e.g. Heidegger, 1997; Bordieu, 1977) suggest why this assumption is intuitive but inadequate. According to Hiedegger for example, in our ordinary routine interactions with the world we have no sense of being separate from it; the basis of our activity then is a state of being unconsciously attuned to the world. Only when routine practice breaks down do we stop, become detached from the world, and consciously reflect on our situations. Hence the points at which we are conscious of our relations with the world are precisely the points when they become problematic. This makes seductive the assumption that our relations with the world are best understood as a series of problems. But this assumption neglects the smooth unproblematic relations that make up the bulk of our activity, and neglects the fact that breakdowns are generated out of ordinary practice. Accordingly, Lave argues that while cognitive psychology assumes that 'problem solving' captures the essential character of everyday cognitive activity, it is in fact a rather unusual kind of situation.

"Problems of the closed "truth or consequences" variety are a specialised cultural product, and indeed a distorted representation of activity in everyday life, in both senses of the term — that is they are neither common nor do they capture a good likeness of the dilemmas addressed in everyday activity. Such a culturally exotic form is more appropriate a category to be explained than a source of analytic terms and relations. Contrary to the spirit and practice of the [cognitive,
"Learning transfer" experiments discussed in this chapter, "problem solving" cannot itself constitute the taken-for-granted field of analysis." (Lave, 1988, p. 43. Emphasis in original).

The essential characteristics of what Lave (1988) prefers to call 'snags' or 'dilemmas' (in contrast to de-contextualised 'problems') of everyday activity include their embedding in familiar settings, in routine practices, and in complex authentic motivations.

Agre (1997) also suggests that to understand commonplace cognition and action we need to reconsider the relations between intelligent agents and their environments, in terms other than problem solving. He contrasts a cognitivist 'planning view' with his preferred alternative:

"How does the world influence activity?

Planning view: The world is fundamentally hostile, in the sense that rational action requires extensive, even exhaustive, attempts to anticipate difficulties. Life is difficult and complicated, a series of problems to be solved.

Alternative: The world is fundamentally benign, in the sense that our cultural environment and personal experiences provide sufficient support for our cognition that, as long as we keep our eyes open we need not take account of potential difficulties without specific grounds for concern. Life is almost wholly routine, a fabric of familiar activities." (Agre, 1997, p. 7)

Here, Agre also points to some key aspects of the nature of everyday activity. The phrase 'cultural environment' highlights specifically human aspects of the world that may support cognition. We are reminded that this environment may have helpful other people in it, and that it may have been shaped in supportive ways by human activity (either our own or other people's). The references to 'personal experiences' and 'familiar activities' point out that we rarely face difficulties that come out of nothing. We draw upon previous experiences and existing practices or ways of behaving to relate with the environment in current situations. In sum, these authors point to prior experiences and activities, and the cultural shaping of environments - historically formed aspects of context that give everyday cognition and activity a character different from that found in laboratory settings.

In the present investigation it will become clear that essay writing is rich in contextual resources - marking it out as a form of 'everyday' cognition, more than as a form of decontextualised self-contained problem. Although the problem may be considered as 'handed down from above' in the form of an essay title, the essay writing problem is
‘owned’ by students in the sense that the essay finds a place in their lives. It is part of a module, which, in turn, is part of their degree; and that degree is one of the activities in which they engage during their time as students. Essays are not correct or incorrect, but marked by university staff on a scale, and the processes that produce them will not be judged as being rational/logical or otherwise. These conditions mean that students may judge their efforts as satisfactory or otherwise according to their own concerns and values. Essay writing also takes place in an environment that is richly resourced with potentially supportive artefacts and people. And essay writing, for undergraduates, is typically experienced as a familiar activity, taking place in a familiar context. Each of these considerations must be taken into account in the present attempt to understand the undergraduate activity of essay writing.

2.1.4 Relating cognition and action

Seeing cognition as something ‘internal’ tends to lead us to consider activity as caused by plans or symbolic representations. When cognition is seen as the processing that intervenes between input from the world and output to it, action appears to involve the translation of instructions for action into motor activity. Through practical experience, many researchers in the field of artificial intelligence have come to question the working assumptions that observed behavioural patterns (Brooks, 1995; Agre, 1997), or experts’ descriptions of their knowledge (Clancey, 1997) should be seen as mechanisms within the head of the agent.

Clancey’s phrase “the map is not the territory” warns against the tendency of the cognitive approach to gather representations of behaviour (e.g. through observing activities) or of knowledge (e.g. expert ‘knowledge elicitation’) and to assume that these representations are (internal symbolic) prescriptions that cause the behaviour, themselves identical to the knowledge. Clancey favours a very different view that sees situated interaction as primary: “Instead of deriving from stored structures, interaction creates structure...” (Clancey, 1995, p. 8).

Similarly, Agre criticises the tendency of cognitive science to conflate embodied activity with internal processes. For example, “the theories of Newell and Simon tended to elide the phenomenon of action by formulating instances of problem solving activity in mental terms. Thus, they interpreted activities that actually take place through complex
interactions with scratch paper and chalk boards as manipulations of working memory” (Agre, 1997, p. 143) Providing a concrete example, Agre describes an influential paper in the cognitive tradition by Hayes-Roth and Hayes-Roth. In the study subjects were given a map of a town and a shopping list and were asked to plan for a hypothetical shopping trip:

"it is as though the stereotypically "cognitive" nature of this activity prevents it from being recognised as an embodied activity in the world. In reading the paper it is hard to get any concrete sense of this activity; although the authors provide a detailed protocol of one subject constructing a complicated itinerary that he calculates down to five minute intervals, they never say whether he writes his plan anywhere – much less where his gaze is directed at each step, whether he uses his hands to keep track of where he is, or how he relates the list of chores to the map. Instead the whole protocol is narrated in the theoretical vocabulary (e.g. “level of abstraction”) that will shortly be embodied in a computer model. And in that model, everything that the subject encountered as a paper artefact becomes an internal data structure." (p. 149)

When reviewing the literature on writing I will suggest that this conflation occurs in cognitive psychology’s modelling of writing activity as a cognitive problem solving process (e.g. Hayes and Flower, 1980; Bereiter and Scardamalia, 1987). The conflation of cognition and action illustrated here suggests that the cognitive approach may provide a somewhat limited perspective on the roles of the various documents, writing technologies and other artefacts involved in essay production.

Suchman (1993) echoes a concern about the conflation of thought and action in recounting the motivation for her seminal book ‘Plans and Situated action’:

“The prevailing view within AI at the time I wrote the book, in the early to mid 1980’s, as I understood it, was that the relation of plans to actions was assumed to be a determining or controlling one. My concern was that as long as plans were treated as determining of the actions planned, that the relation between the two was nonproblematic and in some sense, therefore, uninteresting to people in AI. One might have to worry about cases in which, for one reason or another, a planned action could not be executed, but the fundamental assumption was that once you knew the plan, the action simply fell out from that. A theory of planning, it followed, gave you a theory of action.” (Suchman, 1993, p. 72-73).

In her book, Suchman (1987) concluded that plans do not occupy the central role in activity that cognitive psychology has assumed for them. Rather, she concluded, they are one of many resources that a person might draw upon in the moment by moment
unfolding of their activity. Mistakenly seeing activity as fundamentally planned may lead us to neglect the roles of material and cultural artefacts in shaping activity as it unfolds through time. This aspect of the role of documents, writing technologies, and other artefacts in essay writing is one that the present thesis attempts to address.

2.1.5 Conclusions on traditional cognitive psychology

To sum up, although traditional cognitive psychology usefully draws attention to processes of mind, it runs into difficulty because it separates mind from context. The metaphor of mind-as-container locates (ideal) mind in the heads of individuals, separate from the material world, with its operation independent of context. This appears to be a flawed position, as suggested by the lack of evidence for context independent cognitive processes.

Under the assumption of universal cognitive processes, cognitive psychology has tended to investigate cognition as it takes place in the somewhat unusual situation of the laboratory. ‘Problem-solving’, as it occurs in laboratory settings, is taken as illustrative of cognition as it occurs in more everyday circumstances. The approach has tended to neglect the historical, motivational, and material context of activity in everyday settings that theories of practice and recent challenges to cognitive psychology highlight as important. Concern for such contexts is inherent in the research questions of the present thesis.

Regarding the structuring of activity in time, we have seen that cognitive accounts are vulnerable - through the practice of gathering representations of activity and assuming that equivalent representations reside in the heads of agents and cause their activity - to reducing activity in the world to internal cognitive processes (Agre, 1997; Clancey, 1997). This is an approach that neglects the role of material artefacts in shaping activity as it unfolds through time.

Cognitive psychology’s theoretical commitments, its identification of the phenomena of interest, its commitment to the individual as the unit of analysis, and its favoured methodologies, each reflect little concern for the social and cultural contexts of activity.

Rather than attempting to demonstrate that cognitive psychology is fundamentally incorrect in its assumptions, I have highlighted some of these assumptions and
emphasised their disputability. In conjunction with this I have tried to characterise traditional cognitive psychology as an enterprise whose methodologies and accumulated wisdom is focused on a narrower set of concerns than those of the present thesis. Suchman (1993) describes cognitive science as "an enterprise dedicated to explicating those processes of perception and reasoning understood traditionally to go on inside the head" (p. 71). For its practical indifference to context, if not for fundamental theoretical difficulties, I regard cognitive psychology as an inappropriate basis for my investigations. My own research questions are deeply concerned with questions of context. These concerns are closer to an alternative collection of enterprises which Suchman describes as "dedicated to constructing accounts of relations among people, and between people and the historically and culturally constituted worlds that they inhabit" (Suchman, 1993, p. 71).

2.2 A cultural psychological approach

In section 2.1, I discussed the traditional cognitive approach to human thought and action. I suggested that its chief failure, for my purposes at least, was neglecting context. In the present section, I will suggest that a socio-cultural approach to cognition and action provides a more adequate framework for investigating my research questions – more richly conceptualising human relations with contexts.

I will begin, in section 2.2.1, by presenting ideas from a strand of research known as 'situated cognition'. I will introduce the idea that cognition is more usefully conceived of as located not exclusively inside people's heads but 'stretched across' person and setting. This approach sees the context of activity (including technologies and other people) as constitutive of cognition. It is particularly helpful in dealing with the temporal organisation of activity. Seeing cognition as seamlessly stretched across the person and setting allows us to appreciate the structure of activity as fundamentally emergent from ongoing relations between person and environment. Hence in the case of essay production, elements of the physical context such as pens, computers, notes, and drafts can be seen not only as repositories of information but as shaping activity as it unfolds over time. Lave's account also emphasises the importance of the routine nature, or historical context, of activity.
Having argued that cognition extends beyond the skin of the person and stretches out into the environment, I will introduce - in section 2.2.2 - the notion of artefact mediation to consider what sorts of items constitute that context. I will suggest that this context is constituted in part by artefacts. These are entities shaped through the history of their incorporation into motivated human activity (Cole, 1996). I will emphasise how the mediation of artefacts re-organises cognition and action.

In section 2.2.3, I will present the concept of ‘participation’ as a valuable tool for avoiding certain misunderstandings about artefact mediation. Rather than seeing artefacts as isolated tools that mediate discrete functions, they are seen as mediating elements in more richly mediated practices; practices that are constitutive of deep relations between people and worlds.

In section 2.2.4, I will present a development of Vygotskian psychology that is known as ‘Activity Theory’. Activity theory: explicitly reminds us that essay production is fundamentally a social activity; provides a possible framework for describing activity systems, their operation and development; and postulates a hierarchy of levels of activity, suggesting that a range of empirical ‘frames’ might usefully be employed in the present investigation into undergraduate essay writing.

2.2.1 Situated cognition

This section introduces some ideas presented by theorists of situated cognition. I begin by introducing the idea that cognition can be considered as seamlessly stretched across person and environment. To say that cognition is ‘situated’ then, means more than that it happens to take place at some time and in some place, but that this situation makes up or constitutes cognition: it gives cognition its shape or structure. A direct implication of this view is that activity/cognition is fundamentally improvised. Activity unfolds over time from ongoing relations or co-ordinations between a person and environment. It need not be understood as an acting out of a symbolic mental representations or ‘plans’, although such representations may function as resources that shape activity. The concept of improvisation provides a way to understand both stability and change in (cognitive) activity.
2.2.1.1 Context as constitutive of cognition and action

Lave's critique of cognitive psychology is founded largely on the observation that this approach theorises and investigates cognition as stripped of the resources of it’s everyday contexts. The now famous ‘cottage cheese’ example illustrates how cognition incorporates resources in the environment. Lave reports an observation of a weight watcher, in her own kitchen, preparing food portions as requested by an investigator:

"In this case they were to fix a serving of cottage cheese, supposing that the amount allotted for the meal was three-quarters of the two-thirds cup the program allowed. The problem solver in this example began the task muttering that he had taken a calculus course in college (an acknowledgement of the discrepancy between school math prescriptions for practice and his present circumstances). Then after a pause he suddenly announced that he had "got it!" From then on he appeared certain he was correct, even before carrying out the procedure. He filled a measuring cup two-thirds full of cottage cheese, dumped it on a cutting board, patted it into a circle, marked a cross on it, scooped away one quadrant, and served the rest. Thus, "take three-quarters of two-thirds of a cup of cottage cheese" was not just the problem statement but also the solution to the problem and the procedure for solving it. The setting was part of the calculation process and the solution was simply the problem statement, enacted with the setting. At no time did the Weight Watcher check his procedure against a paper and pencil algorithm, which would have produced \( \frac{3}{4} \times \frac{2}{3} = \frac{1}{2} \) cup. Instead, the coincidence of problem, setting, and enactment was the means by which checking took place." (Lave, 1988, p. 165)

The cottage cheese example warns against locating cognition entirely in the person (or in the setting). The setting of the activity (the texture of the cheese, a board on which to place it, etc.) allowed the ‘same function’ to be achieved by radically different means. Getting the right amount of cheese seemed to be a matter of school-like algebraic manipulation but was resolved in this case as a sequence of manipulations of the setting. The kitchen setting was crucial in enabling this second solution. Hence we can consider the setting as constitutive of the solution. And we are now unwilling to consider a ‘problem’ or ‘task’ as separable from its setting. In Lave’s analyses such activities are understood in terms of unfolding dialectical relations involving persons and settings:

The act of identifying a problem changes dialectically the salience of setting characteristics. These in turn suggest, more powerfully than before, procedures for generating a specific solution. Information and procedural knowledge accessed by eye, hand, or transformed in activity, make possible a move toward the solution or suggest a change in the solution shape that draws it closer to the information at hand... "Problem solving" is part of an articulatory phenomenon constituted between persons-acting and the settings of activity. (Lave, 1988, p. 159)
Situated cognition argues against separating cognition from action. Clancey captures this point concisely: "the internal and social-interactive aspects of the Weight Watcher's behavior are mutually constitutive." (Clancey, 1995, p. 16). Neural activity and practical action shaped each other, and these in combination performed the function of obtaining the right amount of cheese.

It follows that problems involving relations with the world cannot be fully understood in purely mentalistic terms. The existence of at least two routes (one more oriented towards physical manipulations, the other more oriented to school like algebra), to the solution state of having the right amount of cheese illustrates that there is no one-to-one mapping between practical problems and ‘mental computations’ or neural processes. This caution is equally applicable to essay writing. It is a task that can incorporate (or not) a vast selection of cultural resources in diverse ways. If one speculates about what abstract cognitive or neural processes form components in tasks like essay writing, this must be done with great caution.

2.2.1.2 Activity as fundamentally improvised

The view that context is constitutive of activity stands in contrast to the cognitive position that activity is structured in advance of itself by representations of that action. The question then arises, how can complex activities be successfully accomplished if not at base through the execution of plans? What is it that gives activity its structure?

From the situated perspective, activity is structured out of the resources in the current situation. These resources come from both the person and context. Lave (1988) describes them as the resources of person, setting, and activity. In undergraduate essay writing, resources of the person would include, among others: prior experiences of writing, and facility with the English language. Resources of activity would include the essay question, the available time, word length restrictions, and other simultaneous activities. Resources of setting would include written notes and plans, source materials, available writing technologies, and workspaces. For Lave (1988), activity is the improvised articulation of structuring resources. Each moment of undergraduate essay writing would be understood as the bringing together of resources of person, activity, and setting. Activity is not structured in advance of itself but is an ‘ongoing structure-in-process’ created from the bringing together of these resources.
The resources of the current situation create what Lave refers to as a ‘field-for-action’. Lave gives the example, from her studies of weight watchers preparing food, of laying down slices of bread when asked to prepare sandwiches. The slices of bread become part of a field-for-action that does not determine what action takes place next, but enables certain other activities (such as spooning out ingredients) to follow. The key point, for my purposes, is that our actions create the conditions for our further actions. Our actions take place within fields for action, and, because they change the situation, they generate new fields-for-action.

Hence, essay writing may be seen as an ongoing unfolding process. Viewing essay writing as a cognitive problem-solving process encourages us to see documents, such as a page of written notes, in narrowly cognitive terms – such as a store of information to be integrated into the transformed knowledge that is the finished essay. But, they might more broadly be seen as an element in the setting, both material and ideal, that co-constitutes fields for further action.

2.2.1.3 Routine as a central characteristic of everyday activity

The situated view of cognition emphasises relations between person and environment. Lave brings into focus the historically constituted relation between the person and the material environment, by giving it the term ‘setting’, and including this ‘setting’ as an integral category in her analyses of practice. Lave’s distinction between settings and arenas captures the distinction between the objective and the subjectively experienced aspects of context.

"A setting is conceived here as a relation between acting-persons and the arenas in relation with which they act.... The supermarket for instance is a public and durable entity. It is a physically, economically, politically, and socially organised space-in-time. In this aspect it may be called an arena within which activity takes place... at the same time for individual shoppers, the supermarket is a repeatedly experienced personally ordered and edited version of the arena. In this respect it may be termed a setting for activity. Some aisles in the supermarket do not exist for her as part of her setting, while other aisles are rich in detailed possibilities." (Lave, 1988, p. 150-1).

The notion of setting then, sharpens focus onto the relation between person and context.
Settings are functionally relevant relations between person and physical arena. Conceptualising settings allow us to consider physical context as more like a support, or resource for, cognition, and less like an unmanageable or hostile environment.

"Part of what makes personal navigation of the arena feasible is the ordered arrangement of items in the market and the structured nature of shoppers' expectations about the process of grocery shopping and what they will buy. The setting of grocery shopping is one way of conceptualising relations between these two kinds of structure. It may be thought of as one locus of articulation between persons-acting and the structured arena.

"The resulting complementarity or synomorphy (Barker, 1968) of the structure of peoples experience and expectations on the one hand, and the organisation of arenas on the other, is part of what is meant by setting. Its articulatory nature is to be stressed; a setting is not simply a mental map in the mind of a shopper. Instead, it has simultaneously an independent, physical character and a potential for realisation only in relation to shoppers' activity." (p. 152-3)

What underpins the 'complementarity' between expectations and arena - and develops the setting into a useful resource - seems to be repetitions of activities-in-settings.

"Shoppers face overwhelming amounts of information, only a small part of which is relevant in the process of making their grocery choices, and only then when they establish a new choice or update an old result. In general, through time, the experienced shopper transforms an information rich arena to an information specific setting. These transformations of past experience, fashioned in relation with the supermarket setting, form the basis of what appear to be habitual procedures for collecting items purchased regularly." (p. 154, my emphasis).

Just as part of what makes the weekly shopping trip manageable is the experience of previous shopping trips, so we will find that part of what makes the task of essay writing manageable is the student essay writers' previous experience of (essay) writing.

2.2.1.4 Routine and improvisation as a basis for development

The seeming tension between, on the one hand, the idea of routine activity (which may have connotations of pre-programmed actions or plans) and, on the other, improvisation, is removed when we remember that the structure of all activity, routine or otherwise, is emergent from interactions with environments. As Agre (1997) explains, 'routine' should be understood not as mechanical reproduction of actions but as emergent from consistent relations between person and context.
“the routine of everyday life is not a matter of performing precisely the same actions everyday as if one were a clockwork device executing a plan. Instead the routine of everyday life is an emergent phenomenon of moment-to-moment interactions that work out in much the same way from day to day because of the relative stability of our relationships with our environments.” (Agre, 1997, p. 7-8).

Lave emphasises the human agency involved in acting routinely, pointing out that routine activity re-creates familiar (and therefore manageable) situations:

“continuity... of activity across occasions and contexts... may be thought of as an active production of the reproduction of settings, activities and selves.” (Lave, 1988, p. 187).

She suggests then that the routine nature of activity, 'continuity of activity across occasions', is actively defended.

“Persons acting... have much to gain from the routine expectability of what they take to be cycles of activity. Operating with rich working expectations, broad resolution shapes for roughly repeated segments of social life are protected by fancy footwork and fiat.” (p. 187)

Routine activity is a product of ‘fancy footwork’ in that it takes adjustments to preserve the unproblematic nature of activity. She illustrates with the example of dieters making breakfasts. “Some dieting cooks produced the same breakfast every morning: (i.e. the same person cooked in the same kitchen, at the same time of day, and made roughly the same meal). But one morning a dieter turned on the kitchen light because it was dark, took a knife out of the dishwasher rather than the drawer, and moved the lettuce bought the previous day in order to find the oranges, after stopping first to wonder what had happened to them.” This unremarkable ‘fancy footwork’ made the preparation of breakfast as a whole unproblematic. It protected the unproblematic and basically routine status of the breakfast ritual.

Routine activity is a matter of ‘fiat’ in two respects. People may commit to making the activity the same each time as a good way to make it unproblematic. Routine activities embody resolutions to dilemmas, with snags ‘ironed out’ over time. If a routine practice is rejected for a new form of activity new snags may surface. In the case of grocery shopping, for example, changing from an established routine of a weekly shopping trip to a fortnightly one could throw up an array of snags. Purchasing patterns might have to change to include a smaller proportion of perishable foods; established methods of transporting and storing the food may be inadequate for increased quantities; fortnightly
spending might upset the current organisation of household finances, etc. Similarly, adopting an unfamiliar approach to producing an essay – such as deciding to take notes from source texts - may cause an array of snags and dilemmas to surface. The note making activity itself must be managed; note making may not leave sufficient time to consult the usual variety of texts; established approaches to drafting text would have to be adapted to utilise the notes, etc. Such snags are avoided by reproducing routine – what Lave calls, 'the active production of the reproduction of activities, settings, and selves'. In essay production then, as for other activities, there are distinct advantages associated with actively adopting a routine approach to the activity.

The other sense in which activity may be regarded as routine ‘by fiat’ is simply that people choose to describe it as such. Participants in the supermarket shopping study typically described their shopping expeditions as ‘routine’ and ‘the same each time’. In doing this, they emphasise its repeated aspects and de-emphasise its variability. Claiming, after the event, that activity is ‘the same each time’ is a convenient way of accounting for activity (especially when it is experienced as unproblematic). In the present study, participants tend to describe the pattern of their engagements with documents as basically ‘the same each time’. Lave’s analyses provide a warning against taking this claim too literally.

Innovation may be present within routine activity, because activity is routine at the level of working with structuring resources, not at the level of sequences of operations. A person experiences an activity as routine when they are bringing together familiar structuring resources.

“It is not at the level of activity, but at the level of a set of transformations of articulated structuring resources that activity may be said to be the same from one occasion to the next... expectations about the structure of ongoing activity have a rich basis because activity differs from one occasion to another mainly by shadings of difference in the proportional articulation of common structuring resources.” (Lave, 1988, p. 189)

This can lead to new forms of activity: it,

“helps to explain why transformational relations which are part of “intentionless but knowledgeable inventions,” can be anticipated and expectable without having literally been experienced as the resolution shapes in relation with which the experience is constituted.” (p.189)
On this account, routine activity provides a basis for development. Faced with recurring tasks, such as supermarket shopping, cooking, or writing essays, people tend to use routine practices. These practices are useful because they create familiar contexts, making (improvised) activity more viable and less demanding than completely novel approaches. They may also generate particular recurring snags or difficulties. The improvisational nature of activity enables the resolution of these difficulties through innovation. Innovations that resolve recurring dilemmas of routine practices are employed repeatedly, becoming regular features of practices. This newly adapted practice will in turn generate or create terms for the occurrence of new snags. This is one means by which practices develop historically.

To sum up the situated view, situated cognition provides a valuable orienting framework for investigating essay production — a perspective from which "activity might be conceived in terms of its routine character, rich expectations generated over time about its shape, and settings designed for those activities and organised by them." (Lave, 1988, p. 190).

2.2.2 Artefact mediation

The ideas from situated cognition presented above provide a way to understand activity as emergent from relations between person and environment, and to understand both its stability and change, across instances and situations. In the present section, I will consider more closely one key aspect of context — the human-made entities known as artefacts. Vygotsky proposed that human higher mental functions are object-oriented and artefact mediated. The idea that artefacts embody cultural knowledge makes more compelling the notion that cognition is ‘distributed’ or stretched across person and setting. Artefacts also provide a link between individual cognition and wider society and its history. Artefacts are also means of organising oneself. This may be a fruitful way to understand the role of artefacts like notes and plans in essay writing activity. I conclude this section by considering artefacts’ relation with cognitive change. Cognitive change occurs when an artefact is appropriated from an outside source, such as a teacher or peer. As the method of dual stimulation illustrates, cognitive change may also occur with the invention of some new mediational means.
Vygotsky brought the idea of mediation to psychology out of concern for developing a psychology based upon the materialism of Marx and Engels. In contrast to the idealism of, for instance, Plato, the materialists Marx and Engels viewed human nature as deeply rooted in engagements with the material world. Humans were understood in terms of these engagements - 'labour' - which took place through the use of 'tools'. Tool mediated labour was understood to profoundly shape human life. Vygotsky brought the concept of mediation to psychology, applying the principle of mediation to symbolic tools ('signs') in addition to more traditional (material) 'tools'. Mental activity was to be understood as fundamentally 'object oriented' - directed towards some aspect of the environment. Vygotsky suggested that all but the most basic human behaviours - all higher mental functions - take place through the mediation of artefacts that intervene between person and object.

![Diagram](image)

*Figure 2.1. The structure of mediated action.*

The diagram shows the relation between person and object as simultaneously incorporating a direct relation and a relation through the mediating artefact. Artefacts should be understood as means that have been developed by humans for achieving certain purposes. They are described by Cole (1996) as "*an aspect of the material world that has been modified over the history of its incorporation into goal directed human action*" (p. 117). Examples of artefacts include, axes, spades, pens, computers, and languages. The diagram represents a systemic relation. Each of the elements in the triangle is potentially transformed in its incorporation in the mediated activity.

Artefacts provide a link between individual and cultural development. They are shaped in the course of cultural history: they embody culture. Because individuals can 'take on', or appropriate, cultural artefacts in their own object-oriented activity, they benefit from this cultural history. Hence cultural artefacts shape the cognition/action of individuals. The relationship between individuals and culture is reciprocal because individuals may shape culture by creating and/or transforming artefacts.
Because mediated action - or higher mental function - necessarily incorporates each element in figure 2.1, cognition is understood as distributed through each of its elements. The idea of cognition being thus ‘distributed’ is more compelling when it is considered that artefacts can embody cultural knowledge. The use of the navigational device, the sextant (Hutchins, 1990), provides a compelling example. It is a device that a sailor can use to gain information about his current location, and its design is based on astronomical knowledge. A sailor, despite lacking the arithmetical or astronomical knowledge to understand the calculations that underlie the sextant’s design, can ascertain information about his own location through a series of physical manipulations of the sextant. Through the use of this artefact the sailor translates a positional relationship between himself and the stars into information about his own position. The sextant may be said to embody astronomical knowledge (it is not held by the sailor but is the basis for deriving the geographic position). The cognitive performance that has occurred is sensibly understood as an achievement of the functional system that incorporates both the artefact and the sailor (who identifies the relevant star(s) and manipulates the device).

One aspect of the mediating role of artefacts is that they organise behaviour. Vygotsky and colleagues saw, not only the use of artefacts, but also their creation, as central parts of cognitive achievement. In what were called ‘dual stimulation experiments’ subjects were presented with “a problem-solving situation where direct action proves ineffective, so that the individual must find or create auxiliary means to reach the goal” (Cole and Engestrom, 1993, p.10). For Luria, “voluntary behaviour is the ability to create stimuli and to subordinate [oneself] to them; or in other words to bring into being stimuli of a special order, directed at the organisation of behavior” (Luria, 1932, p. 401). The idea of using mediational means to ‘organise behaviour’ is a refreshing way to conceptualise the activity of a writer at their desk-top: I propose that the function of notes, plans, and drafts is more richly understood as a means for organising the activity of essay production, rather than as an auxiliary memory store of symbolic information, or as cognitive constraints in a problem-solving process.

Vygotsky and Luria’s work focuses quite heavily on the organisation of the self through mediating means. Cole and Engestrom (1993) summarise work Luria and Vygotsky carried out with a Parkinson’s sufferer:
"So severe was this condition that the patient could not walk across the floor. Paradoxically, however, the patient could climb stairs. Vygotsky and Luria (reported in Luria, 1979) hypothesised that, when the patient was climbing stairs, each stair represented a signal to which the patient had to respond in a conscious way. When Vygotsky placed pieces of paper on a level floor and asked the patient to walk across the room stepping over them, the formerly immobile patient was able to walk across the room unaided. In a series of studies, Luria and Vygotsky showed that a variety of techniques that induced subjects to regulate their behavior indirectly through language and artificial signs produced the same kind of remedial effects." (Cole and Engestrom, 1993, p. 10-11)

Outside of laboratory investigations, it seems that inventing mediational means is a commonplace method by which individuals organise their activity. This is well illustrated by studies of dieting cooks (de La Rocha, 1986). Dieters on a weight watchers program are required to precisely regulate their food intake. However, using standardised measuring devices - such as weighing scales and measuring cups - to achieve this can be somewhat cumbersome: it consumes time and generates extra washing up. New participants in the program initially used standardised measurement units and devices, but found that they could resolve the dilemma between obtaining precise measurements and the effort of using standardised measuring devices, by inventing their own measurement units and devices:

"Thus a process that had several stages on day one:

• Look up allowed serving size of a glass of milk. Get out the measuring cup, milk carton, and drinking glass. Pour milk in measuring cup. Pour milk from measuring cup into glass. Wash measuring cup and later the glass.

Became:

• Get out glass and milk carton. Pour milk into glass to just below the circle of blue flowers. (wash the glass)" (Lave, 1988, p.128)

Here, the drinking glass becomes an ‘invented’ measuring device. This device reorganises the activity of pouring a ‘serving’ of milk in a way that resolves a dilemma experienced by the dieter. Such inventions were common-place. The study identified 134 invented measuring devices (such as the drinking glass) and 72 invented measuring units (such as a “big” spoonful, and four swallows = four ounces (Lave, 1988)). These inventions may be understood as mediating artefacts in the dieters’ cooking.

In summary, the notion of artefact mediation has some implications for understanding cognition and cognitive change. The mediational triangle provides a way to consider the
structure of cognition. It insists that all (but the most basic) cognitive functions are mediated by, and therefore distributed through, artefacts. Because of the systemic relation between the elements of subject, object, and artefact, the minimal unit of cognitive analysis must be mediated action. Cognitive change is to be understood as reorganisation of this functional unit. One mechanism of cognitive change is the appropriation of mediating artefacts from the wider culture. Cognitive change may also involve the ‘invention’, and subsequent appropriation, of mediating artefacts, as we saw in the case of dieting cooks.

2.2.3 From artefact-mediation to participation in mediated practices

Having introduced the notion of artefact mediation, and having suggested that artefacts are central in shaping cognition and activity, I wish to caution against the assumption that artefacts have clear-cut ‘effects’ on cognition or activity. I suggest that it is not artefacts per se, but the nature of their incorporation into action, that is consequential. The nature of this incorporation is shaped by the social and cultural contexts in which artefacts are encountered and used. We will find that people are enculturated into particular practices. These are particular ways of using artefacts – particular ways of knowing, interpreting, understanding and doing – as a part of their participation in particular communities.

In the shift from considering artefact mediation to considering participation in mediated practices, we come to appreciate that that the social and cultural contexts of activity significantly shape the nature of our engagements with artefacts. We also come to an appreciation that mediated practices fundamentally (re)constitute our relations with the world. They are ways of interpreting, knowing and being in, the world.

Social context importantly shapes the way in which cultural artefacts are ‘taken on’ or ‘appropriated’ in activities. The circumstances in which artefacts are encountered and employed are deeply social. We see this in two respects. Artefacts are often encountered and used in interpersonal circumstances. For example, western children are often introduced to books through (among other practices) the interpersonal routine of the bedtime story (Heath, 1982). But, the conditions under which artefacts are experienced and appropriated are also ‘social’ in a more general sense: undergraduates write essays
because of their place in the institution of the university, with its deadlines, plagiarism rules and assessment procedures.

Artefacts are encountered differently and are put to different uses in different social circumstances. This is true for experiences of texts. Different members of the Vai people in Liberia have quite distinct experiences of texts (Scribner and Cole, 1981). Qur'anic schooled literates learn to read through a process of memorising and reciting the Koran. They use texts principally in religious recitation. Un schooled Vai literates tend to use (Vai script) texts in letter writing and business transactions. English-schooled Vai literates use (English) texts in their educational activities. Different social contexts clearly create different experiences of becoming literate and different purposes for using texts.

Scribner and Cole’s (1981) work suggests that artefacts do not have general cognitive effects on individuals. This conflicts with the cognitivist notion of artefacts as ‘cognitive tools’ that amplify, add to, or elaborate on, abstract domain-general cognitive processes ‘within’ an individual. The artefacts in clearest focus in Scribner and Cole’s work were texts. Prior to Scribner and Cole’s work, a perspective had developed that proposed a “great divide” between oral and literate peoples. Goody and Watt (1968) for example saw texts as embodying language that, unlike speech, is independent of context or ‘autonomous’. As a consequence of these characteristics of texts, literacy was thought to engender or amplify in human beings a general ability for decontextualised, abstract, or logical thinking. This conclusion appeared to be supported by Luria’s finding that schooled literates in Uzbekistan performed better in abstract reasoning tests than a comparison group of unschooled non-literates. Scribner and Cole noted the confound between schooling and literacy in that investigation. Their own comparative studies in Liberia included groups that were literate but had not received schooling. Using batteries of various cognitive tests they failed to find across-the-board ‘effects’ of literacy on task performance. However they did find that the various groups of literates performed better than non-literates on specifically those tasks that reflected their particular ways of relating with texts. For example, Qur'anic literates, who’s literacy practices involve memorising text in incrementally expanded portions, performed better than non-literates on an ‘incremental recall’ test of memory, but not on a test of free recall. Similarly, only the schooled literates - whose classroom literacy practices involve them in syllogistic
reasoning - performed better on a syllogistic reasoning task than non-literates. These results suggest that artefacts do not have inherent cognitive consequences; it is the practices into which they are incorporated that are consequential for cognitive development.

When investigating essay writing activity, it behoves us to go beyond registering the presence or absence of certain artefacts in activity and to consider the nature of their incorporation into practice. As we shall see in Chapter 3, survey based research has often attempted to relate the presence or absence of artefacts, such as notes and written plans, in undergraduate essay writing processes with outcome measures (e.g. Norton, 1990; Branthwaite, Trueman and Hartley, 1980). But this approach has failed to produce reliable findings; suggesting that more attention must be paid to how these artefacts are incorporated into practices. Similarly, experimental research on the ‘effects’ of word processing on writing, has generated inconsistent findings. This also suggests a need to consider the variable nature of artefacts’ incorporation into writing activity (Bruce, 1997).

Individuals’ relations with the world are heavily mediated by, and embedded in, artefact systems and social arrangements. Everyday activity involves not only encountering artefacts but also incorporating them into activity in certain ways, towards certain objects. The differing forms of literacy enacted by different Vai communities illustrates this. Similarly, in the West, insurance claim processors and claiming members of the general public approach claim forms with very different objects and incorporate them into very different practices (Wenger, 1998). They have very different ways of interpreting, making sense of, and generally of being in relation to these documents. Kuhn (1963) has discussed how specialised communities with distinct artefacts and practices, develop fundamentally different ways of constructing knowledge and different all-encompassing ‘worldviews’.

The term 'participation' is helpful in a number of respects. A participant in some event is not considered the event’s sole source, but as someone who “takes part” in it. Hence, we are reminded that the context or setting, in addition to the individual, shapes the practice we describe. When we ‘participate’ in something we are usually involved with other people in some common activity. Hence ‘participation’ also indexes social-interactive/collaborative aspects of practices, and a degree of social consensus about
them. Wenger (1998) has drawn attention to 'communities of practice' involving people linked by mutual engagement in a joint enterprise that involves a shared repertoire of communal resources. His work (1998; Lave and Wenger, 1991) re-frames learning as a trajectory of participation in such communities. This perspective suggests that knowing exists in practical relations with the social world (as opposed to in abstract propositions) and highlights the importance of access to the resources and members of some community. In later chapters (especially Chapter 6, 'Contexts of Participation') I will address these issues.

2.2.4 Activity theory: a descriptive framework of human behaviour

In section 2.3.3, I claimed that (artefact mediated) action must be considered in social context. It creates the conditions for exposure to artefacts, and shapes the objects towards which action is directed. These observations are incorporated in the shift from a focus on 'artefact mediation' per se, to a focus on the social practices into which artefacts are incorporated.

In this section, I will present activity theory as a framework, for conducting empirical investigations into undergraduate essay writing and for analysing the resulting data. Activity theory’s main contribution, for my purposes, is in explicitly extending the structure of tool mediated action to include mediation by (other elements of) the social context. It also suggests that empirical investigation might usefully take place through a set of empirical frames aimed at different levels of the same activity – an approach that is adopted in this thesis.

2.2.4.1 ‘Activity’ as a unit of analysis

Activity theory began as a development from Vygotsky’s approach to object-oriented and artefact-mediated action. Vygotsky’s colleague Leont’ev was central in developing activity theory. Engestrom (1987) developed it further, and was prominent in bringing it to the West.

Activity theory is particularly clear in its emphasis on human relations with the objective material world. Activity theory’s materialism is manifest in its insistence that its unit of analysis is not something purely ideal or ‘mental’, but is embodied activity:
"activity is the non-additive, molar unit of life for the material, corporeal subject. In a narrower sense (i.e., on the psychological level) it is the unit of life that is mediated by mental reflection. The real function of this unit is to orient the subject in the world of objects. In other words, activity is not a reaction or aggregate of reactions, but a system with its own structure, its own internal transformations, and its own development" (Leont’ev, 1981a p. 46).

Here Leont’ev suggests that “mental reflection” mediates activity or is a constitutive element in activity. He makes it clear that ‘activity’ – a system with its own structure and development – cannot be reduced to ‘mental reflection’. Activity then, is the proper unit of analysis.

Activity systems may incorporate not only individuals, but also organised collectives – such as businesses, professions, universities and academic disciplines. Activity theory also insists that individual action be understood as embedded in such systems. Leont’ev was keenly aware that in human cultures, individual action is shaped by social contexts: "performed in conditions of joint, collective activity ... Only through a relation with other people does man relate to nature itself, which means that labour appears from the very beginning as a process mediated by tools (in the broad sense) and at the same time mediated socially." (Leont'ev, 1981a, p. 208). Hence social conditions are seen to mediate activity.

Activity theory expands the basic mediational triangle presented by Vygotsky to incorporate the mediation of other elements of social context. This was first represented graphically by Engestrom (1987), as seen in figure 2.2.
The elements of the activity system can be illustrated further by their application to the work of a doctor in a primary care clinic (Engestrom, 1993). The object of his work is the patients. The main outcome of the activity is change in health status. The instruments include such artefacts as stethoscopes, X-rays, medical records and also concepts from biomedical or holistic medicine. The community consists of people who share the same object - in this case the clinic’s staff. The division of labour determines the tasks and powers of the various clinic staff. The rules regulate the use of time, and how the performance of the physician is measured.

2.2.4.2 Activity as hierarchically structured

One of the key principles of activity theory is that activity has hierarchical structure. The activity itself is the top level. It is realised by actions, which in turn are realised by operations. Activities, actions, and operations are understood to be oriented to/by different phenomena.

- Activity is understood as a collective phenomenon. It is oriented towards an object related motive.

- Actions realise activities. They may be carried out by individuals or groups. Actions are oriented towards (more or less) consciously held goals.

- Operations are carried out by humans or by machines. They are oriented towards the conditions and tools of the actions that they realise.
Some examples may clarify these distinctions. Activity theory insists that an activity is identified by a primary object or motive. For a primal collective hunt (Leont’ev, 1981b) this motive may be to eat. One member of the hunt may be assigned the action of driving an animal away from himself, towards other community members waiting in ambush. This individual's action and its goal do not support the motive of eating directly. Only the combination of the various goal-oriented actions performed by the members of the collective achieve the overall motive. The goal of scaring away the animal is in turn realised through collections of basic operations that require little conscious control. One such operation might be running toward the animal. The running operation would be unconsciously ‘oriented to’, or shaped by, material conditions and tools such as the terrain and quality of footwear.

One of the principles of this theory is that of ‘operationalization’: what start off as conscious goal directed actions, often become unconscious routine operations. In fact, Leont’ev asserts that all operations have their origins as conscious actions. He illustrates with the classic example of driving a car:

"Initially every operation, such as shifting gears, is formed as an action subordinated specifically to this goal and has its own conscious 'orientation basis'. Subsequently this action is included in another action, ... for example, changing the speed of the car. Now shifting gears becomes one of the methods for attaining the goal, the operation that effects the change in speed, and shifting gears now ceases to be accomplished as a specific goal-oriented process: Its goal is not isolated. For the consciousness of the driver, shifting gears in normal circumstances is as if it did not exist. He does something else: He moves the car from a place, climbs steep grades, drives the car fast, stops at a given place, etc." (Leont'ev, 1978, p. 66).

Through repeated application, conscious actions become unconscious operations.

The phenomenon of operationalization points to one of the advantages of organising activities so that they are realised by familiar means. Actions that are repeatedly enacted become less demanding as they become routine operations, and no longer require conscious orientation. Findings in the present thesis will suggest that many of the students’ relations with documents have become operationalized through repeated enactment. While recognising the inherent advantages of this, I will suggest that one of its drawbacks is that these unconscious operations are ‘taken for granted’, and receive less conscious reflection than might be appropriate.
2.2.4.3 Routine, improvisation, and development in activity systems

Although Lave's account of 'cognition in practice' is focused upon the action of individuals, whereas activity theory encompasses collective activity, they account for historical continuity and change in very similar ways.

In describing activity systems, Cole and Engestrom (1993), like Lave (1988), point to a tendency for the (re)production of 'routine' by an inherently flexible and adaptive system whose innovations are a source of development:

"Another important feature of activity as a basic unit of analysis is that when activities become institutionalised, they are rather robust and enduring ... In fact, activity systems such as those that take place in schools and doctors' offices, for example, appear to reproduce similar actions and outcomes over and over again in a seemingly monotonous and repetitive manner.... However, closer analysis of apparently unchanging activity systems reveals that transitions and reorganisations are constantly going on within and between activity systems as a fundamental part of the dynamics of human evolution. Consequently, activity systems are best viewed as complex formations in which equilibrium is an exception and tensions, disturbances, and local innovations are the rule and the engine of change. When an activity system is followed through time, qualitative overall transformations may also be found. Institutionalized activity systems seem to move through developmental cycles that typically last years" (Cole and Engestrom, 1993, p. 8-9).

In Lave's analysis of everyday activity, practices develop through the resolution of 'snags' or unresolved dilemmas. Similarly in activity theory, activity systems are understood to develop through the resolution of 'contradictions' within and between activity systems. New forms of activity develop in response to limitations of the previous forms.

2.3 Implications of a cultural psychological approach

In this chapter, I have presented a theoretical perspective on cognition and action that might profitably be applied in an investigation of undergraduate essay writing. Cultural psychology (which here defines a broad approach incorporating insights from situated cognition and from activity theory) emphasises issues raised in my research questions. The two themes of 'context' and 'history' are central to a cultural psychological perspective on cognition and action.
Cultural psychology insists that cognition and action are embedded in context. In Chapter 1, I outlined an interest in understanding the roles of material and technological resources, other people, and institutional arrangements in essay production. We have seen that, through the concept of mediation, cultural psychology insists upon the constitutive nature of these contexts.

Cultural psychology also insists on a historical perspective. In Chapter 1, I expressed a concern for essay production as a process - something structured in time. The concept of history in cultural psychology applies even to the very short term unfolding of cognition and action in particular instances of thinking and doing. This level of history - "the short term formation of a psychological process" (Wertsch, 1985, p. 55) - may be termed 'microgenesis'. Hence cultural psychology allows us to understand essay production as a process involving mediational means.

Another level of history also has clear relevance to the present investigation. Cultural psychology also emphasises development at the level of the individual. Ontogenesis is described by Saxe (in press) as "developmental shifts in the structure of individuals' repeated efforts to create and accomplish recurrent goals in practices." Cultural psychology suggests that we should understand current instances of essay production in relation to individuals' histories of previous experience. It also considers individual development in terms of changing relations with socio-cultural contexts and resources.

Because cultural psychology directly contradicts some of the assumptions of cognitive psychology, empirical investigations into cognition and action have the potential to contribute to the debate between the two approaches. Cultural psychology offers then, not only principles for investigating (in this case) essay production, but also a different set of assumptions about the nature of cognition and action. Investigations into essay production then, not only have the potential to benefit from a cultural psychological view, but may also provide empirical evidence in support of, or in tension with, each of the two approaches.

In Chapter 3, I will review some alternative studies and approaches, and outline a cultural psychological approach to essay production.
Chapter 3 Approaches to essay production

I have characterised student essay production as an interesting, important and challenging area for research, and identified cultural psychology as a theoretical framework that appears well equipped to meet that challenge. Cultural psychology suggests that we might investigate essay production as involving contexts of various kinds, as a process (of microgenesis) and as more broadly historical.

This chapter will be comprised by two main sections.

In section 3.1, I will review studies of undergraduate essay production conducted from other theoretical approaches. These studies contribute valuable insights into essay production. However, we shall see that while the various approaches to literacy and essay production have their own strengths, none fully address the specific concerns I set out in chapters one and two.

In section 3.2, I will outline a cultural psychological approach to investigating essay writing. I will present some existing research into student writing that is closely aligned with the cultural psychological perspective. I will then, in the light of the reviewed literature, rehearse the particular issues that will be the focus of this investigation. Finally, I will propose that these issues may be investigated by three complementary studies, constituting complementary 'lenses' or 'levels' of analysis.

3.1 Review of research outside of cultural psychology

Many studies have been conducted into essay writing, using numerous methodologies and various theoretical approaches. In this section I will review this research. This will enable us to accumulate insights into essay production, identify areas for further research, and establish relations between cultural psychology and alternative theoretical perspectives on essay production and literacy.

In accordance with my current concern for addressing authentic richly resourced coursework essay production, this review will focus particularly on studies of students writing in authentic contexts. A helpful way of organising this large corpus of literature is to categorise studies according to their theoretical orientations. A great, and potentially bewildering (Kennedy, 1998), diversity of theoretical perspectives on literacy exist. The
category scheme of theoretical orientations that I will employ is not an attempt to present a comprehensive overview of theoretical perspectives; it reflects the theoretical orientations that may be attributed to those studies of essay production that appear most relevant to the present investigation.

The order in which I will discuss the various approaches to essay production will roughly reflect an increasing concern for context. Distinguishing approaches by concern for context is not new. Bizzell (1982) influentially distinguished between inner-directed (typically cognitive) and outer directed ('social') approaches to literacy. Lea and Street (1998) distinguish three 'nested' approaches to academic literacy: successive approaches taking increasingly encompassing views of context. As we shall see in section 3.1.5, the first two approaches I will review correspond most closely to the narrowest view identified by Street and Lea (1998), which they term 'Study Skills'. My third and forth categories correspond to their next most encompassing, 'Academic Socialisation' approach. The last of the five approaches I describe corresponds to their own preferred 'Academic Literacies' approach.

3.1.1 'Cognitive' research

Probably the most influential cognitive model of writing is that of Hayes and Flower (1980; Flower and Hayes, 1980). Hayes and Flower (1980) analysed think-aloud protocols elicited from participants composing under laboratory conditions. In their model, writing is understood as a mentally demanding activity involving constraints such as limited knowledge, basic language conventions (e.g. grammar and spelling) and rhetorical purpose. According to the model, writing occurs as a cognitive process of problem solving. Typical of the cognitive perspective, this process is seen as achieved through a limited set of context-independent processes. Three general processes are identified: planning, translating, and revising. These are achieved through component sub-processes (for example, 'planning' includes 'generating ideas', 'organising ideas', and 'setting goals'). There is no set linear pattern for the processes; they may occur in repeated iterations or be hierarchically embedded. Hence different temporal patterns, or sequences of these processes, can be identified and compared. The processes of writing are strictly separable from context. "Our model describes the writing process. The task environment and the writer's long term memory are the context in which the model operates" (Hayes and Flower, 1980, p. 11). Although "[t]he task environment includes
everything outside the writer's skin that influences the performance of the task" (ibid. p. 13) only the topic, intended audience, and text produced so far are usually considered.

Bereiter and Scardamalia (1987) presented an influential cognitive developmental model of writing. Central to their model is a distinction between two kinds of writing process, in which knowledge is used in different ways. They explain the difference between novice 'knowledge telling' and expert 'knowledge transforming' in terms of two mental 'problem spaces'. The content space consists of ideas, attitudes, beliefs, etc. The rhetorical space contains representations, however abstract, of the finished text. Knowledge transformation occurs when the two spaces influence each other mutually in a 'reflective cycle'. Younger writers have not developed this capacity for knowledge transformation, and their processes of composition reflect this. Younger writers are characterised as engaged in less planning and goal setting, "making the order of presentation correspond to the order of idea generation (Flower, 1979) and limiting revision to cosmetic improvements (that is improvements that can be worked out entirely within the rhetorical space)." (Bereiter and Scardamalia, 1987, p. 304).

Regarding investigations into undergraduate essay writing, the cognitive perspective tends to favour laboratory-based studies over studies of authentic activity. Laboratory situations often isolate individuals from authentic contexts: participants typically write without source texts, in single short sessions, isolated from interpersonal contact, divorced from usual motivations and institutional contexts, and often in an unfamiliar genre. These studies are not reviewed here, as such contexts are a prime concern for this thesis. However, cognitive psychologists at the University of Birmingham (Torrance, Thomas and Robinson, 1999; 2000; Torrance, 1996) have conducted a number of studies of authentic essay production using various methodologies.

Torrance (1996) used writing diaries (supplemented with analysis of written materials and periodic think-aloud protocols) to conduct case studies of the writing 'strategies' of three 3rd year undergraduates, each writing a long essay. After each hour of work, participants reported approximately how many minutes they spent engaged in different 'activities'. The 'activities' were; 'planning', 'rough drafting', 'reading your own text', 'reading references', 'note taking', 'writing final version' and 'revising'.
Torrance used the data to argue that these (reasonably successful) students were engaging in little substantial 'knowledge transformation'. There was a general lack of planning and revising activities. Torrance argued that, when writing in a familiar genre, the kind of detailed goal setting and planning thought characteristic of mature writers is not necessary. He argues that these 'experts', like experts in other domains, do not engage in complex problem solving but draw upon previously acquired knowledge (of producing text in the text genre of essays) and not on the use of problem-solving strategies.

In a larger study, Torrance, Thomas and Robinson (1999) used self-report data, collected concurrently with writing, to investigate consistency in undergraduates' writing strategies. Seventeen students studying for a degree in psychology at the university of Birmingham participated for each of two essays. Throughout any period of working on an essay, participants were repeatedly signalled (by audible, 'bleeps') to classify their activity at the current moment. The bleeps were randomly spaced and occurred, on average, every 110 seconds. Twelve categories of 'activity' were used. These were collapsed in the analysis to 5 categories: collecting, planning, translating, revising, and neat copying.

From these data it was possible, using statistical analysis, to identify three 'strategies', or patterns of writing activity over time. This was done by calculating, for each essay, the proportion of each tenth period of the total working time that was spent on each category of activity. Cluster analysis of these data yielded three 'strategies' or 'procedures'. However, no significant relations could be found between strategy and time taken, or between strategy and grades.

The most striking finding of this study was the high degree of intra-participant consistency in 'strategies'. 13 of the 17 (76%) students who produced two essays had both their essays classified into the same 'strategy'. This was significantly more than could be expected by chance. Whereas it had previously been assumed that writers develop consistent strategies of essay production, the little existing data on this had come, almost exclusively, from retrospective self-report.

The third study (Torrance, Thomas and Robinson, 2000) investigated the writing 'strategies' of undergraduates using large-scale retrospective questionnaires. A total of 322 students at various stages of a degree in Psychology took part in the study.
Data showed that the questionnaire items on process could be reduced to four factors, which were termed 'multiple drafting', 'development during writing', 'outlining', and 'exploration'. Statistical analysis showed a small but significant positive relation between the 'exploration' factor and marks. This is positive evidence for the value of techniques associated with 'transforming knowledge'.

Using factor analytic techniques, they identified four 'strategies' that loaded differently onto these factors. Analysis of variance showed that the 'strategy' variable was significantly related to marks. However, despite the large sample, there were no significant pair-wise comparisons between strategies.

Torrance et al. (2000) also found within-student consistency in 'strategies'. 48 students in the sample had completed the questionnaire over the full 3 years of undergraduate study (each producing between five and nine essays). On average, two thirds of the essays by any individual were written using the same strategy. No trend of changes in strategy with experience was found.

3.1.1.1 Summary of the 'cognitive' research

The cognitive psychological approach makes some positive contributions to the study of literacy. In addressing writing as a problem solving process, cognitive psychology characterises writing as intellectually demanding. It pays close attention to writing as a process, often attending to fine temporal detail. The authentic essay production studies reviewed here focused on describing essay writing as sequences of component processes, and demonstrate some intra-individual consistency in these sequences.

The cognitive studies of authentic essay production described here fail to address important aspects of context. Although these studies are of writing in authentic contexts, the unit of analysis appears to be a disembodied individual mind. Hence there is no mention of participants consulting (or not) with other people when writing their essays. Nor is there any sense of writing as directed towards the demands of a particular institution, nor of taking place in the physical setting of that institution. The uses that students make of technologies, such as paper and computers are addressed rather superficially. Unavoidably, contact with other documents is mentioned, but the various
ways in which documents are used in the process of essay production are not addressed depth.

Consistent with criticisms presented in Chapter 2, the charge of neglecting context is applicable not only to cognitive research on undergraduate essay production, but also to cognitive perspectives on writing in general (Bizzell, 1982). These criticisms have focused on diverse aspects of context. The cognitive view has been criticised for neglecting the roles of language in thought (Nystrand, Greene and Wiemelt, 1993), for neglecting material technologies and external representations (Sharples and Pemberton, 1992) and for neglecting writer's relations with others in the social world (Dyson, 1993). Criticisms such as these will be echoed as I survey other studies on essay production, conducted from other perspectives.

3.1.2 'Factorial' research

The studies reviewed in the present section attempt to identify 'success factors' in essay writing through statistical correlation. These studies address, as potential success factors, aspects of context excluded from 'cognitive' investigations. Research questions common to these studies are, 'What component processes are associated with good grades?', and 'Are these processes also those suggested by official advice in study guides and departmental guidelines?'. Data on essay writing processes are collected through the retrospective self report of large numbers of students, and related through statistical techniques to outcome measures - typically the essay grade. Three studies will be reviewed: Branthwaite, Trueman and Hartley (1980), Norton (1990) and Mahalski (1992).

Branthwaite, Trueman and Hartley (1980) studied the essay writing behaviours of students taking a subsidiary psychology course at Keele University. There was a mixture of first, second and third years on the course. 82 students completed questionnaires in which they answered Yes/No questions about the behaviours they engaged in when writing a specific essay. The research focused on: what students perceived to be the desirable attributes of an essay; how they set about producing their essay; and whether or not their behaviours changed over time.
Participants were asked questions that addressed essay production as action that may be organised in various ways through various approaches to the task, and to resources such as books, articles, deadlines, peers, tutors, written outlines, written schedules, etc. They answered 15 Yes/No questions about component behaviours. These included, did you: make a written plan of the essay structure?; give the essay to someone else to read before handing it in?; try to draw your own conclusions and present your own ideas? They also gave additional information about how many books and articles they used and how long before handing in they began working on their essays. Interestingly, only one individual measure of process was significantly related to marks for all the students as a whole. This was, "leave[ing] time for reflection between finishing the reading for the essay and starting writing the essay". Attempts were also made to relate performance, first, to the number of strategies participants used, and second, to the weighted number of components used (where components were weighted for their importance in discriminating performance). Neither of these analyses reached statistical significance. We may conclude that relations between processes and products were not sufficiently straightforward and strong to be illuminated by these basic measures of process (Yes/No answers) and of product (grades).

Students appeared to differ considerably from the course tutors (who marked their essays) in what they thought were relevant marking criteria. Participants listed "What things do you think tutors look for when assessing essays?" and the seven tutors involved in setting and marking the course answered the same question. Criteria listed by the two groups were different. For example, students most commonly listed 'originality', but this was never mentioned by the tutors. Similarly, students rated 'understanding' and 'use of their own opinion' higher than did tutors, who appeared to be more concerned with 'evidence', 'reading', 'relevance', and 'structure/organisation'.

Although no clear relations between processes and products were found, it was possible to find relations between participants' understanding of criteria and their marks. Relations between students' marks and the criteria they saw as relevant are consistent with the appearance that students suffered from being too relativistic. "Students who believed in the value of presenting 'evidence' did better than those who did not (p<0.1), whereas those who believed in presenting their own opinions or (surprisingly) a critical interpretation did worse (p < 0.1, p < .05 respectively)." (Branthwaite et al. 1980, p.
104-5). These relations between students’ criteria and marks suggest that students' understandings of what is required are important mediators of their essay writing.

Statistical analysis showed that students in different years approached their essays differently. There were no significant differences between years in individual behaviours, but discriminant function analysis suggested that first years tended to work hard on their essay, starting late and working individually. Second years, by contrast, appeared to approach essay production differently, "they were confident, self assertive and in control. They worked only a moderate amount and they were more inclined to discuss what they were doing with their friends" (p. 104). Differences in approaches between first and second years could be said to reflect common trajectories of participation in academic life. The authors suggest that the changes could be brought about by either a re-evaluation of strategies that takes place under heavy end-of-year work loads, or by changes in the social relations of first and second year students – including making friends, and learning efficient approaches to study from more experienced students. This is interesting from a cultural psychological view, in which changed relations with contextual resources constitute development.

Norton (1990) also studied students' activities and the mismatches between tutors' and students' understood criteria. 98 preliminary-year students on a psychology course completed a questionnaire about how they produced their last essay. Like Branthwaite et al (1980), Norton (1990) failed to find any striking relations between processes and grades. Of the many behaviours investigated, few were significantly related to marks. However, there was a small but significant correlation between number of books used and grades, and despite no significant correlation between time spent and grades, Norton did find that participants that reported spending less than seven hours on the essay did significantly worse. Other measures - such as number of drafts, planning strategy and discussing the essay with others, were not significantly correlated with grades. It seems that relations between processes and products are too subtle or too complex and contingent to be captured by these coarse data and large-scale analyses.

Also like Branthwaite et al (1980), Norton (1990) found differences between participants' and tutors' beliefs about assessment criteria. Students appeared to place greater emphasis on 'knowledge/content', whereas tutors were more concerned with 'understanding' and 'argument'. Simple content analyses of essays found significant
differences in the content of high and low scoring essays. Norton links this finding with the differences between students' and tutors' perceived criteria, "Factual descriptive information (i.e. content/knowledge ranked highly by students and not at all by tutors) was significantly greater in the low scoring essays than in the high scoring essays." (Norton, 1990, p. 429). These data then, suggest that participants' understandings about what is required of them differ from tutors, and may be linked to levels of success in essay writing.

Mahalski (1992) conducted a study broadly similar to Norton's (1990), but using an interview method. Twenty eight geography students at a New Zealand university took part. Again there was a notable general absence of significant relations between measures of process and marks. However a significant positive correlation between number of drafts and grades awarded by tutors was found, although there was no significant relation between the lecturer/researchers marks and grades. Like the other studies, Mahalski failed to find a significant relation between marks and the presence or absence of a written plan. Students (excepting the three who brought their original essay plans to the interview) were also asked to recreate their essay plans in the interview. There was a significant relationship between the number of main topics in the 'plans' and marks. However, because all but three of these 'plans' were "recreated" in the interview this evidence provides little insight into the authentic roles of essay plans in document production.

3.1.2.1 Summary of the 'factorial' research

The studies described in this section may be characterised generally as adopting the approach of attempting to identify various success factors in essay production. They used retrospective report, usually large-scale questionnaires, to take basic measures of students' essay writing processes, and attempted to relate these to marks.

One of the strengths of these studies, from the perspective of the present thesis, is that they show that students may organise their essay production in different ways, with respect to the available resources. Each individual may, or may not, make notes and essay plans, discuss their essays with friends and tutors, make drafts, read more or fewer books and journals, use more or less of the time until the deadline, etc. Data were collected on each of these issues. Interestingly, Branthwaite et al. (1980), through
combining various measures, were able to characterise students across different years as differing in the way they organised or approached the production of their essays, largely in terms of such engagements.

However, the value of these studies is rather limited. They generally fail in their aim to contribute useful relations between process and outcome. Part of the problem may be the coarseness of the measures. Although overall grade, for example, is a relevant measure of global text quality, it may tell us little about the learning that occurs in producing the essay, and falls far short of expressing all that is relevant and interesting about the text. Process measures were rarely more than a collection of binary distinctions that capture few of the subtleties of process. More sensitive measures might lead to greater insights, as suggested by Mahalski's (1992) failure in relating the presence or absence of plans to grades, but success in relating a more sophisticated measure (number of topics included in reconstructed plans) to grades. In adopting a correlational, 'success factor' approach, the studies provide little sense of how different individuals bring together component processes into a complete, coherent essay production process. Little insight could be gained into the temporal organisation of essay production as an extended process, unfolding in time.

The studies reviewed in this section do not draw upon, nor contribute strongly to, theoretical understandings of essay production. Their general failure to find direct empirical relations between coarse measures of process and essay products suggests a need for more theoretically informed approaches to the complex phenomenon of essay production.

3.1.3 'Phenomenographic' research

The 'cognitive' and 'factorial' research described in the preceding sections addressed essay-writing processes without serious concern for how students experience, and what sense they make of, the topics about which they are writing. A central aim in these studies was to relate processes to academic success, or failure. In general, they failed to find robust and compelling relations between processes (thus measured) and grades. However when basic measures of students interpretations of requirements were taken, these tended to be the strongest predictors of success. This suggests that students' own interpretations and understandings of what they are doing merit closer attention.
Phenomenographic approaches to student learning (Marton and Saljo, 1976; Marton, Entwistle and Hounsell, 1984) and to essay writing focus heavily upon the experiences of learners. Whereas cognitive and factorial approaches investigate writing in terms of component processes, almost as though independent of content and meaning, phenomenographic approaches attend closely to students' beliefs about learning and study, and to how they experience and make sense of the topics they study and write about. Through taking a 'second order' (Marton, 1981) perspective that keenly addresses the experiences of the learner, the phenomenographic approach links processes of study to forms of learning or ways of knowing. Typical of the phenomenographic approach is, "a simultaneous concern for how students learn as well as what they learn. The 'how' of learning consists of general strategies of studying that students use... The 'what' of learning... concerns the central issue of how students interpret and comprehend what they encounter in teaching and learning." (Saljo, 1988 p. 35).

One of the key sources for phenomenographic perspectives on student learning is Perry’s (1970) ethnographic investigation of students at university. Perry found learning difficulties experienced by students at university to be underpinned by differences between students and staff in conceptions of learning. Perry described how university students gradually changed from absolutist epistemologies centred upon discrete facts, to more relativistic epistemologies typical of academic staff.

These conceptions have been related to the ways in which students set about academic tasks – their 'approaches' to learning/studying. Marton and Saljo (1976) asked students to read an article knowing that they would be asked questions about it afterwards. In interview, students were then asked about the content of the article, and also about how they went about reading it.

"The first way of setting about the learning task was characterised by a blind spasmodic attempt to memorise the text: these learners seemed, metaphorically speaking, to see themselves as empty vessels, more or less to be filled with the words on the pages. In the second case the students tried to understand the message by looking for relations between the text and phenomena of the real world, or by looking for relations between the text and its underlying structure. These learners seemed to have seen themselves as creators of knowledge who have to use their capabilities to make critical judgements, logical conclusions and come up with their own ideas." (Marton and Saljo, 1984, p. 40).
These two alternatives have been described respectively as "surface" and "deep" approaches. In the study, and in numerous subsequent investigations (Watkins, 1983; van Rossum and Schenk, 1984) strong and significant relations were found between these "approaches" and "learning outcomes". Deep approaches lead not only to more sophisticated understandings of texts, but also to better long-term retention.

Hounsell (1984b) employed a phenomenographic interview approach to investigate the essay writing of students at Lancaster University. Seventeen history students and 16 psychology students were interviewed after producing each of two coursework essays. Interviews focused particularly on students' aims in essay writing. From these interviews, Hounsell identified some variation between students in what they thought was required of them. These different 'conceptions' were described as "not confined to a single essay task but appeared to be applicable across the various essay tasks recounted in the two interviews. Moreover [they] seemed to be mirrored in students' more general observations about the nature of essays and essay writing in the course unit and discipline concerned." (p. 21). A student's 'essay conception' reflects the purpose towards which efforts are directed.

The different conceptions may be understood as different ways of conceiving relations between three 'elements' of essays. These elements were also identified from the interview data. The elements are: data, the raw material or subject matter; organisation, the structure or sequencing on the essay, and; interpretation, the meaning(s) given to the material by the student. In the more sophisticated conceptions - called 'cogency' (in psychology) or 'argument' (history) - interpretation is super-ordinate to data and organisation. Hence essays are made coherent by organising them under some interpretative stance. In the less sophisticated conceptions - called 'relevance' (psychology) or 'arrangement' (history) - no clearly articulated relation between the three elements exists: Essays are seen as collections of relevant data and opinions, but no overall interpretation or stance is applied, and essays may be organised under more arbitrary principles.

Based upon what was said in interview, Hounsell also identified five distinct planning strategies, independently of conceptions (see figure 3.1).
**No plan** - A written or external plan is not used.

**Inventory** - This is a catalogue of intended content, but it does not aspire to completeness or set out the sequence to be followed.

**Basic** - This is the recognised standard plan. It aspires to completeness and sequence.

**Extended** - Here the basic plan technique is elaborated so that the students’ notes are categorised according to headings or sub headings in the plan.

**Evolving** - Here planning, however tentative or provisional it may be, is initiated from the outset, rather than largely postponed until reading and note taking has been completed, as is the case in the other techniques.

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Figure 3.1. *The five planning strategies identified by Hounsell (1984b).*

Planning strategy (a more subtle measure than the simple presence or absence of a plan) appeared to be related to students’ essay conceptions. Although the sample was small, and no tests of statistical significance are presented, students with the more sophisticated essay conceptions more often used the more sophisticated (basic, extended, or evolving) plans.

Furthermore, planning strategy and conceptions (themselves correlated) also appear to be related to students’ academic performance. Participants with more sophisticated conceptions and planning strategies not only appeared to score better in their coursework marks, but also, it seems, more often achieved at least an upper-second class overall degree result. So it seems that 'conceptions' shape essay products, and are related to overall academic performance.

Prosser and Webb (1994) complemented Hounsell's research by examining students' 'essay conceptions' and 'approaches' to essay writing, and relating these to both traditional and functional linguistic measures of the essay product. They conducted semi-structured interviews with nineteen students on an introductory sociology course at the University of Sydney.

From interviews, they identified two 'conceptions' of essays, similar to those identified by Hounsell. Prosser and Webb named the conceptions using terms provided by Biggs and Collis (1982). In their, less sophisticated, 'multi-structural' conception, "the essay was conceived of as a collection of points, each relating to the topic, but not contributing..."
to a whole view of the topic". In the more sophisticated 'relational' conception, an essay is conceived as a structured 'argument'.

In addition to identifying participants' 'conceptions', Prosser and Webb also considered how participants went about producing their essays - their 'approach'. Following Marton (1988) they distinguished between 'surface' and 'deep' approaches. A surface approach to reading would be to take down key points: a deep approach would involve relating meanings and viewpoints to each other in the pursuit of a coherent argument (see table 3.1 for further examples).

Unsurprisingly, participants' 'conceptions' and 'approaches' were related. 8 of the 13 subjects that were categorised as having the less sophisticated 'multi-structural' conception, had an approach that was categorised as 'definitely surface'. The remaining five were described as having a 'probably surface' approach. Of the six students with the relational conception, five were described as having a 'definitely deep' approach, with the other described as having a 'probably deep' approach. This correlation is further evidence of a close relationship between conception and process.

Prosser and Webb were also able to relate their 'approach' measure of process to various measures of product quality. They found a strong, and statistically highly significant, positive correlation between the mark obtained and participants' approaches (as scored from 1 (definitely surface) to 4 (definitely deep)). This study supports the existence of a relationship between participants' conceptions and approaches and their final texts.

Campbell, Smith and Brooker (1998) conducted another interview study of students' essay aims, approaches, and products. Forty-six undergraduate students were interviewed. They comprised a mixture of 1st and 3rd year B.Ed. students at the Queensland University of Technology.

Campbell et al attempted to relate approaches to each stage of essay writing, with characteristics of finished essays. They classified participants' approaches to each component as 'deep' or 'surface'. Table 3.1 shows how each component behaviour was dichotomised into 'deep' or 'surface' approaches.
Table 3.1. Campbell et al.'s (1998) classification of deep and surface approaches to component behaviours in essay writing.

Campbell et al. found significant relations between approaches to each of these components and essay quality. They measured essay quality by classifying the essays according to the SOLO taxonomy of learning outcomes (Biggs and Collis, 1982). This measure was positively and significantly correlated with marks. Chi-squared statistics were calculated to test for a relationship between the approach to each component and the SOLO classification of essays. The approach to each component was significantly related to essays' conceptual structures ($p < 0.01$).

These authors also revisited the issue of students' misperceptions of essay criteria. From widely circulated departmental essay marking criteria, the investigators took three concepts that previous literature had shown to be problematic for students: 'organisation', 'synthesis', and 'critical evaluation'. It was demonstrated that students' ability to provide (nearly) conventional definitions for these terms was related to the sophistication of their essays. Campbell et al. (1998) suggest that students' underlying 'conceptions' limit the successful communication of essay requirements between staff and students.

3.1.3.1 Summary of the 'phenomenographic' research

These studies highlight the critical importance of meaning in student's essay production. They highlight important variation in students' epistemological positions and understandings about requirements - their 'conceptions'. Further, they provide significant insights into essay production by characterising process as directed towards creating different kinds of meanings or as treating and organising information/content in different kinds of ways. These powerful insights should be carried into further research into essay production.

The research described in the following section, for example, addresses the different meanings students make in a writing task. It also describes writing processes in fine
temporal detail (through the use of spoken protocols) and begins to relate these to personal history and social context.

3.1.4 'Social cognitive' research

In this section I will review a research project conducted at Carnegie Mellon University (Flower, Stein, Ackerman, Kantz, McCormick and Peck, 1990) as an attempt to investigate student writing as both a social and cognitive process. This project may be understood as an attempt to bring together cognitive and social perspectives on literacy that were in tension throughout the 1980's (e.g. Bizzell, 1982; Berlin, 1982). They term this a 'social cognitive' approach (Flower et al. 1990; Flower, 1994).

Flower et al. (1990) studied the composition processes of students engaged in a task with some similarities to what we might characterise as a typical essay in a British university. As part of a course in composition, participants were given pre-fabricated 'notes' on a topic and were asked to write about that topic, based upon the notes provided. Data were collected using interviews, protocol analysis and analysis of the texts produced. The study also included a phase of revising the original text.

In keeping with the findings from phenomenographic research, students were found to differ markedly in how they understood or represented 'the same' writing task; some students attempted merely to summarise the readings, others attempted to review and comment upon them and others attempted to synthesise the material or use it to address an issue of their choice. Students also varied in their 'strategies' for completing the task. For example, 'strategies' included using the text as a springboard for their own ideas, listing each main point in the notes and dividing the material into separate camps. Close temporal analysis of the protocols revealed that students dynamically re-presented the task for themselves and shifted between strategies throughout their reading and writing processes.

This research highlighted the strategic nature of the task. Flower (1990b) argued that students' difficulties in writing could be explained in terms of strategic knowledge as opposed to their lacking basic cognitive skills (as was prevalent in the cognitive perspective). These strategic skills involved reading the rhetorical situation, setting
appropriate goals, access to the strategies necessary to meet these goals, and the ability to reflect upon one’s goals and strategies.

This research invites us to understand the task as organised through the selective application of cognitive strategies. Interestingly, students appear to have limited repertoires of strategies. They often apply their 'standard' strategies unreflectively, and are often unaware of alternative strategies outside of their own repertoires (Flower, 1990a). Ackerman (1990) suggests that these strategies are developed through personal histories of culturally organised experiences (although these histories are not addressed empirically in any detail). This is one way in which we might understand the role of personal history in document production.

3.1.4.1 Summary of the 'social cognitive' research

This research makes useful contributions to our understanding of undergraduate writing. It addresses the variability in how students 'represent' the writing task, and expresses this representation as dynamically negotiated. It stresses the strategic nature of the task, and proposes that personal history shapes document production through the development of a personal repertoire of strategies.

However, the task under investigation lacked certain aspects of European coursework that would have particular relevance to the present enquiry. The basic task was a relatively short one that could be completed in a single session. Hence the issue of how essay production is organised over numerous sessions and locations is excluded. Students were supplied with a single inauthentic set of notes, and therefore did not become involved in selecting and consulting numerous source texts. Further removing it from authentic European essays, the task was an unusually open-ended request to write about a topic unrelated to the class or discipline ('composition') in which it was set.

Beyond these limitations of context, the study provides an account that, from the present perspective, seems curiously disembodied. The materiality of the cultural environment has no clear place in the analyses. For example, the study included a revision task, and although the technologies available make crucial differences to how revision can be performed, I could find no indication of whether participants were revising their documents on paper or computer. Regarding social context, there was no mention of any
informal collaboration that may have taken place in the production of texts. In the following section, I will present an approach that addresses more directly social, institutional and discourse contexts.

3.1.5 'Social practice' research

A social practice approach to literacy (Barton, 1994; Baynham, 1995) may be distinguished by its commitment to the context embedded nature of literacy. This approach, often referred to as “New Literacy Studies”, has its roots in cross-cultural ethnographic studies of literacy in authentic contexts (Street, 1984; Scribner and Cole, 1981; and Heath, 1983). By focusing on authentic literacy, these studies revealed literacy as shaped by social and institutional contexts, rejecting the (cognitivist) assumption that literacy is composed of ‘autonomous’ context independent atomic processes.

In this perspective, literacy is understood as embedded in (shaped by) various social practices: business letter writing, religious ceremony, rituals for reading newspapers, bedtime story telling, etc. The different practices constitute different forms of engagement with texts and for different functions. Hence literacy is not understood as taking a single universal form, but existing as multiple literacies. Participation in these practices constitutes a link to wider social and institutional contexts: systems of trade, religious ideologies, local communities, family systems, practices of government, etc.

From the social practice perspective, literacy is to be investigated in authentic contexts. Authentic instances of involvement with texts are observed or otherwise recorded, and understood as literacy events (Heath, 1983), in which people draw upon historically developing practices. In addition to being linked to broad (institutional and ideological) social contexts, literacy events frequently involve direct interpersonal contact, such as children's bedtime stories, or reading a newspaper with family members (Heath, 1983). Indeed, literacy often involves people in interdependent networks in which different people take different roles (Barton, 1994). In cases where expertise in (various forms of) literacy is unevenly distributed across community members, these communities may organise themselves co-operatively so that literacy may be considered as a resource belonging to this community as opposed to only specific members within it (Baynham, 1995).
With its strong concern for social and institutional contexts, social practice research emphasises the functions of literacy. People use literacy to act within social contexts. Consequently social practice research has shifted attention somewhat from how literacy is performed (as a process) towards what literacy does (its functions) in social context (Baynham, 1995). Some researchers cast a critical eye, for example, on how literacy is used to (re)produce and perhaps to transform institutional power and ideology.

Regarding writing at university, the ‘social practice’ perspective is becoming increasingly visible through the “academic literacies” approach of Lea and Street (1998). A particular focus of the academic literacies approach is on how various academic disciplines construct knowledge through their literacy practices.

"Theoretical perspectives on student learning in today's higher education have tended to ignore the role of academic literacy practices in constituting knowledge in university settings." (p. 103)

"Language is not merely the transparent medium through which students learn about academic ways of thinking, which an 'acculturation into academic modes of discourse' model of student learning would have us believe. Language and associated literacy practices actually construct and constitute knowledge in specific ways..." (p. 105)

"Learning at university involves adapting to new ways of knowing: new ways of understanding, interpreting and organising knowledge. Practices of academic literacy are central processes through which students learn new subjects and develop their knowledge about new areas of study." (Lea, 1999, p. 106)

Lea and Street (1998) argue that the academic literacies approach represents a more complete treatment of context than the major alternatives. They set out three approaches to investigating writing, largely in terms of their treatments of context. The three approaches and their treatment of context are indicated in Table 3.2. The table also shows how the approaches described in this chapter map onto Lea and Street's categories.
Lea and Street’s categories are described in the following paragraphs.

The **Study Skills** approach is criticised as "crude and insensitive" and suffering from neglecting "broader issues of social context and learning".

"The study skills approach has assumed that literacy is a set of atomised skills which students have to learn and which are then transferable to other contexts. The focus is on attempts to 'fix' problems with student learning, which are treated as a kind of pathology. The theory of language on which it is based emphasises surface features, grammar and spelling." (Lea and Street, 1998, p. 158-9)

This approach corresponds to the 'factorial' and 'cognitive' approaches in the present literature review.

The **Academic Socialisation** approach is characterised as an approach "more sensitive both to the student as learner and to the cultural context", but that does not sufficiently model and criticise this context. It is criticised for failing to address the role of language in constructing knowledge.

"Even though at some level disciplinary and departmental difference may be acknowledged, institutional practices including processes of change and the exercise of power, do not seem to be sufficiently theorised. Similarly despite the fact that contextual factors in student writing are recognised as important (Hounsell, 1988; Taylor et al. 1988), this approach tends to treat writing as a transparent medium of representation and so fails to address the deep language literacy and discourse issues in the institutional production and representation of meaning" (ibid. p. 159)

Both the 'phenomenographic' and 'social cognitive' research described in the present chapter may be recognised in Street and Lea's characterisation and criticism of the 'academic socialisation' model.
The Academic Literacies approach critically addresses the conflicting demands placed upon students in the literacy practices in which they are asked to participate. Research in this tradition "views student writing and learning as issues at the level of identities and epistemology", and emphasises gaps between staff expectations and student interpretations of what is involved in student writing.

"We believe that it is important to realise that meanings are contested amongst the different parties involved: institutions, staff and students... through researching these differing expectations and interpretations of university writing we hope to throw light on failure or non-completion, as well as success and progression." (ibid. p. 158)

Studies in the Academic Literacies perspective have done important work in addressing how students orient themselves as participants in academic and disciplinary literate practices. Lea and Street (1998) point to the diversity of disciplines within which some university students are asked to write, the contradictory demands, and the associated 'problems of interpretation' that students face. Lillis (2001) addresses practices of 'mystery' that obscure university staff expectations of undergraduate essays. These studies raise important issues and encourage a valuable questioning of the literacy practices that students are asked to involve themselves in. However, in focusing on issues of epistemology and interpretation, and relying heavily on interview methods and analyses of texts, they inform us less than we might hope about the production of an essay as a temporally structured process.

3.1.5.1 Summary of the 'social practice' research

The social practice perspective on literacy is broadly consistent with cultural psychology. It sees literacy as fundamentally context embedded and critically addresses social and institutional contexts of literacy. Literacy is understood in terms of historical practices that constitute a link between the individual and wider social and institutional contexts. Learning to write academically is considered as participating in literacy practices in which disciplinary 'ways with words' mediate the construction of knowledge. This then is a view that - consistent with cultural psychology - emphasises the semiotic mediation of language, and different language practices valued by different communities.

The chief problem we can have with a social practice approach to undergraduate writing concerns its choice of focus. This research tends to focus more upon functions of texts,
rather than the processes of producing them. We understand student writers to be engaged with language in ways that implicate epistemology and identity, but gain little insight into document production as processes involving engagements with computers, paper, books and other artefacts. Similarly, we understand this writing as embedded in powerful institutions that value certain discourses: "An academic literacies approach views the institutions in which academic practices take place as constituted in, and as sites of, discourse and power" (Lea and Street, 1998, p. 159). There is little sense however of the university as a place: There is little sense of the student engaging, through time, with the temporally and spatially organised arrangements and resources of the university.

In section 3.2, I will argue that cultural psychology enables us to avoid these neglects by extending the 'social practice' emphasis on the (ideal) mediation of language to the more encompassing (material and ideal) mediation of artefacts.

3.1.6 Summary of investigations from outside cultural psychology

The approaches and studies reviewed here make valuable contributions to our understandings of literacy and essay production. Taking each approach, we might pick out, for example:

- Cognitive approach - emphasising the 'process' nature of essay production.
- Factorial approach - emphasising the variety of socio-cultural resources with which students can engage.
- Phenomenographic approach - emphasising students' diverse interpretations and conceptions of the task.
- Social cognitive approach - emphasising the strategic nature of the task.
- Social practice approach - emphasising knowledge construction in a variety of discourse contexts.

With regard to theorising essay production, together, these studies contribute to understanding essay production as a process of making meaning through language in social and institutional contexts. We have seen many of the criticisms of cognitive psychology as an approach to cognition and action resurface in the specific area of
literacy research. In addition, the 'social practice' approach appears to be gathering momentum.

However, a need remains for investigations from a cultural psychological perspective. There is a lack of studies that unite a concern for context with close analysis of essay production as a temporal process. Also, while social and institutional aspects of context have been given attention, material aspects of context remain somewhat neglected. In the following section I will outline how cultural psychology can redress this.
3.2 A Cultural Psychological Approach to Undergraduate Essay Production

In section 3.2, I reviewed existing studies of essay production. Although they provide useful insights, it seems that there is room for an approach that more directly addresses essay production as both a process and as involving a variety of resources. In the present section, I will outline a cultural psychological approach to essay production.

In section 3.2.1, I will present some existing research on student writing that is closely aligned with cultural psychology.

In section 3.2.2, I will employ a cultural psychological framework to outline the key research issues for the present investigation.

In section 3.2.3, I will propose a set of studies, comprising complementary lenses on essay production, which will make up this thesis.

3.2.1 Review of cultural psychological studies

The research reviewed in section 3.1 made progress in understanding essay production as embedded in social and institutional contexts. However, it did not link this insight to an understanding of essay production as a temporal process involving engagements with various artefacts. This is more readily achieved through a cultural psychological perspective.

One way of describing a cultural psychological view of essay production is as an extension of the increasingly visible 'social practice' approach to literacy. Social practice research sees literacy not as autonomous but as context embedded. The writer is understood as participating in social practices, and thereby literacy is deeply embedded in wider social, historical and institutional contexts. However, the language based view of context (e.g. Fairclough, 1989) taken by social practice research appears to lead to a privileging of ideal over material contexts.

In social practice research there is an understandably strong emphasis on making meaning through language. Writing is cast in ideal terms. There is a focus on sign mediation, to, I believe, the neglect of material mediation. Texts are considered in
semiotic terms: as though independent of their material instantiation on computer screens, scraps of paper, or bound into journals. Institutional contexts are seen in ideal terms – those of power and ideology. Their physical, geographical, and temporal properties are not a focus. Cultural psychology unites material and ideal forms. It brings together 'tools' and 'signs' in the concept of the artefact - urging a stronger consideration of material aspects of context. In relating cultural psychology to other approaches to literacy then, we can point to a shift from 'sign' mediation to 'artefact' mediation.

North American genre theorists have made explicit the link between language and other tools. In North American genre theory, genres are not documents: genres are typified ways of using artefacts such as documents as 'tools'.

"(G)enres can be defined, following Miller (1984) as typified tool-mediated ways of purposefully and dialectically interacting among people in some social practice (and across various linked social practices) ... In this sense, genres, as Bazerman (1994, p. 1) says, are not best described as textual forms, but as 'forms of life, ways of being, frames for social action..." (Russell, 1997, p. 4).

Including documents in a broadly defined class of 'tools' helps us, both to consider documents' material properties, but also to link understandings about (our uses of) texts to understandings about (our uses of) other artefacts.

"The term genre in this analysis may apply to the typified use of material tools of any type by an activity system, often in conjunction with one another. Indeed, the term genre has often been applied to painting, music, clothing design, architecture, and so on, and might even be applied to heavenly bodies as they are used by sailors for navigation (Hutchins, 1995). For the purposes of analyzing classroom interactions and their relation to wider social practices, genres of manipulating scientific apparatus (Velez, 1995) or computers (Haas, 1996) may be crucial." (Russell, 1997, p. 4-5).

The notion of 'genre' enables us to understand and investigate literacy practices (and even social practices unrelated to literacy) through drawing upon principles and concepts that are central to cultural psychology. Russell draws on Leont’ev’s (1981a) distinction between ‘actions’, which are usually conscious and goal directed, and ‘operations’ which are usually unconscious. Recurring or typified (tool mediated) actions become operationalized over time, requiring less conscious attention. Genres are conceived as operationalized actions:
"The first time one or more persons in an activity system (or between activity systems) is confronted with a need to carry out a specific action, to achieve a specific goal, the person(s) must choose some means of action, using some tool(s). If the person(s) perceive(s) the choice of tools and their use in a certain way has accomplished the goal, they might choose it again. Over time, people may be confronted with what they perceive as a similar need to act in similar conditions, and pick up and use-appropriate—some of the same or similar discursive tool(s) (form of words) in some of the same or similar ways for the same or similar use. That is, they appropriate and perhaps eventually operationalize what the participant(s) perceive(s) to be similar actions using what they perceive to be similar tools and uses of the tools (ways of writing). They create what I am calling a genre." (Russell, 1997, p. 6).

The notion of genre provides a strongly historical view of literate activity. Genres are not given but historical. They provide a "conservative, reproductive force" (Bazerman, 1997) on local activities while still being subject to transformation-in-use. The notion of genre will prove useful in understanding (as historical) the essay writing practices investigated in this thesis.

Christina Haas also adopts a set of concerns particularly consistent with those of cultural psychology. In her book, "The materiality of literacy", Haas (1996) identifies a neglect of materiality in contemporary literacy researchers, whose philosophical roots she traces to the Platonic separation of mind and body. (She also aligns herself with the 'neo-Vygotskian' perspective of uniting 'tools' and 'signs' in 'artefacts'). The focus of the book is upon the writing technologies, paper and computers.

"The problem we can have with most theorists is that they don't examine technology itself in any systematic way. ... As long as the computer, remains unspecifed, or too variously specified, attempts to understand the complex, symbiotic relationship between writing and technology will remain disjoint, or even contradictory." (Haas, 1996, p. 32)

Haas envisages a multidisciplinary project dedicated to investigating writing technologies as cultural-historical artefacts:

"Technology studies is a concerted, focused attempt to examine the technologies of writing—historically, theoretically, empirically, and practically... Its goal is to understand how material technologies both constrain and enable acts of mind, on the one hand, and how cultures produce, adapt and are affected by material technologies, on the other hand." (Haas, 1996, p.25)

In the book, Haas presents a series of studies of reading or writing short texts using paper or computers under laboratory conditions. These allow some insights into the importance
of technology’s materiality. Some such studies will be addressed in Chapter 5. Haas has also investigated writing in richer, historical and authentic undergraduate contexts.

Haas (1994) addressed undergraduate writing in terms of a student’s relations with particular social and cultural resources. In this case study, one students' rhetorical development may be seen as bound up with her trajectories of participation in a degree course, and in a scientific discipline. Haas charts a shift in the student's perceptions over the duration of her degree, from considering texts as autonomous, to greater acknowledgement of the agency of their authors. Concurrent with this change, the student also; engages proportionally more often with journal articles and less often with text books (as required by her course), writes her own reports; takes a summer job actually doing research in a lab; gets to know post-graduates in the department; etc. Her rhetorical development appears to be bound up with these changes in identity, and in changing relations with, and access to, relevant communities' resources. Although this study does not investigate actual processes of document production, it draws attention to the importance of students' relations with social and institutional resources, including different kinds of material artefacts.

Geisler (1994) also investigated undergraduate writing from a perspective closely aligned with cultural psychology. Using a Vygotskian framework, Geisler used multiple methodologies - including interviews, protocol analysis, and analysis of written products - to address writing in academic contexts. She argues that academic literacy is particularly difficult to achieve because academic practices conceal the rhetorical nature of texts.

One particular study (Geisler, 1994, Ch. 10) demonstrates the viability of investigations into essay production in terms of temporally structured engagements with various documents. Two first year students (yet to have taken any university philosophy course) and two Philosophy lecturers were supplied with relevant source materials (6 authentic articles), and were asked to write an essay on an aspect of philosophical ethics with which they were unfamiliar. Lecturers prepared their essays during available time in their working days. Students worked in specific hours during which office space was specially made available to them. Participants supplied think-aloud protocols for each of their sessions, kept all of the writing they produced, and were interviewed between sessions on their aims and accomplishments on the task so far. Geisler described patterns of
document production in terms of component 'activities' that are engagements with documents. Descriptions of the activities are provided in table 3.3.

<table>
<thead>
<tr>
<th>Category</th>
<th>Materials Consulted</th>
<th>Materials Produced</th>
<th>Sequencing Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>Readings</td>
<td>Own notes</td>
<td>Order of words in readings</td>
</tr>
<tr>
<td>Reflecting</td>
<td>Readings, own notes</td>
<td>Own notes</td>
<td>On-the-fly</td>
</tr>
<tr>
<td>Organising</td>
<td>Own notes</td>
<td>Linear order of topics</td>
<td>On-the-fly</td>
</tr>
<tr>
<td>Drafting</td>
<td>Own notes, readings, outline</td>
<td>Continuous draft</td>
<td>Outline</td>
</tr>
<tr>
<td>Revising</td>
<td>Draft</td>
<td>Annotations to draft</td>
<td>Order of words in draft</td>
</tr>
</tbody>
</table>

Table 3.3. Geisler's (1994) classification of 'activities' as engagements with documents. (Geisler, 1994, p. 170)

Geisler noticed differences between novices and experts in how the task was organised, demonstrating the utility of this approach. She notes that the experts "used a more highly differentiated activity structure to organise their work" (p.170), that they took a smaller percentage of their time in drafting, and delayed drafting longer into their activity. After initial readings, the experts used source texts little when reflecting and organising - preferring instead to work with their own notes. After this, they rarely, if ever returned to the original sources. In contrast, the novices made considerable use of the sources when reflecting and organising, and continued to refer to the sources when drafting and revising. Geisler summarises, "Both experts ... seemed to have a more clearly defined sense of the texts appropriate to each activity, whereas neither novice showed as decisive a choice of texts over the course of their activities." (p.172). Geisler also compared the observed patterns of action with patterns of face to face conversation. She used this comparison to characterise literate practices as offering a space for reflection and knowledge transformation that is not afforded by oral communication. This study clearly demonstrates that we can meaningfully describe essay production in terms of engagements with resources.

Although Geisler's work demonstrates that meaningful analyses can be based upon descriptions of engagements with resources through time, there is much scope for taking this further. The study could be expanded to incorporate a richer diversity of contextual resources. Geisler's undergraduate students worked at pre-specified times. This prevented any insight into how participants temporally organise their coursework activities in more everyday coursework contexts. The task the students faced was, apparently, constructed
especially for the investigation, and was not embedded in the context of a philosophy course. This cut participants off from various resources, such as interactions with classmates and teaching staff, and from the usual motivations for the task. The study could also be expanded to a larger subject base. Only two students took part in the study, limiting the ability to generalise from it - especially considering the diversity in students' aims and actions uncovered by other research.

In this section, I have presented some existing studies that are particularly well-aligned with a cultural psychological perspective. North American genre theorists draw heavily upon concepts from activity theory, including considering texts as cultural-historical artefacts. Haas (1994; 1998) and Geisler (1994) each consider writing as artefact mediated and context embedded. Haas (1994) has addressed student writing in terms of participation in cultural practices and engagements with cultural resources. Haas (1998) has also investigated the significance of the materiality of writing tools. As part of a broader investigation into academic literacy, Geisler (1994, Ch.10) described student document production in terms of temporally organised engagements with documents. These studies helpfully orient the present investigation into undergraduate essay production.

A cultural psychological perspective would seem to be a natural ‘next step’ for literacy research. In this section, I have suggested that a cultural psychological approach to essay production may be chiefly distinguished from social practice research by its incorporation of specifically material aspects of context. Adopting a cultural psychological perspective would not mean going against understandings of the rapidly emerging ‘social practice’ perspective on literacy, but building them into a more complete view of context.

3.2.3 An agenda for the present investigation

I have outlined a set of concerns about essay writing (Chapter 1), proposed a general theoretical framework (Chapter 2) and reviewed the relevant literature on essay production. I will now set out an overall agenda for this research. My initial concerns, theoretical framework and literature review suggest the need to investigate essay writing as involving relations with artefacts, people, and institutions; and to investigate it as historical.
I will investigate essay production as involving relations with **artefacts**. Cultural psychology views making use of artefacts as integral aspects of human cognition and action. Although existing research into essay production has considered the roles of language in essay production, artefacts such as computers have not been a focus of literacy research in general (Selfe, 1999; Haas, 1998). This neglect of the roles of artefacts has been evident in the studies of authentic essay production reviewed here. An exception to this rule is the study by Geisler (1994, Ch. 10) that described essay production in terms of temporal patterns of engagements with documents. The present investigation will follow on from Geisler (1994). I will describe temporal patterns of engagement with paper documents and with computers.

I will investigate essay production as involving relations with **people**. Cultural psychology draws attention to social contexts. Collaboration, division of labour, and community are key concepts. Social practice research has investigated literacy events that involve interpersonal contact and 'talk around the text' (e.g. Heath, 1983). The reviewed studies of authentic essay production, however, provide little insight into the roles of informal interpersonal contact and collaboration in the production of essays, or into the extent to which 'practice communities' of students resource essay production. The present investigation will explore these issues.

I will investigate essay production as involving relations with **institutions and activity systems**. In line with cultural psychological concerns, 'social practice' research has made progress in viewing literacy as deeply embedded in large-scale social and institutional contexts and practices. For example, the (diverse) ways in which academic disciplines construct knowledge through literacy practices is a central concern for 'Academic Literacies' research. Significant progress has been made in investigating practices and institutions in 'ideal' terms such as 'power' and 'ideology'. In the present thesis I will bring the materiality of institutions into clearer focus. I will address the campus (and arrangements for its use) as organised in space and time. I will consider, for example, how accommodation, eating and teaching arrangements bring students together (or separate them) patterning opportunities for informal learning relevant to essay production.

I will investigate essay production as **historical**. Primarily, this investigation will be historical at the level of microgenesis. This study will investigate instances of essay
production from 'start' to 'finish' as complete processes - organised in time. Whereas those studies that have paid close attention to process have focused upon 'in-the-head' phenomena (e.g. Flower, 1990) I will particularly emphasise the roles of physical artefacts such as documents and computers in processes of essay production.

This study will also be historical at the level of individual development - ontogenesis. Torrance Thomas and Robinson found, from both diary data (Torrance et al. 1999) and questionnaires (Torrance et al. 2000), that participants show some consistency in the patterns of essay production they enact. However, whether and how personal history contributes to this consistency is not clear. Torrance Thomas and Robinson (2000) failed to find systematic changes across participants in temporal patterns (or 'strategies') of essay production. Flower and colleagues (Flower, 1990; Ackerman, 1990) argue that students' unreflectively employ 'cognitive strategies' that result from their histories in social practices, but they do not probe into their participants' individual histories. Campbell, Smith and Brooker's (1998) third year students tended to have more sophisticated 'conceptions' than did their first year students. Haas (1994) described development in terms of changing relations with communities and resources. Questions of how personal histories contribute to essay production processes remain pertinent and intriguing. In the present investigation, I will relate participants' uses of documents and essay production processes to their personal histories and prior experiences of essay production.

Having outlined the major concerns of the present investigation, the question remains of how this investigation will be conducted.

### 3.2.3 Proposal for an investigation at three 'levels'

To investigate essay production as outlined above is not a simple matter. Diverse contexts must be incorporated into the analysis: material and semiotic artefacts, other people and larger institutions, communities and activity systems. Furthermore, artefacts, people and practices are to be understood historically. To attempt to do justice to this complexity, I will employ multiple studies, each focusing on different aspects of context and activity, and each contributing to a larger composite picture.
I will employ three studies that may be thought of as complementary analytic lenses - each focused upon different 'levels' of activity. As we saw in section 2.2.4.2, for Leont'ev (1981a), activity is constituted at the three levels. These occur on vastly different time-scales - from indefinitely enduring activities, to fleeting operations. Their hierarchical structure implies that each level is better understood when seen in relation to the others. The three studies in the present thesis somewhat echo Leont'ev's (1981a) distinctions between macro, meso and micro levels. The foci of the studies are presented in table 3.4.

<table>
<thead>
<tr>
<th>Level</th>
<th>Action recorded</th>
<th>Context in focus</th>
<th>Thesis chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macro</td>
<td>Encompassing and neighbouring activities</td>
<td>Campus and student community</td>
<td>Ch 6 'Contexts of participation'</td>
</tr>
<tr>
<td>Meso</td>
<td>Complete instances of essay production</td>
<td>Documents, computers, other people</td>
<td>Ch 4 'Diary-based study'</td>
</tr>
<tr>
<td>Micro</td>
<td>Brief engagements with paper and computer</td>
<td>Document materiality</td>
<td>Ch 5 'Materiality at the desktop'</td>
</tr>
</tbody>
</table>

Table 3.4. *Three studies in the thesis as complementary levels of analysis.*

I will outline the three studies in the following sections, beginning with the central, 'meso', level study.

3.2.3.1 At the 'meso' level: Chapter 4 - The diary-based study.

The first study in this investigation will form the central, 'meso' level, analysis. For Leont'ev, the meso level is characterised by artefact mediated *actions* oriented to *conscious goals*, combinations of which realise overarching motives.

The first study will describe authentic essay production as a temporally organised process involving engagements with various resources. As we have seen, Geisler (1994, Ch. 10) has shown that it is possible to usefully characterise processes of essay production in terms of engagements with documents. This study will investigate essay production that is potentially more richly resourced by various documents, computers, and by social contacts, and that is less temporally and geographically constrained.

Cultural psychology and research on essay writing both emphasise the great importance of addressing the students' own understandings, interpretations and experience of the task. For Leont'ev (1981a) individual actions at the meso level are oriented to conscious aims. In literacy research, phenomenographic studies in particular have emphasised the
student's experience and their diverse 'conceptions of learning' and 'essay conceptions' (Hounsell 1984a). Accordingly, students' understandings and personal experiences of the essay task will form an essential part of this study.

This study will also address the role of personal history in shaping essay production. We have seen that cultural psychology directs attention to the importance of personal history, and that literacy research raises the issue of essay production 'strategies' developing through time. I will address personal histories of essay production, and will relate processes evident in these essays to personal histories.

3.2.3.2 At the 'micro' level: Chapter 5 – The 'materiality at the desktop' study

While the 'meso' level study will lead to insights into the overall temporal organisation of essay production and into students aims and interpretations of the task as a whole, it may be less useful for understanding fleeting processes of essay production and the relevance for these of material contexts. The second study in this investigation will address concerns at a 'micro' level. For Leont'ev (1981a), the micro level of activity consists of fleeting operations. Emphasising that the levels are embedded, multiple operations realise a single action. Operations take place at an unconscious level, and their 'orientation-basis' is material conditions.

In this study, I will investigate document production at a finer level of temporal granularity. Although cognitive and social cognitive researchers have conducted useful investigations into moment by moment writing activity (e.g. Hayes and Flower, 1980; Flower et al. 1990) their work has tended to neglect material contexts. This study will emphasise material contexts. It will enable clearer and more confident insights into the importance of materiality - specifically, the relative merits of online and paper documents.

3.2.3.3 At the 'macro' level: Chapter 6 – The 'contexts of participation' study.

My third study will emphasise concerns at a more 'macro' level. For Leont'ev, the subject at the macro level is a collective. Collective activities are directed towards a common object/motive. This level provides a motive force for lower level actions. Activities are indefinitely ongoing. Although the study will not investigate full-blown collective activities, it will address more 'macro' concerns than the preceding studies.

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The 'contexts of participation' study will emphasise broad institutional contexts, student communities and more encompassing endeavours that situate and motivate essay production. Other studies, particularly from the 'social practice' / 'academic literacies' traditions, have emphasised institutional contexts in terms of ideal aspects: discourse practices, power and ideologies. However, consistent with this thesis as a whole, the study will focus more heavily on more material aspects of institutional contexts. It will investigate how the physical architecture of campus, and institutional arrangements for its use, pattern interpersonal contact and access to community resources.
Chapter 4 A diary based study of authentic essay production

4.1 Introduction

As I have outlined in section 3.2.3, this study will occupy the central, ‘meso’ level of analysis. It will investigate essay production in authentic social and cultural context. Consistent with a cultural psychological approach, I will address authentic essay production, organised with respect to socio-cultural resources. Under the cultural psychological view, such instances are to be understood historically; as complete processes organised in time, and as related to relevant previous experiences and instances. How will this investigation be conducted?

In order to investigate essay production instances as processes, I will employ a relatively small-scale idiomatic approach. We saw in chapter three that large-scale studies of essay production tend to employ retrospective and rather coarse measures of essay production. Component processes are identified and, through bringing together data from all participants, correlations are sought between these processes and outcome measures (e.g. Norton, 1990; Mahalski, 1992). This approach fails to address each individual instance of essay production as a coherent contextualised process, organised in time. It may be more advantageous to seek rich process data from fewer participants, and to acknowledge and address idiomatic and contextual variation, rather than to attempt to transcend it with statistical power.

The need unobtrusively to investigate essay production instances as processes that are also authentic, suggests that self-report diaries would be an appropriate method. The temporal organisation of essay production may not be adequately captured through ‘after the event’ retrospective recording. Also, authentic coursework essay production can occur in any place and at any time of the student’s choosing. Students can work at any time of the day or night, and in various locations: their own rooms, libraries, friends' rooms and even public transport. Accompanying students in these situations is not viable, and constraining this freedom would damage ecological validity. Given these considerations, it seems appropriate to develop some form of self-report diary.

The diaries will record temporal patterns of engagement with various resources of context. Cultural psychology emphasises how cognition and action may be achieved
through engagements with, and transformation of, resources of setting. Documents, such as books, notes, and written outlines may be crucial such resources, and will be a particular focus of this study. We have seen that Geisler (1994) described the temporal organisation of essay production in terms of engagements with these artefacts. The diaries should also incorporate a broader set of resources. They will also record; participants' locations, whether they are working alone or with others, and whether they are using computers. In order to address how essay production is temporally organised, date and time will also be recorded. In the interests of limiting the demands on participants' time and attention during essay production, the diaries will be designed to be quick and simple to use.

The diary method will not be suitable for gaining proper insights into participants’ private experiences and interpretations of the essay task. Inviting participants to relate their interpretations and experiences as they perform the task would place upon them unwanted reflective demands. Any demands additional to the coursework task itself may increase the risk of participants dropping out of the study, and may also transform what is studied. The demands of communicating experiences and interpretations seem especially likely to promote reflection on, and reorientation to, the task.

The diary will record temporal patterns of engagement and disengagement with various resources, but will not require participants to relate their private experiences of these. While these records will be valuable in themselves, it is clear that they will provide only a limited insight into essay production. Accordingly, retrospective interviews that will address participants’ understandings of the essay task and ‘flesh out’ the diary data with personal experiences, will form an essential complement to the diary method.

The interview will also provide an opportunity to investigate participants’ personal histories of essay production. This will allow these essay production instances to be seen in the broader historical context of relevant previous experiences. Particular emphasis will be placed upon ways in which participants have previously organised their essay production with respect to documents and other artefacts.
4.2 Method

4.2.1 Study context

The university. Loughborough University is located in the East Midlands of England. Its large campus, located about fifteen minute's walk from the town centre, accommodates approximately 5,000 students. The vast majority (approximately 80%) of its first year students are accommodated on campus during term time.

The courses. The degree courses in Psychology, Ergonomics, and Psychology with Ergonomics are three-year Bachelor of Science honours courses. Students have the option to seek a one-year placement in industry between their second and third years. Students must accumulate 360 'credits' to gain a degree. These should be divided equally over the three years. Marks obtained in the first year do not ordinarily contribute to students' degree classification.

The majority of students on the course took a direct route from 'A' levels to the degree. A small proportion of students enters the degree via alternative routes. Approximately fifteen percent of students in these classes were over 23 years old. The students might be described as 'successful' in their academic careers preceding admission to the course. Students offered places typically require grades equivalent to one A and two B's at 'A' level (or three C's for Ergonomics).

The module. 'Communications and Study Skills' is a compulsory module for all first year students in the Human Sciences department. This module is aimed at the general academic development of the students. One of the components of this module is to write an essay. This is the first essay that the participants wrote at university. The module is run mainly through tutorial group contact. Each student in the department has a 'personal tutor' - a member of staff who is their general-purpose point of contact for academic matters. Tutorial groups of approximately five or six students in each year share the same personal tutor. The 'Communications and Study Skills' module is run by the students' personal tutors, in the form of tutorial group meetings.

It is a 20-credit module, split across both semesters in the first year. Assessment on the module is entirely by coursework. The essay accounts for 40% of the assessment.
The tutors have considerable autonomy in how they teach the module. Tutors typically set word limits of around 1500 words, but this varies across tutors. Some tutors give their entire group a single title; others offer the students a range of titles; and others allow students to create a title of their own.

4.2.2 Participants

44 first year students of, 'Psychology', 'Ergonomics' or 'Psychology with Ergonomics' were contacted - either by myself, or by their personal tutors - during one of their weekly tutorial group meetings. Students that did not respond to the initial recruitment efforts were approached opportunistically by the investigator from shared departmental spaces. Four of the students were recruited by this method (CHKA, WARE, PASA, DACL).

Fifteen students provide the data for this study. 17 volunteers were recruited, but two of them failed to complete the study (One returned an inadequate diary. The other felt 'too stressed' to complete the diary.)

4.2.3 Apparatus and materials

Blank diaries

The principle aim of the diary was to record participants' essay production processes as temporal patterns of engagement with documents and other resources.

The aim of gathering detailed and comprehensive data had to be balanced against the burdens any recordings placed upon the participant volunteers. Placing heavy recording burdens on participants could produce two kinds of drawback. The first is that students may not meet the demands. For many of these students, essay production in itself was a mentally demanding, emotionally charged activity. Under such conditions, participants may opt not to meet recording demands, and instead, drop out of the study or return incomplete diaries. The second potential drawback is that participation could impact upon essay production. For example, if the demands of recording any activity were high, it could discourage participants from that activity. Also, if the diary required participants to reflect more than usual on their activities, then this too could substantially shape activity.
The diary (appendix 4.1 shows a single day's entry in one participant's diary) was a collection of A4 sized sheets, upon which participants recorded, for every half hour in which they worked, their engagements with documents and computers, where they worked, and who they worked with.

The diary consists of two main sections. The "document list" is a numbered record of 'all' the documents participants engage with when working on the essay. Participants add to this list as they encounter each new document. The list is always visible when the diary is in use. The numbers in the list provide an efficient way for participants to express, on the "diary sheets", which documents they are engaging with.

Each diary includes a number of "diary sheets". Each diary sheet can contain up to eight hours worth of data. Participants take a fresh diary sheet for each day that they work on the essay, (and if they record more than eight hours' activity in one day). The major part of each diary sheet is a chart in which participants represent their activity. Participants represent their activity over time by filling in this chart on each day that they work on their essays.

The chart has numerous columns. Participants identify all the documents that they work with in each session by heading the columns, labelled 'engage with' and 'write to', with numbers from the document list. The other columns record: the location where work is taking place (home, library, lecture theatre/tutor's room, and 'other'); whom, if anyone, the participant is working with; whether the participant is working on the essay or is spending some intervening time on a break or on other work, and; whether the participant is using paper, a computer, or both.

Within the chart, time runs from top to bottom. This vertical dimension is divided into sixteen rows, each representing half an hour. For each half-hour, they express, simply by shading the appropriate columns, which documents they 'engage with' and 'write to'. Participants were encouraged to use single shading to represent occasional engagements with (or 'writing to') a document, and cross-hatching to represent frequent or continual engagements in each half-hour. The location of every half-hour's work and who the participant was working with, are each recorded by placing a letter (from a simple key provided) in the appropriate columns. Participants record whether they are working, on a
break, or doing other work, and whether or not they are using paper and computers, simply by shading.

Participants were also encouraged, but not required, to record any information they felt relevant in a blank "Comments/Descriptions" space, to the left of the chart.

'Diary instructions for each session' and 'Answers to some questions'

Although the diaries allowed participants to record their activities quite efficiently, pilot work had shown that their initial appropriation of the diaries had to be handled carefully to avoid misunderstandings. Two sheets of paper (appendices 4.2 and 4.3) helped explain the diaries to participants. I 'talked through' both of these when introducing participants to the diaries.

The "diary instructions for each session" sheet (appendix 4.2) took participants, step by step, through the process of filling in a diary sheet. It contained definitions of the terms 'engage with' and 'write to'. It emphasised that activity should be recorded at half-hour granularity, but suggested that participants could actually make recordings hourly.

The "Answers to some questions" sheet (appendix 4.3) stressed the breadth of the concept of 'document' (including self-created documents, web-pages, etc.); emphasised the importance of retaining documents and accurately referring to them in the diary; and suggested the possibility of retaining computer drafts of essays.

Example diary

The example diary (appendix 4.4) contained a single diary sheet, with plausible activities represented in it. It contained diverse locations, and diverse activities, including a period of work with a classmate. Example comments were made in the Comments/Descriptions section. It was stressed that this fictional pattern of activity should not be taken as a model for participants' own essay production.

4.2.4 Procedure

1 Introduction to the diary. After initial recruitment, participants spent a session of approximately 10 minutes being introduced to the diary, and trained in its use.
Pilot work had shown that training in the use of the diary was necessary as some students had failed to understand its requirements. Participants were shown the example diary, and were 'talked through' the 'diary instructions for each session' and 'answers to some questions' sheets. Because participants varied in their enthusiasm and in their approaches to the diary, this session provided an opportunity to promote commitment to the diary. Although all participants were required to meet the minimum requirements that were set out, some were prepared to make additional efforts, such as recording their activity at quarter-hour level granularity.

A date for an 'interim interview' was also agreed at the introductory meeting. This was arranged to be a time, convenient to them, by which they had expected to be approximately midway through working on the essay.

2 Keep diary. Participants kept their diaries as they went about essay production activity.

3 Interim interview. The main functions of this meeting were to ensure participants' commitment to the study, and to ensure that they were completing the diary appropriately. Pilot work had suggested that contact with and encouragement from the investigator - both at this stage, and at the introductory stage - was important in building rapport between the investigator and participants, and in minimising 'drop-out' rates. Participants were asked to talk through the work they had done so far, using the diary as a resource. They often came to this meeting unsure that they were using the diary appropriately. Reassurance, encouragement, and - if necessary - advice on the use of the diary were provided on the basis of this. Participants were also sometimes asked basic biographical questions, obviating the need to do this in the final interview.

4 Completion of coursework and diary. Upon completing the coursework, participants returned their diaries and accumulated documents to me, and set a date - within 10 days of submission - for their interview.

5 Extended interview. The semi-structured interview was guided by a written schedule (Appendix 4.5).

After being thanked for completing their diary and for attending the interview, participants described what courses they had studied prior to university, what essays they had written in the past, and their previous experiences of guidance on essay production.
They were then asked about their overall experience of producing this essay, and of essay production in general. They were asked: how enjoyable, routine, variable and problematic they found this and previous essays, and were prompted to expand upon their answers where appropriate.

Approximately half of the interview time involved the participants talking through their diaries, in chronological order, page by page. Supported by these records and by the documents they had retained, participants provided rich accounts of their document production process. The simple request to 'describe what you were doing' for each diary page typically resulted in richly detailed descriptions of their activities. Participants were prompted, when necessary, to account for changes in their engagements with documents and for starts and stops in their sessions of work. Throughout the interview, participants were prompted to expand upon issues of interest as and when they arose.

After reviewing the diary, participants were asked further questions, concerning the following themes.

- **General management of the process of essay production**: (in)efficiency and (in)effectiveness in how participants went about producing their essays; any difficulties they experienced; their use of workspaces; and their own awareness of the process.

- **Guidance**: what kinds of guidance have they been given, how much of it, and from whom; also their attitudes to, and use of, such advice.

- **Previous experiences of essay production**: similarities and differences between producing this and previous essays, and any relevant changes with experience.

- **Interpersonal aspects**: previous experiences of working with others, knowledge of others' approaches, and any interpersonal contact in producing this essay.

- **Essay 'conceptions'**: beliefs about what constitutes essay quality and about marking criteria.
4.2.5 Analyses of data

Together, the interview recordings, diary data and collected 'trace' documents, comprised a substantial corpus of data. Two of the major activities in the analysis of the data, were constructing 'document usage charts' and coding interview data from each participant.

Diaries had captured temporal patterns of engagement with documents, but were not sufficiently concise to support a clear overview of these patterns. I therefore constructed 'document usage charts', which condensed each diary down to one or two sheets of A4 paper, but lost no information about the temporal patterning of engagements with resources. Example document usage charts are shown in appendices 4.6 and 4.7. The charts enabled a clearer sense of each instance as a complete process with its own integrity, facilitated qualitative comparisons between instances, and readily enabled quantitative descriptions (such as time spent composing and total number of work sessions). I constructed the document usage charts one at a time - working through each diary in temporal order and making sense of these patterned engagements by listening to the interview data and inspecting the trace documents. This process itself fostered a keen understanding of the data.

Tape recordings of interviews were digitised as audio files, and analysed using 'KIT' qualitative analysis software. Sound recordings enable access to communicative subtleties (e.g. tones of voice and timings of utterances) that may be lost when working with interview transcriptions. Analysis of the interview data involved the iterative development of a coding scheme. Segments of the interviews were marked with codes that identified them as belonging to some theme. I developed the coding scheme through successive iterations. This process engendered an intimate relationship with the interview data. It also allowed me to identify themes that were not predicted in advance, nor directly targeted by the interview questions, but that emerged from the data. The software supported analysis through ready access to coded interview segments.
4.3 Results

This results section will be comprised of three main parts. They will address the two cultural psychological themes of context and history. The first part will focus upon context. Respectively, the second and third parts will address essay production at microgenetic and ontogenetic levels.

One of the main challenges I have outlined for this investigation into essay production is that it should provide an account that incorporates the various resources involved. In section 4.3.1, 'Contexts of essay production', I will do this. Data showed the involvement in essay production of many factors. I will present a rough framework, based upon ideas from cultural psychology, for describing this richly diverse ecology of 'structuring resources'. I will examine the specific contribution that, data reveal, particular resources make to essay production. We will come to see essay production, consistent with cultural psychological theory, as deeply embedded in, and constituted by, this complex ecology of contextual resources.

Because essay production is a process in which engagements with various resources are organised in time, I have also stated that this investigation must address it as a process. I will do this in section 4.3.2, 'Processes of essay production'. I will show that essay production is shaped through document mediation. Based upon the data, I will argue that this mediation is sufficiently pervasive and strong that accounts of writing that neglect it can substantially misrepresent the work of essay production. In contrast to the assumption that temporal patterns reflect 'in-the-head' mental structures or 'strategies', these data are consistent with the view that these patterns emerge through improvisation with documents and other mediating resources. I will suggest that viewing document production as emergent from 'fields-for-action' encourages richer appreciation of how essay production instances are enacted.

The final main part, section 4.3.3, will address 'histories of essay production'. Accounting for change and development at an ontogenetic level has obvious merit from a pedagogical perspective. It will become clear in this section, consistent with cultural psychological theory, that the patterns of action described in section 4.3.2 must be understood as resourced by prior experiences. I will use the notion of 'personal genres' to address the development, across multiple instances, of essay production practice.
Considering essay production in terms of personal genres emphasises the improvised, yet routine, character of activity, and the dialectic development on ontogenetic time-scales between participants and the texts they create and engage with. I consider the dynamic and conservative forces that shape the development of personal genres, and their consequences for students' essay production practices.
4.3.1 Contexts of essay production

From a cultural psychological perspective, it was imperative that this study be sensitive to a broad range of socio-cultural contexts. Diaries focused upon temporally patterned engagements with documents, computers, people and places. Interviews encouraged rich accounts, from which it became clear that a much broader set of aspects of context were relevant. In this section, I shall consider this rich variety of contextual elements. In section 4.3.1.1 I will propose a framework, inspired by cultural psychological theory, that incorporates these elements, as 'structuring resources'. I will then use this framework to address the contributions of some of the key resources. I will consider resources of activity/motive in section 4.3.1.2; of setting/arena in section 4.3.1.3; and of person in section 4.3.1.4. We will come to see essay production, consistent with cultural psychological theory, as deeply embedded in, and constituted by, this complex ecology of contextual resources.

4.3.1.1 A framework of resources

Data from the present study (and from the literature reviewed in this thesis) show that many different resources are involved in essay writing. It would be helpful then to have some framework that could incorporate these diverse resources, and account for their contributions in some theoretically informed way. In order to organise the data I had collected, I drew on theories from cultural psychology to construct such a framework. It is comprised by two dimensions.

The first dimension of the framework is 'source'. It states where the resource 'comes from'. This dimension draws upon ideas presented by Lave (1988) and by Leont'ev (1981a). As we saw in Chapter 2, for Leont'ev, activity involves elements of three types in systemic relation. These are: a subject, an object and various mediating artefacts, arrangements and people. Three similar elements are central to Lave's (1988) account of activity. Lave repeatedly refers to the resources of person, activity and setting. Despite some tensions between the approaches of Lave and Leont'ev, their categorisations clearly echo each other. Table 4.1 shows the categories I have used in the dimension 'source', mapped onto the categories from Leont'ev and from Lave.
<table>
<thead>
<tr>
<th>Categories of 'source' used here</th>
<th>Activity/Motive</th>
<th>Setting/Arena</th>
<th>Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leont'ev's (1981a) categories</td>
<td>Object/Motive</td>
<td>Instruments, community, rules and division of labour</td>
<td>Subject</td>
</tr>
<tr>
<td>Lave's (1988) categories</td>
<td>Activity</td>
<td>Setting and Arena</td>
<td>Person</td>
</tr>
</tbody>
</table>

Table 4.1. The categorical first dimension of a proposed framework of structuring resources and its mapping onto categories provided by Lave (1988) and Leont'ev (1981a)

The second dimension, I call 'longevity'. It refers to the persistence and stability of resources through time. It is inspired by Leont'ev's notion of three levels of activity (see Chapter 2) in hierarchical relation. At the top level are continual, ongoing, activities. These motivate, and are realised by, actions directed towards specific goals. Actions, in turn, are realised by fleeting operations. Although I am reluctant to wholeheartedly appropriate Leont'ev's view of activity as hierarchically structured, my three levels of 'longevity' broadly map onto Leont'ev's levels. 'Ongoing' resources tend to be persistent and relatively stable throughout the duration of an essay, and beyond it. These resources may be part of large, persistent activity systems, such as the ones that motivate instances of essay writing. 'Essay specific' resources are present throughout an essay, but may not persist much longer. 'Fleeting' resources are realised and then disappear at time-scales shorter than a single essay.

Table 4.2 illustrates my proposed scheme of structuring resources of essay production. It is comprised by the two orthogonal dimensions. The entries in the table are elements that the present data suggest were influential in essay production. The resources are associated with the person, the setting/arena, or the activity/motive; and may be described as 'ongoing', 'essay-specific' or 'fleeting'. Table entries in italics and labelled with a section number will be discussed in distinct sections of this chapter. Other examples illustrate resources that the data showed to be relevant, but that will not be discussed separately.
Underpinning this table is the cultural psychological assumption that the elements within it are constitutive of essay production. Person, setting/arena and activity/motive are understood as elements that make up the system that produces the essay. It follows that the items in the table are parts of that system: they are to be understood as constitutive. In the following sections, I will consider the various ways in which elements in the table constitute and shape essay production.

Our route through this table will be to take one column at a time, starting with more ongoing resources and working down towards more fleeting resources. I will begin with the resources of activity/motive.

### 4.3.1.2 The structuring resources of activity/motive

A central feature of cultural psychology (Cole, 1996) is that activity is understood as oriented towards some objective. The collected data revealed firstly, that participants essay production was oriented to objectives at hierarchically different levels. At the ongoing level, participants appeared to be oriented to large encompassing aims: their talk revealed that their essay production was motivated in different proportions towards 'getting a degree' and towards 'learn about psychology'. At the essay specific level, they

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<table>
<thead>
<tr>
<th><strong>Ongoing</strong></th>
<th><strong>Activity/Motive (4.3.1.2)</strong></th>
<th><strong>Setting/Arena (4.3.1.3)</strong></th>
<th><strong>Person (4.3.1.4)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Motive of encompassing activity systems e.g. learning vs. being assessed (4.3.1.2.1)</td>
<td>Instruments, community, rules, and division of labour for encompassing activity systems</td>
<td>Identity (4.3.1.4.1) participation in academic and neighbouring activity systems</td>
</tr>
<tr>
<td></td>
<td>Neighbouring activity systems, e.g. work vs. leisure (4.3.1.2.2)</td>
<td><em>Institutional arrangements and architecture (4.3.1.3.1)</em></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Essay specific</strong></th>
<th><strong>Interpretation of the assignment (4.3.1.2.3)</strong></th>
<th><strong>Other people and their roles in this essay (4.3.1.3.2)</strong></th>
<th><strong>Knowledge of the present topic</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assignment deadline (4.3.1.2.4)</td>
<td>Documents (4.3.1.3.3) and other technologies specific to this essay</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Fleeting</strong></th>
<th><strong>Aims for the present work session</strong></th>
<th><strong>Temporary physical arrangements of documents</strong></th>
<th><strong>Current physiological and emotional state (4.3.1.4.2). Posture</strong></th>
</tr>
</thead>
</table>

Table 4.2. *Structuring resources in a categorisation scheme.* Examples shown in italics and labelled with a section number are discussed in distinct sub-sections of this chapter.
worked towards their own interpretations of what was required of them and they organised their efforts to meet their deadlines. At a more 'fleeting' level, their efforts were broken down into components: a participant would visit the library intending to gather all the books they will need, or resolve to complete their note-taking in a particular session (although they often reported not working with such clear aims in mind).

To understand better the roles of resources of activity/motive, in this section, I will address: tensions between work and leisure; tensions between learning and assessment; participants' interpretations of the assignment; and the role of the deadline.

4.3.1.2.1 Learning vs. assessment - ongoing resources of activity/motive

The cultural psychological approach, as embodied in the framework of resources, suggests that we should consider the larger activities that incorporate the action under study, particularly because these motivate and shape that action. Interviews showed that we should not assume that producing an essay realises only a single clear motive. Engestrom (1987) suggests that it is informative to consider contradictions or tensions that exist within object/motives.

One might argue that pedagogical concerns should far outweigh assessment concerns in these essays. First year grades do not contribute to overall degree classifications in this department. Although students' progress into the second year is dependent upon their achieving pass marks in their first-year modules, the majority of students exceed these by a considerable margin. Hence, in the first year at least, we might expect that students would see assessment as secondary to learning in these essays.

However, in interview, participants showed considerable concern for grades and rather less concern for learning per se. (They exhibited what Becker et al. (1968) termed a 'grade point average perspective'.) Provided that we assume that the pursuit of grades is consistent with pedagogical concerns, this need not trouble us, and in general, participants did not seem to be aware of tensions between learning and assessment.

However, one participant felt that she had learned less in the process of producing this essay and had found this essay "more boring" than usual because she had already written a very similar essay in her 'A' level studies, and had not been given the choice of an alternative topic. Another case where pedagogy and assessment may also be in tension is
in students' attitudes towards collaboration. Participants often voiced concerns about working with others, in terms of feeling that their work must be their own and that collaboration may constitute cheating. Some also voiced the concern that sharing information might lead to them losing out in an environment of competitive assessment. If essays were more clearly seen as vehicles of learning rather than of assessment, concerns about such inadvertent 'cheating' might become less salient.

4.3.1.2.2 Work vs. leisure - ongoing resources of activity/motive

The cultural approach invites us to consider relations between the activity we wish to study and other activities that neighbour (Engestrom, 1987) or 'articulate' (Lave, 1988) with it. Interviews emphasised that producing essays is by no means the only thing that students do at university! In addition to all their academic activities they participate in friendships, families, and social life in general. Consistent with cultural psychological theory, evidence presented in this section will show that essay production and leisure activities are not independent concerns. We shall see that leisure and work activities not only compete for time - punctuating each other - but also shape each other in more subtle ways.

One quite straightforward relation between work and other activities is that they compete for time. Not surprisingly, many of the breaks shown in the diaries were brought on by other activities. These other activities can be either time-tabled or spontaneous. They included lectures, eating, nights out, television, sporting activities, phone calls and appearances by friends. Tensions between academic and other activities also surfaced often in students' talk, such as in this quote: "The girls in our flat at least want to go out and have some kind of freshers' time and all the lads that we live with are like 'oh no, got a lab report ...'. They're absolutely sad" (WARE). Notice here that how these dilemmas are resolved varies between students, and also that such variations help to constitute social identity (in this case, as 'absolutely sad' versus one of 'the girls'). Tensions between work and leisure shape the absolute amount of time spent on essays, and the frequency and duration of periods of work. It is likely that these temporal concerns shape how time is spent within working periods. E.g. when sessions are interspersed over longer time-periods there may be more need for notes as aide-memoirs than if the entire essay is produced in one session.
Diaries and interviews showed that academic and leisure activities do not just punctuate each other, but can take place simultaneously. Approximately half the students said that they listened to music during some of their time working on the essay. While background music may shape participants' work in quite subtle ways (such as influencing concentration), other simultaneous activities may shape essay production more heavily. It was COSH's practice, including in this essay, to 'watch' approximately the first half of televised films while continuing to work, and, if the film caught her attention, to abandon work for the second half. For AUKA, the work/leisure distinction is unclear because within 'work sessions' she enjoys reading parts of textbooks that are not relevant to her assignments, "if there's nothing pressing, yeah, fine sit down and have a read... You could almost say I read them for enjoyment. If there was something in the next column I could read it just for the sake of reading it, just to see what it's about."

Probably nowhere in these data was the distinction between work and leisure more blurred than when friends worked together. HAMA studied with a friend and their study became "progressively light hearted" as they worked. Another student (LEEL) worked together with a friend as they smoked marijuana and became "too stoned" to work. We could reflect upon why these rare occasions of collaboration broke down into more recreational pursuits. For various reasons, when in the company of friends out-and-out leisure may be a more seductive option than collaborative study. This might particularly be the case when deadlines are not pressing, and when full collaboration is discouraged by individualistic assessment practices.

To summarise, data showed that essay production can 'come together' with other activities, and, in this coming together, essay production is transformed. Essay production is therefore embedded in, and should not be understood as isolated from, neighbouring activities, that shape it.

4.3.1.2.3 Interpretation of the assignment - essay specific resource of activity/motive

When asked to review the patterns of action recorded in their diaries, participants' talk was rich in references to what they were trying to achieve. These comments sometimes suggested that they conceived of essays in particular ways, and that these "conceptions" guided their efforts. For example, CHKA's use of his notes appeared to hang upon a specific (and questionable) belief about what constitutes 'answering a question':
"I just wrote a few brief notes... to make sure I did pick up on key areas ... I've got to make sure I keep all of these points in ... no matter what else I put in my essay, no matter what else I miss out, I have answered the question because I have got that information in."

Through a combination of comments made when reviewing their actions and answers to direct questions, I found that there was some diversity in "conceptions" about essays. (This is consistent with phenomenographic studies by Hounsell (1984a), Prosser and Webb (1994) and Campbell et al. (1998)). The three psychology essay conceptions identified by Hounsell (1984a) expressed much of this diversity.

The talk of most of students was consistent with one category of essay conception. Table 4.3 shows which 'conception' was attributed to each participant.

<table>
<thead>
<tr>
<th>Conception</th>
<th>Grade</th>
<th>Mean grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSH 'Cogency'</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>DUJA 'Cogency'</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>HAMA 'Cogency'</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>DACL 'Cogency'</td>
<td>66</td>
<td>64</td>
</tr>
<tr>
<td>WOSA 'Cogency'</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>SKRU 'Cogency'</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>WARE 'Cogency'</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>CAMA 'Cogency'</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>AUKA 'Cogency'</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>TWRI 'Relevance'</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>KEWI 'Relevance'</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>PASA 'Relevance' (Cogency?)</td>
<td>62</td>
<td>61</td>
</tr>
<tr>
<td>LYAL 'Relevance' (Cogency?)</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>CHKA 'Relevance'</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>LEEL Viewpoint</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

Table 4.3. Participants' 'essay conceptions' and grades. (Where a second conception is presented with a question mark, this denotes uncertainty caused by utterances consistent with the alternative. Classification of conceptions was based on their descriptions in Hounsell (1984b))

Table 4.3 shows that 9 of the 15 participants made comments that were broadly consistent with them holding the most sophisticated 'cogency' conceptions. In this conception, essays are seen as empirically backed arguments or cogent treatments of some issue. Five participants appeared to view essays as more fractured collections of relevant information (although two of these participants - PASA and LYAL - did show
some concern for unifying their essays under some empirical stance). The remaining participant appeared to hold a 'viewpoint' conception; viewing essays as expressions of her opinion with little concern for empirical evidence. The mean grades for participants' that held the most sophisticated conception was higher than that of the other students (mean = 60) but this did not reach significance (t = 1.38, df. = 13 p > 0.05). Regardless of statistical (in)significance, we may note that, consistent with phenomenographic studies, there is diversity in conceptions of essays and that these conceptions appear to guide efforts.

However, caution must be exercised when considering the role of essay conceptions in shaping action. Participants occasionally made comments that contradicted what appeared to be their essay conception. Saljo (1988) states that essay conceptions are properly understood as relational phenomena, involving a person's 'reading' of a situation. In this view a conception is not held by a "student" but is changeable between situations. This is consistent with Flower's (1990a) notion of "task representations" that are constructed 'on-the-fly', throughout the task.

The present data emphasise that participants' interpretations of their assignments by no means only reflected their essay 'conceptions'. More local considerations must also be met. AUKA's experience demonstrates this. Her tutor group all attempted to answer the question, 'Is stress a useful psychological concept?'. The tutor that set this question was inspired by discursive psychological work that questioned its use. AUKA however, assumed there was a consensus that the answer was a more straightforward, 'Yes'. Only after completing the essay did she discover otherwise,

"In the tutorial [a fellow group member] said he couldn't find any arguments against the question, and I said 'well I didn't even attempt to go there'... I just sort of did 'This is what stress is, and it does affect people, and this is why we ought to look at it.'" (AUKA).

Essay 'quality' then, is dependent upon local context: part of this context is what the tutor has in mind when setting a question.

Participants often devoted appreciable effort to interpreting local contexts of their essays. Indeed, an apparent focus of academic talk between students was interpreting staff expectations. HAMA expresses this concern nicely, "in a sense you are always playing a
game, analysing what they want" (HAMA). I shall address this function of social contact more thoroughly in Chapter 6, 'Contexts of Participation'.

4.3.1.2.4 Assignment deadline - essay specific resource of activity/motive

Deadlines are an institutional requirement that need less interpretation but also shape essay production. The deadline is an institutionally imposed constraint on essay production. Deadlines are a cultural given of student life in Britain, but this is not the case everywhere. For example, deadlines for specific coursework assignments are rarely set in German universities, where students are more free to complete work at their own pace.

Deadlines shape not only the temporal organisation of essay production, but also the forms of action that constitute it. LYAL, for example, claims that proximity to the deadline limited what revision she could do, "It was probably more due to limited time that I didn't sort of re-draft it more. If I had had more time I would have done that. I left it a bit late". Her approach of delaying her efforts until 'the last minute' also seems to have constrained her use of source materials,

"other people are planning it on the assumption that everything's available so they can go and get it, and I do it with what I have got, use that. That might sort of narrow down what I can do... doing it the other way is just more time consuming, isn't it, because then you have to go and find the stuff... I think it is just generally because I leave it to the last minute that I have had to adopt that process, as opposed to, if you planned it more, you could go out and find what you need."

As suggested in LYAL's comment, students vary in the way that they incorporate deadlines into their work. There was a general tendency for participants to do most of their work in the few days immediately preceding their deadline. Many participants felt that proximity to the deadline was a powerful motivator, increasing their productivity. As SKRU put it, "I need stress to work". LYAL was the most extreme example of delaying until the deadline. She started working on her essay only two days before her deadline date. Other participants clearly did not adopt the approach of 'creating a crisis'. COSH, for example, had done approximately 40 hours work (82% of her total) more than a week before the deadline. Less hard-working, but also working well in advance of her deadline, WARE put in 7 of her total 9 (approximate) hours more than six days before her deadline. As mentioned by LYAL, working well in advance of deadlines carries
certain advantages. One not mentioned by LYAL but demonstrated by other participants, is the possibility of having friends proof-read one's work. The institutional artefact of deadlines, is an imposed constraint on participants' action, but, like other artefacts that mediate essay production, it does not have direct 'effects' on action - students negotiated different ways of incorporating it into their activities.

4.3.1.2.5 Summary of resources of activity/motive

In this section, I considered 'activity/motive' as a source of resources for essay production. Importantly, I argued that these resources shape essay production. I identified some resources of activity/motive at the 'ongoing' and at the 'essay specific' level, and considered their specific shaping roles in essay production.

The cultural approach suggests that we consider how the production of a single essay is embedded within larger activity systems. Interview comments showed that larger, more ongoing activities that incorporate essay production, motivate the production of these essays. I have considered how the activity of getting a degree motivated and shaped essay production. In some respects participants' strong concerns with assessment were in tension with the objective of learning. We saw also that essay production was shaped by neighbouring non-academic activities. Leisure and work activities competed for time and punctuated each other but sometimes also shaped each other more intimately.

At the essay specific level, in line with previous research, I found evidence of differing "conceptions" that appeared to shape essay production. Participants efforts were also shaped by more localised interpretations of the task. Deadlines also had a constitutive role. I considered how participants' activity incorporated the assignment deadline.

This section has shown that essay production is shaped by, and embedded in, resources of activity/motive.

4.3.1.3 The structuring resources of setting/arena

In the present section I will consider some of the wealth of resources of setting/arena. Mediation is a central principle in cultural psychology. Accordingly, both Lave (1988) and Leont'ev (1981a) make the mediating context vital in their analytic frameworks of activity - but they categorise it in different ways. More focused on collective activity and
on development at the level of collectives, Leont’ev (1981a) considers context in terms of community, instruments, division of labour, and rules. While this approach has demonstrable utility (Engestrom, 1993), and each of these factors are clearly important, here I prefer to use Lave’s terms ‘arena’ and ‘setting’. Lave’s approach is focused more heavily upon the action of individuals, and seemed more readily applicable to the data I gathered. Additionally, the terms ‘arena’ and ‘setting’ emphasise arrangements of matter, such as physical architecture, that might not strike us as ‘instruments’. Hence there are numerous resources to be included under this heading. They include; pens, paper, computers, various documents, other people, various buildings and institutional arrangements.

In this section, I will illustrate something of the richness of the arena/setting. I hope to show that this mediating ecology may fruitfully be explored in terms of the various levels of 'longevity'. I will briefly consider how long-term institutional arrangements such as physical architecture shape essay production. I will also consider roles played by other people in participants' essay production. I will address these at the ‘essay specific’ level, although these doubtless reflect ongoing relations such as friendships and families, and are played out moment-by-moment. Documents are clearly also an essential aspect of essay producing action. Although I will delay more detailed discussion of their use until section 4.3.2, I will suggest that even fleeting arrangements of documents shape action.

4.3.1.3.1 Institutional arrangements and architecture - ongoing resource of setting/arena

Data showed that resources provided by various institutions, such as libraries and the internet, shape essay production. WOSA spent her first weekend of work using books that she felt were inadequate. The reason for this was that she lived twenty miles away from the campus, and its library. She claims that she would certainly have made the trip to this institutional resource, and thereafter worked with different books, had she lived nearer. Other institutional resources allowed TWRI, despite living on campus near the university, to not once visit the library for his essay. His tutor had resourced him with a single source article that - TWRI believed - was adequate for writing his essay. The university had also provided, to his on-campus study bedroom, access to the internet. By using this continually available resource, he was able to check the university library catalogue from his room (he found nothing of interest), and to search the world-wide-
web (where he found one article that he made considerable use of). His use of this resource (the internet), he felt, made unnecessary a visit to the library.

It is not only the presence or absence of institutional resources that matters, but how individuals' access to them is configured. WOSA was not the only participant whose access to the library was shaped by physical distance. The library at Loughborough is located at one end of a relatively large campus. Participants that lived on-campus but at its far end also stated in interview that they avoided visiting the library because of the length of walk required. Teaching staff are another resource with an ongoing presence at the university. While some students felt that access to tutors was readily available, CHKA complained that the department was "an unfriendly place", and he did not consider consulting his tutor privately to be an appropriate option. Individuals may vary in their level of access to institutional resources. I will examine how students' everyday activities configure access to relevant resources in Chapter 7, "Contexts of participation".

4.3.1.3.2 Other people - essay specific resource of setting/arena

Essay production is an inherently social activity. The social institution of the university gives meaning to the notion of the undergraduate essay. Other social institutions motivate essay production, such as potential employers that require certain grades. In addition, mediating cultural artefacts, such as language, journals, books, pencils and computers are all constructed and developed by other people. In this section however, I focus on interpersonal interaction that relates directly to essay production. Due to the focus of this diary-based methodology I exclude the interactions between tutor and student in assigning the essay and giving feedback.

Of the 15 participants, 8 recorded periods of working with others in their diaries. And - with only the (notable) exception of CAMA, who worked with others for 5 of her 11 approximate hours on task - periods of collaboration made up a very small proportion (one or two hours) of students' time working on their essays. Table 4.4 shows who these periods of collaboration occurred with, and roughly what kind of collaboration occurred.
Interpreting question/Research/Generating ideas

<table>
<thead>
<tr>
<th></th>
<th>Tutor/This investigator</th>
<th>Course mate</th>
<th>Friend (not on same course)</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYAL</td>
<td></td>
<td>LEEL, HAMA</td>
<td>COSH</td>
<td>KEWI (phone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHKA</td>
<td>CAMA</td>
<td>HAMA (phone)</td>
</tr>
</tbody>
</table>

Having work read by others

<table>
<thead>
<tr>
<th></th>
<th>KEWI</th>
<th>CAMA</th>
<th>WOSA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COSH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.4. *Periods of working with others recorded in participants' diaries.*

When participants worked with others, approximately half of those periods of work involved people connected with the department (course-mates, tutors and myself).

'Having work read by others' involves someone else reading, or having read, text that the participant has produced. Such access to drafted text appears to enable richer-than-usual interpersonal exchanges. For example, CAMA was intensively tutored through much of her essay production process by fellow students on different courses. Yet, there were no instances of 'having work read' by course-mates. Interpersonal exchanges other than work read included cases of participants using other people as a direct source of ideas for their essays (e.g. LEEL and KEWI) and using other people as a sounding board for their ideas (e.g. HAMA, WOSA, and COSH).

Numerous contextual factors, combined, may account for the pattern of collaboration shown in table 4.4. High levels of contact with family and with friends, relative to contact with course-mates, may reflect these participants' early stage in their university careers. Such contact may become less frequent in later essays, as students develop friendships with course-mates through their time at university, and as their work becomes increasing removed from lay-approaches to their disciplines. The tutorial basis of this coursework may also have limited collaboration between students, because only members of participants' own tutor groups, as opposed to the whole cohort of students on the module, were likely to be tackling the same question. The absence of proofreading by course-mates may reflect concerns about plagiarism, and (students histories of engagement in) competitive assessment practices. Additionally, collaboration may have been discouraged by the difficulties of scheduling it. For example, although 9 participants did not report (either in diaries or in interview) having their texts read by others before handing in, only two of these participants finished drafting their essays with more than twenty-four hours before the deadline. Of the six participants whose
work was proof-read however, all but one finished writing more than twenty-four hours in advance. Lack of proof-reading then, may, in part, be a result of participants not organising their time, relative to deadlines, in ways that enable it.

Interview data suggests that when people did collaborate, it not only shaped their action, but also their output. WOSA radically edited her draft essay on the advice of her tutor. LEEL felt that some of the people she spoke to "said some very useful things", and HAMA's discussions with her father were "really useful" and "really got [her] thinking". These comments suggest that other people shape processes of essay production, to the benefit of finished essays.

Although diaries showed that participants rarely spent long periods working on their essays with others, interviews suggested that more fleeting interpersonal exchanges about essays were more common. Generally, participants did not record these exchanges because they saw them as too transient and/or informal to merit recording as 'periods of work'. These exchanges seemed to occur most often with course-mates or with other friends, and involved some mention of approaches to, and progress with, the essay.

Despite their transient and casual character, such exchanges seemed to fulfil a variety of useful functions. Many of them were influential in how participants interpreted their questions. For example, in her interim interview with me, L YAL reported,

LYAL: "I have been speaking to other people who have been doing it, but they seem to be like doing it differently to how I have been doing it. That's why I am a bit sort of dubious about it all. I was going to look at the different concepts the different models of stress and the different research by people and then, and talk about the problems of defining it and every thing, and then go for the useful bit where, saying what's come out of the research and then talk about its relevance to everyday life, but they don't seem to be doing it like that."

Roy: "Do you know what they are doing?"

LYAL: "Yeah they are doing it more sort of talking about, they're just, they seem to be talking about the different definitions of it and stuff like that, they don't seem to be putting in the research and I don't know if I am doing it wrong or..."

Here L YAL is using information about other students' work - gleaned from informal conversations with them - as a benchmark for her own efforts. AUKA was similarly involved in discussions of the content, sources used, and position taken in their essays. Another function of these casual interactions is the exchange of useful 'administrative'
information. PASA found out deadlines, assessment weighting, and word limits through these, and CHKA compared the word limits set by his own tutor and that of a course-mate.

Although participants discussed matters related to their essays with others, they seemed to not discuss the details of their study practices, such as their approaches to note taking or to essay planning. When pressed in interview, participants' knowledge of others' study practices was found to be quite limited, but this tended not to concern them. Aspects of processes that were shared tended to be essay specific, such as which source texts were most useful (AUKA). They also seemed to discuss progress in only very general terms, such as how much time they had spent (WOSA), what proportion of the text they had written (TWRI), or how motivated they were feeling (COSH and AUKA).

In sum, diary data showed that participants rarely engaged in long periods of collaborative work on their essays, although they sometimes considered this collaboration useful. Interview data however suggested that informal and fleeting exchanges relevant to their essays were more common. On at least some occasions, these exchanges were useful to students in writing their essays.

These findings raise some questions about the community life of students. For example, we might address the nature of this informal contact, its utility for students, and what kinds of situations enable it. In the meso level study - Chapter 6 "Contexts of participation" - I will employ a method that will enable clearer insights into these issues.

4.3.1.3.3 Documents- essay specific resource of setting/arena

I have stated that it is possible to consider the ecology of mediation in terms of 'ongoing', 'essay specific' and 'fleeting' levels. Illustrating the 'ongoing' level, some students mentioned having made use of dictionaries consistently, from one essay to the next. At the 'fleeting' level, students also mentioned short-term arrangements of documents, e.g. stacking them or literally putting them to one side. I will address more fleeting arrangements in the micro level study - Chapter 5, 'Materiality at the desktop'.

This study has yielded data on the use of documents through the course of producing a single essay, and so my attention in this chapter is focused at the 'essay specific' level. Considered at this level, individuals writing specific essays may also use some book (or
other document) in particular ways. Additionally some documents, such as a particular essay plan, may only exist for the duration of a single essay. In section 4.3.2, I will consider the roles of documents in essay production in some depth. I will demonstrate that they have a rich and pervasive shaping role in participants' essay producing action. I will argue that accounts of essay production that neglect this mediation are seriously flawed.

4.3.1.3.4 Summary of the resources of setting/arena

In this section, I discussed various resources of setting/arena that data showed to be relevant to essay production. Using the framework presented in section 4.3.1.1, we saw that these resources may be considered at different levels of longevity, from ongoing resources such as libraries, to essay specific resources such as an essay outline, down to the fleeting arrangements of documents on a desktop. Consistent with cultural psychological theory we saw that these resources had constitutive, shaping roles in essay production.

4.3.1.4 The structuring resources of the person

I have considered resources of activity/motive and of setting/arena. The remaining resources that the data revealed are resources of person. As for activity/motive and setting/arena, the resources of person appeared to have very different longevities. Students' identities might be relatively stable from one essay to the next. Some students mentioned having written about their essay topics earlier in their academic careers. This clearly shaped their efforts on this occasion, but seemed unlikely to impact on other essays they wrote. Students' accounts of their essay production processes were often rich in emotion. Like identity and topic knowledge then, emotions also clearly shaped essay production, but emotions seemed more variable within episodes of work and from one episode to the next.

In this section, I will address in more detail identity and emotion.

4.3.1.4.1 Identity - ongoing resource of person

In the following quote, we see that one participant's identity, as a newcomer to psychology, shaped what she tried to achieve in her essay. Here, PASA gives her
response to some guidance on essay writing that was offered by a tutor for a different module.

"She said 'take one stance and sort of criticise the other one more'... and I thought well how the hell am I, I am not even a Psychologist, do you know what I mean, I am just studying this how am I supposed to? She said 'well have you not read psychological literature before, about how scientists have one argument and they stick to that' ... and I said, 'well yeah I have but I am not really a psychologist, do you know what I mean, I am just doing an essay for Communications'" (PASA).

Clearly PASA's view of her own identity as a student was in tension with what she was being told was required. PASA was unwilling to take the advice of her tutor, and worked towards less ambitious aims for her essay. This tension between the authoritative stance adopted in the essay genre, and student's status as a learner-under-assessment has been well examined by other authors, and related to various educational practices (e.g. Lillis, 2001). For our present purposes, it is adequate to note that 'identity' constitutes an ongoing 'resource of person' that shapes students' aims and actions. That this shaping may conflict with institutional requirements, illustrates the relevance of this point.

4.3.1.4.2 Emotional state - fleeting resource of person

When they talked through the activities recorded in their diaries, participants' accounts of their activities were rich in emotion. Despite being largely neglected in cognitive accounts of writing (Hayes and Nash, 1996), emotions - such as interest, boredom, anxiety and satisfaction - and physiological states - such as comfort and tiredness - seemed to be strongly implicated in essay production. Emotions find a place in the present cultural psychological account as 'fleeting' resources of 'person'.

The relations between emotional/physiological states and essay-producing actions are complex. On the one hand, essay activity shapes emotion. Lack of progress creates boredom, despondency or frustration. For some students the fact of having to produce an essay creates an intense emotional experience. "The very word essay makes me cringe" (CAMA). On the other hand, emotional/physical states also shaped action. The most common reasons that participants gave for stopping a period of work were boredom and tiredness. The shaping effects of emotion are not limited to influencing temporal patterns of work. Some participants mentioned that the feeling of stress can help them to work efficiently. Further to this, one participant suggested that emotions associated with
various ways of working, shape her choices between them, "if I try one way and I enjoyed working that way, I might choose to do it again" (HAMA). One way to understand the bi-directional relationship between essay activity and emotional experience is to think of them as dialectically constituted - given shape by their coming together or articulation. Essay production action would not take the shape it does without emotion, and emotional experience would not take the same shape without the essay activity.

Although emotions are typically thought to interfere with cognitive processes, data from this study suggest that emotions are more intrinsic to essay production, and may play a more positive functional role in it. Boredom or frustration often resulted in (a break and then) redirection in participants' efforts from a less effective avenue of work to a more effective one.

4.3.1.4.3 Summary of resources of person

Cultural psychology does not leave the person out of accounts of action. We have seen that the person brings to essay production various resources, of different longevities. Key resources that participants 'brought' included; their identities as students, any knowledge or prior experience of the essay topic and their emotional state. We saw that these resources - like the others in my framework - have shaping roles in essay production. They help constitute essay production, making it what it is.

4.3.1.5 Summary of contexts of essay production

Data revealed a rich variety of resources involved in essay production. In order to make sense of these resources I proposed a framework, inspired by cultural psychological theory, that characterised the resources along two dimensions. Resources were classified according to their longevity and whether they came from 'activity/motive', from 'setting/arena' or from 'person'. The framework is theoretically grounded, and accounts for the many diverse resources that the data presented. Cultural psychological thinking suggests that the various resources should be understood as constitutive elements in the 'system' of essay production.

I explored some of these elements and found that their various roles could be understood as 'shaping' or 'structuring' essay production. Resources such as; deadlines, other people,
documents, students' identities, and even the leisure activities that articulate with essay production make it what it is. This is clearly consistent with cultural psychology's view of context as constitutive.

Having identified and discussed a rich variety of constitutive structuring resources, it remains for me to address how engagements with resources are organised in time. In the second main section of these results, I will consider processes of essay production activity.
4.3.2 Processes of essay production

This, the second of three main parts in this results section, addresses instances of essay production as temporal processes. Using data from this study, we shall come to a view of essay production as temporally organised action that is heavily resourced by, and structured through, documents.

I will begin by establishing, in section 4.3.2.1, the pervasive nature of document mediation in essay production. We shall see that documents of many forms were created and used by these participants. We shall also see that use of various source or self created documents is not limited to early, 'pre-writing' phases. Participants made substantial use of these documents also when composing the texts of their essays.

I will go on, in section 4.3.2.2, to consider the strength of this document mediation. Using the example of a single participant, I show how this individual's use of documents gives form to the cognition/action of producing his essay. This example will highlight the dangers of describing essay production without taking full account of document mediation.

In section 4.3.2.3, I will question the assumption, implicit in the term 'strategy', that the individual is the sole source of the temporal organisation of essay production. This assumption is philosophically inconsistent with the principle of 'mediation', and I will present empirical evidence to question it.

In section 4.3.2.4, I will propose a way of accounting for the temporal structure of essay production. In this view, essay production unfolds out of 'fields for action' constituted by the various resources of the situation. I will suggest that this view enables a richer understanding of the roles of documents in essay production - as material and semiotic resources constitutive of an emerging microgenetic process.

4.3.2.1 The pervasive nature of document mediation

Diary data focused upon participants' use of documents, and their organisation in time. Table 4.5 shows what kinds of documents participants engaged with when working on their essays. It also shows (in parentheses) whether participants engaged with these
documents during those half hour periods in which they actually wrote the texts of their essays.

<table>
<thead>
<tr>
<th></th>
<th>Books</th>
<th>Journal articles</th>
<th>Web articles</th>
<th>Own previous essays</th>
<th>Lecture notes</th>
<th>Annotating/Highlighting</th>
<th>Notes</th>
<th>Spider-diagram</th>
<th>Outline</th>
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<tbody>
<tr>
<td>AUKA</td>
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<td></td>
<td></td>
<td></td>
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<td>CAMA</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>CHKA</td>
<td>7(7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y(Y)</td>
<td></td>
<td></td>
<td>Y(Y)</td>
</tr>
<tr>
<td>COSH</td>
<td>8(8)</td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y(Y)</td>
<td></td>
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<tr>
<td>DACL</td>
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<td></td>
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<td></td>
<td>Y(Y)</td>
</tr>
<tr>
<td>DUJA</td>
<td>5(3)</td>
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<td></td>
<td></td>
<td>Y(Y)</td>
<td></td>
<td></td>
<td>Y(Y)</td>
</tr>
<tr>
<td>HAMA</td>
<td>6(5)</td>
<td>1(1)</td>
<td></td>
<td></td>
<td>Y(Y)</td>
<td>Y(N)</td>
<td>Y(Y)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KEWI</td>
<td></td>
<td>1+(1+)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LEEL</td>
<td>1(0)</td>
<td>1(1)</td>
<td></td>
<td></td>
<td></td>
<td>Y(Y)</td>
<td></td>
<td></td>
<td>Y(Y)</td>
</tr>
<tr>
<td>LYAL</td>
<td>5(2)</td>
<td>1(0)</td>
<td></td>
<td></td>
<td>Y(Y)</td>
<td>Y(Y)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASA</td>
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<td>1(1)</td>
<td></td>
<td></td>
<td>Y</td>
<td>Y(Y)</td>
<td></td>
<td></td>
<td>Y(Y)</td>
</tr>
<tr>
<td>SKRU</td>
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<td></td>
<td></td>
<td></td>
<td>Y(Y)</td>
<td>Y(Y)</td>
<td></td>
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<td>Y(Y)</td>
</tr>
<tr>
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<td>Y(Y)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WARE</td>
<td>3(0)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>WOSA</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Y(Y)</td>
</tr>
</tbody>
</table>

Table 4.5. Document use for all participants. Entries outside of brackets show how many/whether resources were used/made. Entries in brackets show resources that were engaged with during periods of text composition.

Table 4.5 shows that participants made use of many documents in producing their essays. Books were the most commonly used source texts (mean = 3.8). Each of the following: journal articles, web articles, lecture notes and participants' own previous essays, were used by two of the fifteen participants. But these were not the only texts that participants used. In addition to the essays (and drafts) they created, they also produced other documents. These could be classified (all such documents were retained as part of the diaries) into notes, spider-diagrams, and essay outlines. All but two of the participants produced one of these kinds of text: eleven made notes, six made a spider diagram, and ten made outlines of their essays. Four participants also reported highlighting, underlining, or otherwise annotating their source texts. Already we can see that the
production of these essays generally involved the use and creation of numerous documents.

One way to gain some sense of the richness of document usage is to consider what documents participants used at times when they were actually writing the text of their essays. It could be argued that the fact that participants used so many source and self-created texts simply reminds us that, in coursework essay production, students must not only write an essay, but also read sources. However, we should not understand coursework essay production as involving 'both reading and writing', as if they were neatly separable. The present data suggest that the use of source and self-created documents was a pervasive aspect of all phases of document production, including the actual writing of essay text. The bracketed figures show what documents played a role in each participant's composition processes. 12 of the 15 participants engaged with at least one source text (book, journal article or web article) while composing drafts or essays. Additionally, all of the eleven participants that made notes engaged with these when composing text. Similarly, all ten participants that made outlines, and four of the six participants that made spider diagrams, engaged with them while composing.

A stronger sense of the mediated nature of essay production is provided by analysis of the time spent producing essays.
Table 4.6. Time that participants spent, on working, composing text, and composing from documents. * Certain rules of analysis were necessary for the construction of this table. The total number of hours spent working were approximated by adding all the half-hour diary units in which participants worked on their essays. Hours spent composing were calculated in a similar way. A period of composing was defined as any in which a participant ‘wrote to’ an essay or draft, with the exception of periods of ‘neat copying’. Neat copying was defined as writing to a computer draft of an essay using only a paper draft. AUkA was excluded from the table because her diary was incomplete.

Table 4.6 shows some basic temporal measures of participants’ activity, through which we gain further insight into essay production’s mediated nature. Basic data on time spent working will give readers a sense of the scale of participants’ efforts. The mean time spent working was approximately 14 hours (std. dev 6.8). On average, approximately half of the thirty-minute intervals of work involved some composition of essay text (7 hours worth, std. dev 4.6). Pertinent to the mediated nature of essay production, we can see how many of these time units also involved engaging with other documents. Participants engaged with documents produced by others (books, journal articles and/or world wide web documents) in an average of 59% of those units (std. dev. 37%) and they used self-created sources (notes, spider-diagrams and/or outlines) in an average of 52% of their composing units (std. dev. 33%).

We have now seen that participants not only refer to various other texts while composing their essays, but also that they make quite frequent use of these when composing. Interested readers are referred to appendices 4.6 and 4.7. These ‘document usage charts’ show participants' diary data in condensed format. The charts, showing data from both
more industrious (HAMA - appendix 4.6) and less industrious (WARE - appendix 4.7) essay production instances, further illustrate the pervasive nature of document mediation.

4.3.2.2 The strength of document mediation

Having established that document mediation was pervasive within participants' essay production activity, I will now argue that this mediation strongly shapes essay production. We shall see that it is strong enough that classifications schemes of document production that do not fully account for this mediation, when applied to essay production, may be mis-informative.

One way to try to understand participants' essay writing actions is to attempt to apply some classification scheme to them. Chandler (1992) produced such a scheme, which Wyllie (1993) later developed. Wyllie (1993) surveyed students and academic writers and identified five types of approach. The five categories of strategy or approach are; watercolourist, architect, bricklayer, sketcher and oil-painter. This scheme classifies participants' writing in terms of planning, composing, and revising behaviours. Many writing researchers (e.g. Sharples, 1999) have taken up this scheme. However, it accounts for writing too narrowly for my purposes.

The chief problem we can have with the scheme is that it takes no account of documents other than drafts and plans, and their roles in essay production. As a consequence, it is inadequate for categorising, and can badly misrepresent essay production. I shall illustrate this with data from a single participant. TWRI took three and a half hours to write his first draft. He wrote the text from beginning to end, and did not have a written plan. He wrote his essay in a single session, and later made only minor changes to the text. The information that this student; did not make a plan, composed his text from beginning to end and broadly 'got it right first time', suggests that, under Wyllie's (1993) typology, this student enacted a 'watercolourist' approach. From this information and classification, we might imagine what went on 'inside TWRI's head' as he composed. We might imagine the kind of processes Hayes and Flower (1980) suggested; such as, probing memory for ideas, organising them, and translating them into text. But because this classification neglects his use of other documents, it badly misrepresents his actual activity.
A richer understanding of TWRI's action, and one that is inconsistent with the watercolourist classification, is achieved if we consider what resourced TWRI while he was composing his text. TWRI referred extensively to his notes throughout writing. Analysis of the content and organisation of these revealed that his first draft bears a striking resemblance to these notes. In fact, these notes consist, almost entirely, of fully formed paragraphs, each of which appears in only slightly modified form in his first draft. The ordering of text in his draft is also almost the same as it is in his notes. From this information about how his composing was resourced, we see that creating the draft was a very different activity than that which the 'watercolourist' classification suggested. Broadening our view of composition - to include its mediation by documents other than 'plans' - enables a richer understanding of what TWRI did. It now seems to have involved mainly copying out paragraphs from his notes while making minor adjustments to them.

However, having observed that there were substantial similarities between TWRI's draft and his notes, it is now clear that how he produced his notes is pertinent to an overall understanding of his activity. The documents collected with the diary and the interview show that to create his notes he drew heavily on a highlighted source text. He was "copying out" and "rewording" highlighted parts of the text "and anything else that caught [his] eye". An account of how he produced his notes must therefore acknowledge that this process was heavily mediated by the highlighted text. In turn, any account of the highlighting process must incorporate the original text.

By paying fuller attention to document mediation, we have seen that the cognitive work of writing the essay was distributed throughout various stages of essay production. As a consequence, coursework essay production cannot be fully understood without addressing its mediation by documents. This mediation made TWRI's activity what it was. The shape or structure of cognition/action in essay production is not separable from the forms of document mediation that it involves.

Data from other participants also illustrate the importance of document mediation in constituting the cognition/action of essay production. For example, both of the participants that used essays they had written for previous coursework assignments actually inserted parts of these texts into their drafts. Actions like these dramatically violate the usual assumptions about what forms of cognitive activity produce essay text. Other participants provide more subtle examples of cognition/action taking shape
through some specific form of document mediation. For example, COSH composed using one source text at a time. Working from each source she wrote directly into whatever section of an emerging computer draft seemed most appropriate, taking care to exhaust each source before moving on to the next. She rearranged her text both as she read from the source texts, and also after she had exhausted them all. This is how she incorporated source documents into her composing process: This is how her whole composition process (what she wrote and when she wrote it) was given shape by her source texts.

4.3.2.3 Patterns of essay production as 'strategies'?

As I argued in Chapter 2, taking the individual (out of context) as a unit of analysis, makes seductive the assumption that the individual is the sole source of the structure of action. In the case of document production, this tendency appears to be manifested in a conflation of patterns of action and 'strategies'.

It has become common in writing research to describe temporal patterns of composing as 'strategies' (Sharples and Pemberton, 1992; Torrance, Thomas and Robinson, 2000; Chandler, 1992). It is less common to critically address how these patterns of action emerge. Consider for example, Torrance, Thomas and Robinson (2000). Despite titling their article "Individual differences in undergraduate essay-writing strategies: a longitudinal study". Torrance et al. (2000) do show some caution towards the term 'strategy'. They "remain agnostic as to whether or not the "strategy" has been adopted deliberately" (p182). This stance reflects that their data throws little light on such issues. A stronger sense of why patterns of essay production activity emerge as they do, would seem central to a rich understanding of instances of essay production as processes.

My data suggest that the structure of the activity is not determined (exclusively) in advance of itself, nor held in the head of the writer. It therefore suggests that 'writing strategy' is a misnomer. The participant CAMA provides a clear example. CAMA was in the company of friends for at least five of the eleven (approximate) hours that she worked on her essay. They had a significant role in shaping what she did. For example, she created a document outline only when advised to; she deleted specific parts of her text and made specific reorganisations of her text as she was advised to; and she switched from working at a computer to working with paper under advice. She used her
friends as sounding boards for generating content. She included ideas that they came up with in her essay, even using fragments of text and plans that were written by them. The organisation of her activity was not a 'strategy'. It was determined by her friends as much, perhaps, as it was by her. Nor was it determined in advance: she reacted to her friends' advice as it was given.

Close attention to the shaping roles of situational factors allows us to see that, in line with observations in other domains (Lave, 1988; Suchman, 1984), document production is mediated by and improvised with the setting. It became clear that CAMA's action was improvised when we considered the mediation of her friends. WOSA's process involved multiple drafts (of her introduction). This was not a 'strategy'. It was a response to her first draft falling short of the quality she expected of it. LYAL claimed that she would have revised her text once it was written, but was forced by proximity to the deadline to hand in her first complete draft. Action is shaped by and improvised through each of the factors identified in section 4.3.1 'the mediating ecology of essay production' - friends and deadlines included. Essay production seems to be an ongoing unfolding structure-in-process. The resources of the situation - including documents, other people, and students' expectations and understandings - co-constitute activity, giving it shape.

Although the examples above consider how the broad temporal organisation of action is shaped by the mediating situation, mediation also shapes the moment-by-moment structure of action. The moment-by-moment shape of LEEL's composing action, for example, is created through continual engagement with her emerging text. She describes that she;

"put[s] all of [her notes] in [to a word processor], and then go back to the top, and expand on each bit, and then go back to the top and [J move, start moving stuff around to try and make sensible paragraphs and things. ... I don't know if it is for other people but things sort of all of a sudden look like they should be in the conclusion or they look like the kind of sentence that could be in the introduction, and that's how I move them around ... ".

The potency of documents in shaping moment by moment activity is particularly apparent from instances of action going 'off-track'. LEEL finds that she neglects aspects of the text that are not currently visible on screen.
"I normally [laughs] get a page looking really good and then I go to the next page and I realise that I have ignored all the bits that, it's all been moved down hasn't it, so I haven't incorporated those bits, just the first bits, so it's a bit confused."

The emergent pattern is that her efforts tend to be focused on the earlier middle parts of the document. This,

"just seems to happen because ... if I can't see it on the screen then I forget its there - which is a bit weird."

Her way of coordinating with the text seems to overwhelm her attempts to be more systematic:

Roy:      "Do you ever have a system where you try, try and, go through-"
LEEL:    "The whole thing? Oh, I'll try but I get easily distracted." (LEEL).

DUJA provides another example in which an online document apparently contributes to unintended and inappropriate action. Here, he describes drafting his essay on computer. (It was the first time he had ever drafted on computer).

"It did take over the process. I got a little side tracked from finishing and completing the thing... I remember getting to the point [of realising that] if I carry on doing this I will be carrying on and on... I was beginning to lose track of what I was actually doing. I was more concerned with shuffling it around instead of actually writing an essay that made sense."

In this and previous examples, it seems that action is not under the top-down conscious control of individuals but is shaped, in part, by the conditions of the situation, including mediating documents. Although in these examples action is clearly incongruent with well-considered aims, it is quite possible that more successful activity also lacks top-down control and is similarly improvised.

Testament to the power of the setting in shaping action comes from cases where participants take control of their action, not through mental goal setting, but through shaping their environments to encourage desired patterns of activity. The data is replete with examples of this. A very simple example is provided by CHKA: he shuts the curtains of his room to avoid being distracted by what is outside. An example involving more sophisticated manipulation of the setting is provided by AUKA. AUKA is another participant who found herself vulnerable to patterns of action that were in tension with functional concerns. She reports that she has a habit, when using source texts, of being
distracted into reading text that has no relevance to her immediate concerns. She claims that she is particularly vulnerable to such distraction when using indexes: when looking for a specific word, some other term catches her eye, and she succumbs to the temptation of reading about it. This has been particularly problematic for her when working under pressing time constraints. AUKA's resolution of this snag is one that involves reconfiguring her setting in a particular way. She attaches 'post-it' notes to relevant pages of textbooks, so that she can find these pages without using indexes. This reconfiguration of the setting enables her to use the book without the distractions associated with indexes.

These examples of participants shaping their settings in order to shape activity are nothing out of the ordinary. Readers will recall, from Chapter 2, that this is what participants in Vygotsky and Luria's (Luria, 1932) dual stimulation studies were doing: creating or using intervening stimuli to mediate or structure their cognition/action. These stimuli 'act-back' upon participants, structuring their cognition/action. In section 4.3.2.4 I will attempt to recast documents' roles in essay production in a way that will take better account of this phenomenon.

4.3.2.4 Patterns of essay production as emergent

How might we describe the roles of documents suggested by these data, answering the question, how is essay production structured in time with respect to documents? In the present section, I will suggest that we may profitably understand document mediation and its implications for temporally structured essay production activity in terms of 'fields for action'. Recall from Chapter 2 that fields for action, as described by Lave, are the possibilities created moment-by-moment in the coming together of person, setting and activity. As key elements in the setting, documents are constitutive of fields for action. Fields for action enable the progressive unfolding of action through time. They combine both material and ideal characteristics. I will argue, based on the accumulated data, that it is profitable to think of essay production as an unfolding process of working in fields for action - of which documents are a key element. From this perspective, the challenge for students is to appropriately manage the continual process of working in, and creating fields for action, so that essay production is successful.
Diary and interview data suggested that participants tended to manage work rather efficiently and effectively. Their diaries rarely showed that they had to completely abandon work that they were doing, or to throw out drafts that they had made and start from scratch. When asked, they were rarely able to offer examples of where their essay production efforts became 'inefficient', 'ineffective', or 'off-course'. Nor were there many occasions at which they simply 'got stuck'. I was intrigued as to what underpinned this typically appropriate activity.

It seemed that, at any point in time, participants seemed to know what to do. In the following quote, COSH describes how her own activity unfolded. (Before this point in the interview she had explained that she wrote her essay using one book at a time, exhausting each one before taking the next from a pile of books on her desk.) COSH's account of how the temporal sequence of reading the books emerged, dovetails nicely with a fields-for-action account of essay production.

COSH: "It's not quite whatever is perhaps closest to hand, but I work on, um, the next project, part of the project. There is always a sort of a natural progression for me. I mean, from the books I had chosen from the library, I had already - as I flicked through them when I got them out of the library - I had already decided pretty much that I liked this one, this one is going to be first, and this one is ok, and I don't like this one very much so I will leave that one to last, and then if I have got enough information then I don't have to read it."

Roy: "What you mentioned sounds a bit like a sort of a plan for which books you will read and which books you [won't-"

COSH ["But its not a like seriously conscious, it is conscious, but its not rigid or I wouldn't even describe it as a plan almost. It's just, you know, like, the books are put on the table in that order because I know I want to read them in that order, but its not like you have to read them in this order."

COSH's example, and her use of words, suggest that her activity unfolds out of itself. Her use of the word "progression" has connotations of building upon what went before. The example she gives reinforces this impression. She describes how one activity (collecting books) created the situation that prompted and resourced the next (reading them in a suitable order); she describes activity unfolding out of itself.

Another point of overlap between COSH's reported experience and the fields for action view is that fields for action do not determine activity, but enable it. "It's not rigid ... the
books are put on the table in that order because I know I want to read them in that order, but its not like you have to read them in this order." The pile of books, and COSH's preliminary experiences of them, together, do not determine that the books will be read in the order of the pile, but they do suggest an order in which the reading could be done.

The idea of progression through fields for action is highly applicable to participants use of documents. For example, we have already seen how TWRI highlighted his source texts and took notes from them. Through doing this he was making use of documents (resources) currently in the setting, to produce new ones that would resource subsequent action. We may take the same view of any students' use of spider diagrams, document outlines, or drafts. AUKA's placing of post-it notes in books is another case of adjusting the setting to create more appropriate fields-for-action. Student writers produce essays through creating and exploiting fields for action.

The fields for action approach overcomes two forms of oversight associated with more traditionally cognitive approaches to understanding students' essay production process. The first we have already dealt with. It is a general neglect of the setting. We have seen that documents (as part of the setting) mediate (these participants') coursework essay production more pervasively and strongly than we might have imagined. We found, for example, that we misunderstood TWRI's writing activity when we took a perspective that overlooked how the materials in the setting resourced his action. The various changes TWRI made to his setting (highlighting and note taking) were key resources in his subsequent action. As I argued in Chapter 2, acknowledging the structuring role of the setting necessarily means acknowledging the improvisational character of action. Because it more fully considers the role of the setting, the fields for action approach is equipped to deal with the mediated, improvised nature of activity.

The second, more subtle, form of oversight in cognitively oriented approaches to writing is reducing the material to the ideal. In "The Social Life of Documents" Brown and Duguid (1996) argue that viewing the material document as a neutral conduit of information - essentially independent of the information that is sprayed onto it - is a flawed position. For example, the spatial locations of stories on newspaper pages and their font sizes, convey something about stories that is not expressed in the words themselves. They also give the example of a historian picking up information about archived postal correspondences from their smell: letters from plague affected areas were
disinfected with vinegar, and retained its odour. These examples illustrate that not all information is cleanly separable from a document's materiality. At best, any attempt to reduce a material document to abstracted information, risks neglecting something important.

Data from the present study also suggest that documents' contributions to fields for action are not reasonably reduced to simply carrying information. The spatial organisation of COSH's book-pile depended upon their materiality, and I have argued, contributed to the structuring of further action. COSH's book collecting activity added a number of books - spatially arranged in a relevant order - to her setting, and resourced her with experiences of and expectations toward the books. The spatially arranged collection of books, and COSH's experiences of them, combined as inextricable parts of the situation (along with all the other structuring resources) to enable the unfolding of action. The same argument applies to AUKA's use of the material properties of books and post-it notes to enable a different mode of access to book pages. The fields for action approach reminds us that - in Vygotskian terms - document mediation is not only a semiotic, or 'sign', mediation, but also a material, or 'tool' mediation. We would gain little and, Brown and Duguid's (1996) observations suggest, risk much, if we attempted to reduce this combined ideal/material field for action into a purely ideal one.

4.3.2.5 Summary of processes of essay production

The ideas presented in this section enable us to take a novel view of the materiality of coursework essay production. I noted earlier that there are rich patterns of engagement with, and creation of, documents throughout essay production. Traditionally, we would see this in terms of the manipulation and storage of information. I proposed that we should understand this as the creation of resources or 'fields' for action. This gives us a new perspective on self-created documents. In this view, notes, outlines, highlights and spider-diagrams are of interest not only for the information processing they achieve, but for all the ways that they contribute to further action. That is, how they resource and set up fields for the activity that will eventually result in a finished essay. This includes considering documents as not only semiotic but — inseparably — as material artefacts.
4.3.3 Histories of essay production

In the first two parts of this results section, I investigated contexts and processes of essay production. We came to see essay production instances as context embedded, heavily mediated processes.

In this third and final part of the results, and consistent with the cultural psychological perspective, I will address participants' relevant histories and the development of their practices across instances. The data will suggest that, consistent with cultural psychological theory, attention to this level of history enriches greatly the understanding of essay production built up in sections 4.3.1 and 4.3.2. These data suggest that students' practice histories were central to how they managed and experienced the process of producing their latest essay. The data also provide some insights into how individuals' essay production practices develop across instances.

In section 4.3.3.1, I will present data indicating that personal history is an important element in the shaping of essay production. Participants' interview comments suggest that they drew on their own personal histories to produce essays, and that they experienced as 'routine' the, often idiosyncratic, ways in which they produced their essays. It appears that the essay production instances or events recorded in the present study are more fully understood as part of an extended, developing, history of practice.

In section 4.3.3.2, I will suggest that we can helpfully think of participants as accomplishing essay production through enacting personal historical 'genres'. I will outline and illustrate this concept before putting it to work on the data in the sections that follow.

In section 4.3.3.3, I will present three ways that, data suggest, genres develop across instances.

In section 4.3.3.4, I will discuss the relative contributions of these forms of genre development. I will develop a picture of individuals' ways of producing essays as gradually building upon themselves, somewhat incrementally, into individual-specific forms.
In section 4.3.3.5, I will discuss the conservative aspects of personal genres, arguing that their taken-for-granted, operationalized nature can lead students to enact them unreflectively, missing out on more appropriate ways of working.

In section 4.3.3.6, I will summarise this section and its insights into essay production.

4.3.3.1 The routine nature of essay production contributes to its manageability

Given the complex and demanding nature of essay production, one might imagine that it would be experienced as a form of action that was extremely hard to organise. In approaching the cognitively demanding task of essay production, we have seen that students must engage with a rich variety of resources in a lengthy and somewhat improvised temporal process. In such circumstances one might expect frequent 'wrong turns' and action-stopping problems, and also much careful deliberation about how to proceed.

However, both the diary data and participants' comments suggested that participants' action was rarely inefficient, ineffective, or experienced as problematic. The diaries suggested that there were few occasions on which participants abandoned some effort, such as throwing out a draft, or making notes that they did not refer back to. And when asked in interview to describe any of their actions that were ineffective or inappropriate, they were rarely able to provide examples. They felt that their actions were generally appropriate to the unfolding situation in which they found themselves. However, when participants were asked about what kept their activity 'on track', they claimed that they rarely reflected heavily on how to proceed.

It seems that the routine nature of essay production - or each student's personal history of essay production - enables them to act appropriately without laborious reflection. Participants' talk certainly supports this position:

"It's just the way I've always done it to be honest, since I started writing essays, just follow the same pattern." (TWRI);

"For me it's absolutely routine, I do go about it in a very similar way each time... What you are trying to do is hard enough without worrying about the process, you just do it, don't you, the easiest way you know how." (LEEL); and,
"I don't think about it that much, it's just instinctive, you get used to a routine of doing an essay and you just do it." (HAMA).

These claims of inter-participant consistency across essays are supported empirically by Torrance Thomas and Robinson's (1999) finding that undergraduates' 'strategies' of essay production were consistent in approximately two of every three essays.

Even when participants did show evidence of spontaneous conscious reflection on how to proceed, their comments also seemed to reveal that essay production's routine nature formed a basis of their action. DUJA explains that he is hoping to replace a consistently troublesome approach to beginning composing his essays, with some unknown alternative:

"Previous times I have used a text book... and kind of like used sentences and then strung them all together, but then can't put it into my own words until I have read it understood it, and then re-wrote it, but that way seems to be a bit, y'know kind of like a faf really. So I am trying to think of a different way of writing an essay, because before it seemed like a little bit too much like hard work. I felt as though I was making hard work for myself, and I thought well there must be an easier way."

WOSA talks about 'the process' as a repeated, routine practice that she needs to improve because it generates consistent snags. "I am open to improving the process. I am aware that there are problems and I do come up against the same ones every single time and I have to sort of try and make a concerted effort to change the way I write essays." In both these cases, talk of change reveals consistent patterns of action.

We have seen that students appear to draw heavily on their prior experiences of essay production and show consistency across essays in the ways that they produce them. How can we incorporate the role of students' histories and their tendency to produce essays in consist ways, into our understanding of essay production?

4.3.3.2 Students enact 'personal genres' of essay production

In this section, I will propose the view that students' histories of essay production resource them to enact what can usefully be called 'personal genres'. This idea helps us to account for both stability in, and development of, students' ways of producing essays.
So what are ‘personal genres’? Recall from Chapter 3 that contemporary American genre theory (Russell, 1997; Bazerman, 1988) considers genres as 'typified tool mediated' ways of acting purposefully. The data from the present study suggest that, to produce their essays, students draw upon and develop, typified (repeated) ways of engaging with and creating texts. Let us consider some examples of these 'genres'.

- **The way COSH creates and uses notes to herself.** COSH invented something she calls a "focus note". When she experiences a difficulty, she makes a note about it, on a specific kind of paper, set aside especially for the purpose. This allows her to either focus on resolving the difficulty or to set it aside to review later. In a special receptacle, she also sets aside paper for other kinds of notes, which she has torn to a specific size (A6) especially for this purpose. She has refined and elaborated these techniques over time.

- **AUKA’s use of post-it notes as book-marks.** As described earlier, AUKA uses post-it notes as bookmarks to avoid the distractions of using indexes. She says she has done this consistently since she first tried it.

- **HAMA’s use of spider-diagrams.** Unlike most participants, HAMA made particularly heavy use of spatial organisation, arrows, brackets and other such graphic and typographic features in the documents she created. She made heavy use of these features in six of the eight hand-written self-created documents she used to produce her essay (the two other documents were a hand-written draft and a definition of stress copied from a book). She reports that she is consistent across essays in working this way, and that without having these characteristics in mind, the documents she produces, "just end up being mind-maps".

These examples are typified stabilized ways of acting purposefully through the mediation of documents, and might therefore be considered 'genres'. They are 'typified' in the sense that a particular student enacts similar processes repeatedly, from one essay to the next. A characteristic of these genres that leads me to qualify them as 'personal' is that - whereas genres are ordinarily shared by the various members of a community - these ways of working are quite specific to particular individuals.

The nature of 'personal genres' may be understood more deeply by reference to situated-cognitive principles that I introduced in Chapter 2. In sections 2.2.1.2 - 4, I proposed that
through repeated activity over time, a historically constituted relation between person and environment (which may be termed 'the setting') becomes a key resource in the manageability of action. And that, routine activity is an active achievement of improvisation that draws upon the history of a person's relations with their environment. In this view, routine is a valuable characteristic of everyday action, and one which persons may actively defend, but that (because of its emergent character) even routine action retains its inherent flexibility. Individuals’ personal genres may be understood in this sense. Consistent with the view - developed in section 4.3.2 - of essay production as improvised, personal genres may be considered typified forms of action that readily emerge due to the strong contribution of individuals' personal histories to fields for action.

The term 'genre' (as used in contemporary North American genre theory) helpfully captures much of interest about students' routine ways of producing essays. Genres are forms of action involving both person(s) and mediating artefact(s). Typically, that artefact is some document or text. One way that a genre may change is that the person uses the document in a new way. But genre theory also recognises the potential for change in the document. To see the document as an 'artefact' is to acknowledge its historical nature, and its potential for change. 'Genres' then are a concept consistent with a truly 'relational' view of development. They allow us to think of development as not solely within texts, or within persons, but in their relation. They offer the opportunity to consider dialectic development between persons and texts across instances of essay production.

Understanding students ways of producing essays as 'personal genres' also helps to account for them being enacted with little reflection, and somewhat 'automatically'. We saw in the previous section that participants seem to enact genres without thinking heavily about them. And HAMA suggests above that, without conscious decision making, her notes and plans, 'just end up being mind maps'. These views are markedly consistent with Russell's (1997) description of genres as 'operationalized action' (Russell, 1997), and with the view that personal history heavily shapes fields for action.

In the following sub-sections, I will use the concept of personal genres to address the development of students' ways of producing essays.
4.3.3.3 Data suggests that personal genres develop in three ways

In the present section, I will consider three mechanisms by which, data suggest, personal genres may develop: refinement, invention and appropriation from the cultural milieu.

4.3.3.3.1 Development through 'refining' genres

One of the ways in which students may develop essay production genres is through gradually refining them over numerous occasions. Techniques may be tweaked, shaped, or refined with experience. Participants often felt that they had 'just got better' at working in those ways that they routinely enacted, and could not identify sudden jumps or changes in their genres. AUKA describes the gradual developmental in her reading/note-taking, "I think I just got more efficient at pulling the necessary chunks out".

Highlighting is a genre that participants often felt they had improved gradually. TWRI and DACL, for example, provided very similar accounts of how their highlighting genres had developed over time.

"Before, when I first started to highlight things, I'd highlight loads and loads and loads, but now I'll pretty much know what I need and only highlight that." (TWRI)

"I try to highlight less of the actual thing because I used to end up highlighting nearly the whole lot, rather than just the key bits." (DACL)

Both participants described this development as gradual. One can imagine how this personal genre develops gradually. Reading-and-highlighting can be difficult. As she makes highlights, the reader must be attuned to the needs she will have in her future use of them. It would be unrealistic to expect that a person's first attempt at highlighting could not be improved upon in subsequent efforts: with repeated experience, these participants refined their technique.

We have seen then, that essay production genres may develop through being gradually refined over time.

4.3.3.3.2 Development through 'inventing' genres

There is evidence that personal genres may also be developed through 'invention'. Through improvisation with the resources of the current situation, people 'invent' 'new'
ways of doing things. Should these new ways of working prove successful, the writer can, at their discretion, apply them in subsequent essays.

WOSA provides an example. In response to the perceived challenge of her first essay she read more books than she normally would. Through comparison with other students, she found that this was a beneficial adaptation, and here she claims that she intends to repeat it.

"Everyone was phoning me ... saying well 'what do you write in the introduction?' ... I think everyone was getting it from Gross ... and they didn't understand it because they had only read it from one source ... but I got it from two sources so I understood what he was saying better. So that convinced me that if next time I can't do it its because I need more [ ] another sort of perspective on the way he was explaining things ... I am going to keep doing it like that now."
(WOSA)

If WOSA fulfils her prediction of consistently using more than one source to understand difficult ideas, then - like the special purpose notes COSH's makes, or AUKA's use of post-it notes - this will become one of her genres.

4.3.3.3 Development through 'appropriating' genres

The third mechanism for the personal development of genres is 'appropriation' from other people, or from the cultural milieu. There are a plethora of study guide books available to students. Friends, family, school-teachers, subject tutors, and a university 'flexible learning centre', may all at some time provide these participants with advice on how to produce essays. But was it 'appropriated' by students to become part of their routine essay production practice?

The data include many examples of appropriated genres. Approximately half of the distinct changes to their practices that were recalled, were associated, by the participant, with some piece of advice. The advice could come from teachers, friends or family.

WARE "At 'A' levels we were always told it was useful to [make plans and spider diagrams], it was just like a habit that stuck...

Roy "Who told you?"

WARE "Just all our teachers; we used to have essay writing things when we were doing our A levels and everyone was panicking they used to give us like, 'how to write and essay' talks, and little like symbols and spider diagrams and stuff and the best ones just stuck... There's loads of
little stuff that's stuck, there's stuff like if you are writing any - using all your different symbols at the beginning of the line just to show what sort of stuff it is. And if I was evaluating anything, so I knew that it was an evaluation I would do like a big, weird, arrow thing. I am still doing that now and that was years ago."

HAMA also received influential advice, from a family member.

"My Dad was quite a heavy influence in my early education, in terms of saying, well, 'you wanna get straight in there'. I have had that from teachers and my dad. And they were saying 'look don't worry so much about introductions, just get straight in there and do it... when I was much younger I used to get hung up on that, you'd just be sitting there going 'How am I going to start?'"

Appropriation is an active process (Vygotsky, 1978), and depends somewhat upon motivation. Notice that in the two examples of appropriation given above, participants characterised themselves as experiencing something like a need for change. HAMA characterised herself as 'hung up' and asking questions about how to start, and WARE mentioned 'panicking' about essay production.

4.3.3.4 Genres as a basis for development

Having identified 'mechanisms' involved in the development of individuals' essay production genres, I will now present a more encompassing analysis of the development of essay production practice through 'personal genres'. The present data suggests that personal 'invention' and 'refinement' of genres have more pervasive roles in the development of participants' ways of producing essays than does appropriation from the cultural milieu.

In general, participants were not keen to appropriate other peoples ways of producing essays. This was despite evidence that others' advice and guidance had significantly impacted on their development over previous years, when private study was newer to them. The advice that students typically sought when working on this essay was not usually about essay production technique, but rather was about the requirements of this specific essay. This is understandable given that the practice of producing essays was relatively familiar (despite this being their first at university) but the essay topic and content were typically unfamiliar, and were therefore more natural objects of reflection.

Interpersonal contact between students appeared insufficiently frequent and rich to support much appropriation. Exposure to others can play a role in the development of
personal genres, such as when WOSA compared the success of her 'invention' of reading multiple books with others' comparative failure, and resolved to adopt this approach in future. Similarly, DUJA's motivation to find another approach to beginning drafting his essays was apparently based in part by social comparison. His understanding that "Other people can do it" (DUJA) gave him confidence that there are more effective approaches. Tellingly however, this contact was insufficiently rich to enable him to appropriate the genres of his fellow students: "Some people say 'oh, I just write it on paper' or something." (DUJA). So, if these data suggest that appropriations of essay production genres from others is a rare phenomenon, then what about the other ways in which genres of essay production develop?

The inevitable variation between one essay and another is a potential source of development in essay production practices. For example, when PASA began work on her essay, she was in the unfamiliar situation of having considerable prior knowledge about her topic (having studied it for 'A' level) and of starting work on the essay much closer to the deadline than she would normally do. She responded to the unique combination of factors at play in her situation by working in an unfamiliar pattern. She began her work on the essay by simultaneously working on both a plan and a draft. This adaptation to the specifics of her situation nevertheless also drew heavily on her established genres of essay production: the notes she took and essay plan that she made, were of her usual kinds.

The specifics of our situation are resources that enable us to invent new forms of activity by bringing together familiar resources in novel ways, creating new forms of action. All the sources of structure identified in section 4.3.1 can vary between one situation and another. This variation provides the basis and stimulus for new ways of working. WOSA's decision to read two books instead of one was a flexible response to the specifics of her situation (which involved the unfamiliar experience of finding a single source inadequate for her understanding). It is an 'invented' way of working that she predicts will become routine for her. These examples from WOSA and PASA, and others such as AUKA's use of post-it notes, show that, in line with Lave's (1988) contention, 'invention' is not an astonishing feat of inspiration, but arises quite naturally through improvisation in setting. Such adaptations and inventions appear to be a cornerstone of the development of essay production genres.
The development of participants' essay production practices then, appears to be based more upon the gradual evolution of existing genres than upon the wholesale appropriation of less familiar genres from the cultural milieu. The overall picture is that, in preference to seeking and/or enacting new, personally unfamiliar ways of producing essays, students tend to draw upon their own repertoire of essay production genres. This does not mean that there is no development in students' genres of essay production. Even in enacting basically routine genres, we have seen that participants make adaptive 'refinements' and 'inventions' to cope with the variations and snags that occur from one essay to the next. Because routine action tends to generate the same snags repeatedly, these 'inventions' and 'refinements' are ripe for repeated re-use. Through repeated re-use, they may be 'operationalized' into the student's standard repertoire of genres. In this way, essay production genres build upon their own histories: current personal genres become the foundations upon which new personal genres of essay production emerge.

4.3.3.5 Genres as conservative forces

Having inferred from the data that students' ways of producing essays develop, in large part, through cumulative adaptations of existing genres, I will now consider evidence highlighting conservative and constraining aspects of genres.

I have suggested that through their familiarity, ways of producing essays become taken-for-granted. Students' histories of experience allow them to take familiar, tried and trusted steps, instead of being dazzled and overwhelmed by the full range of options in any situation. (In Lave's (1988) terms, an 'information-rich arena' is transformed into an 'information-specific setting'). The comments from LEEL and HAMA in section 4.3.3.1 are notably consistent with this view. The potential drawback to this is that students enact familiar genres unreflectively – familiarity blinkers them to the diverse options available. Because all ways of producing essays do not equally enable rich learning experiences and high-quality finished texts, this is problematic. I will present evidence here to flesh out and support this argument.

Despite some inherent adaptability, familiar genres are somewhat conservative forces. Participants expressed strong reluctance to appropriate unfamiliar genres in place of more familiar ones. For example, COSH's practice when word processing is to work on her documents in 'page-layout' view. She explains that this not a carefully considered
choice, but probably originated from this being the default option on her computer. Nevertheless, she expresses strong reluctance to experiment with, and perhaps appropriate the use of, other 'views' offered by the word processor.

"If I find problems with it I will change views. Otherwise I will stick with it" (COSH).

In the following unsolicited explanation for lack of detail in her plan, PASA shows an awareness of another approach to planning, but an unwillingness to appropriate that method because of its unfamiliarity.

"I'm not really used - I'm not one of those people that does an in depth big plan before I start an essay, because I am not used to that. I've never been taught to do a detailed plan, maybe a spider diagram but nothing too major, I've never done that before..." (PASA).

TWRI expresses a similar conservative tendency in more general terms.

"If I've found something that's worked before I will try and stick to it. If I have needed to adjust it I'll adjust it, but generally I will try to generally stick to it." (TWRI).

One good reason for reluctance to appropriate new ways of working in place of familiar genres is that, through enacting them repeatedly, participants have already become proficient in familiar ones. Whereas familiar genres may be enacted with ‘automatic’ ease, unfamiliar practices would be experienced as effortful.

A further reason for reluctance to change is that familiar genres may well be better tailored to a student’s needs than unfamiliar ones. Students are unlikely to appropriate advised ways of working that seem unlikely to meet their particular needs when their existing genres have been appropriated, invented and/or refined specifically in accordance with these. Hence, other investigators have shown that students' ways of producing essays (their “approaches”) tend to be consistent with their understandings (“conceptions”) about essay requirements (e.g. Hounsell, 1984; Campbell, Smith and Brooker, 1998). To give an example from the present data, LEEL appeared to lack any clear understanding of essay structure, and this is reflected in her approach to ‘essay planning’ and her unwillingness to change it. LEEL’s approach to planning her essay was to gather notes and enter them into a computer with little regard for structure. She was aware of alternatives, such as spider-diagrams, but seemed oblivious to any advantages they might offer in structuring her essay. When I suggested that she had not
made a plan for her essay, she responded, "The very first thing that I do when I start putting it on the screen is like making a plan, is like re-writing notes before I start. It's like a spider diagram but without the arms - it's the same thing." When I suggested that the list of notes she puts on the screen does not suggest any particular essay structure, she said, "I really don't think that I understand structure well enough, yet." Ironically, it seems that because of her relative blindness to issues of structure, LEEL was unlikely to appropriate any way of working that would enable her to more systematically structure her essays.

As a form of 'operationalized action' (Russell, 1997), genres, like the mechanics of driving a car apparently become somewhat 'automatic'. HAMA’s claim that without specifically setting out to produce this kind of document, her notes and plans "just end up being mind-maps", was consistent with this. Similarly, COSH claims that when she is at work on her essay, for her, phenomenologically, 'there are no other options'.

Consistent with their status as 'operationalized action', it seems that well-practised genres become unproblematic and somewhat 'transparent' to participants, such that they do not reflect heavily upon them. When questioned about the strengths and weaknesses of her approach to essay production, DACL’s main response to this question was simply, "It works for me." TWRI's response was also similar to many of the other participants in displaying a lack of reflective awareness, "I've never really thought about anything like that. I've just done it. Never thought if I could do this better or that better. Never had any ideas on that."

This invisibility of genres may lead students to assume that they do not shape the experience of essay production, nor the kind of essay that results. Participants were generally unable to suggest ways they could have worked differently to change the character of their essays or the experience of producing them - other than by spending more or less time at work. Even when alternative ways of working were proposed to them, they generally felt that these would not alter the quality of their essays or of their experiences. For example, DACL’s approached her essay by systematically skimming, highlighting, and then writing from sources but she felt that changing her approach (such as brainstorming ideas) could not make the task more or less enjoyable. Similarly, TWRI - whose pattern of working I will review in the following paragraphs - felt that changing his current way of working would not influence the kind of essays he produces.

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What makes the conservative aspects of personal genres concerning is that all genres do not equally enable the same quality of experience or outcome. I will take TWRI’s ways of producing essays as an example. I described TWRI’s pattern of essay production in section 4.3.2. It involved highlighting source texts, and then taking notes by copying out sections almost verbatim. He then drafted his essay through a process of selecting, rewording, and slightly reorganising these notes. It is possible to argue that this way of working was appropriate to the specific demands of this essay. (The source text was a difficult one and was provided by the tutor as a key text for the essay. Also, the finished essay received an acceptable upper second-class grade). However, TWRI’s way of producing this essay seems to constrain his intellectual experience and the kinds of text he produces.

Specifically, it seems that TWRI’s approach is supportive of ‘telling’ (Bereiter and Scardamalia, 1987) the knowledge inscribed in source texts, but unsupportive of ‘transforming’ it. The following quote suggests that his way of note taking has indeed constrained him to telling the knowledge of his sources.

"I don’t write out now as much as I would have done before. I used to write out a lot more of other peoples’ words. That was something that got changed when I was doing my ’A’ levels, because my psychology teacher would always say "nice notes by Coolican but no [TWRI] [.] because I would have copied out exactly what he says. So through things like that I have learned to write out things more specific, more my words."

Interestingly, this quote suggests that, stimulated by advice from his tutor, he has refined his note-taking genre to support greater intellectual independence from his sources. I have identified earlier that refinements and mundane inventions are the typical mechanisms of development in essay production genres. However, it seems, that small adjustments to TWRI’s established genre of note taking have not taken him far towards putting ‘more of himself’ into the texts. Although we may acknowledge that genres have inherent flexibility, and that TWRI’s current genres could eventually evolve into something more supportive of knowledge transformation, they seem unlikely to organically evolve into something as supportive of knowledge transformation as, say, spider diagramming. It seems that he needs more than to adjust his current note-taking genre, but to break free of it; he would perhaps benefit most by enacting an entirely different (probably unfamiliar) form of note taking.
Findings from TWRI's participation in a follow-up study (Dymott and Crook, 2001) constitute strong evidence of the conservative and constraining influence of personal genres. In his next essay at university, TWRI was required to substantially transform the knowledge presented in his source texts. From a choice of three essay themes, TWRI selected one in which students were asked to discuss the popularisation of any chosen branch of psychology. TWRI chose personality testing. Hence TWRI needed to step back from his sources (on personality testing) and adopt a critical stance. However, when he began work on the essay, he enacted his familiar genres - including "writing out all the notes from the bits I had found in the books and trying to put them in some kind of order" - and found himself only able to summarise his sources.

"Once I had finished getting all the notes I thought I needed, then I started thinking about what I can put where, how I can structure it. That was my next step really, because, when I had all the notes, I just wanted to get it all done. So I just thought about the introduction, thought about what would be the main body. But I had forgotten that I am trying to answer the question of the essay because I had got all the stuff on personality testing, and I was just writing an essay on that without realising it. ... I had just written an essay on personality testing. I hadn't really answered the question. I actually remember realising I hadn't answered it so I wrote a paragraph of about 6 or 7 lines, and that's the only time I spoke with reference to the title. And that's when I thought this is wrong. I have to do something else."

Unsatisfied with his first draft, he abandoned it, and began work again. This time he worked on a different essay title, "In what sense is psychology a 'moral and political science'?", which he was to address with reference to research on aggression. However, he again enacted what was basically his familiar way of working.

"I didn't have much time, but other than that, the format was pretty much the same as I always do. Do, like, the reading and make all the notes from whatever sources I have got. If there is something that sticks out I will highlight next to it, 'introduction' or 'main body' or 'discussion' or something like that. Then I just start the writing really. So this was quite a lot similar to what I would normally do."

Again, he failed to adopt the necessary distance from his source materials.

"I went through my all books on aggression, the articles, [and] got the bits out. And basically wrote about aggression. It wasn't till I had nearly finished the writing, or having finished the writing that I'd look back at the title. ... This one barely answers the question as well. I found it really difficult to get an answer out of it. And I got 50% for this... [The feedback] said 'When you
answer the question, you have really good points', but my weak point was that I hardly answered the question."

Yet despite these two failings, TWRI shows remarkably little reflection about different ways in which he could have produced his essay. I indicated some of the diverse ways that other participants organise their essay production, and asked him to speculate on whether he might have benefited from a different approach.

"I honestly haven't really thought about that kind of thing at all. [pause] I mean there is bound to be weaknesses, because of the mark I have got. There is obviously something wrong. But what elements I don't really know."

It seems that TWRI was unable to see beyond his existing personal genres, which could not support the form of intellectual inquiry required.

4.3.3.6 Summary of histories of essay production

This third and final section of the results has addressed the historical developmental aspects of essay production. It has complemented the other sections by demonstrating the central importance of personal histories in shaping essay-producing action.

Participants showed little evidence of heavy reflection and deliberation over alternative ways of producing their essays. Instead their personal histories resourced them to enact essay production in ways that were experienced as 'routine' and largely unproblematic.

I proposed that we might profitably consider these aspects of participants' practices as 'personal genres'. These are typified forms of action that readily emerge, due to the strong contribution of individuals' personal histories to fields for action. A strong contribution of personal history to fields for action explains the unreflective ease with which, interview data suggests, personal genres were enacted, and is congruent with Russell's (1997) description of genres as 'operationalized action'. Consistent with cultural psychological theory, genres are simultaneously improvised and routine achievements, with inherent flexibility but conservative characteristics. Also consistent with cultural psychological theory, the term genre emphasises relations between person and document (or other artefact) and the potential for dialectic development between them.

Data suggest that students work in substantially similar ways from one essay to the next, and develop these genres largely through re-using (and 'operationalizing') the mundane
'inventions' and 'refinements' that occur in their action. In this view, development occurs more through individuals building upon their existing personal genres than through them appropriating unfamiliar ways of producing essays from the cultural milieu.

Finally, I presented evidence that individuals can become unhelpfully shackled to familiar genres. Due to the strong contribution of personal histories to fields for action, personal genres may be taken-for-granted and enacted without reflection. Because of this, students may fail to attempt ways of producing essays that would enable higher-quality essays or richer learning experiences.
4.4 Discussion

4.4.1 Summary of results

Consistent with the aims of this 'meso' level study, my data revealed something of how essay production takes place in cultural and historical contexts. Consistent with cultural psychological concerns, data were presented exploring context and (microgenetic and ontogenetic) history.

Data presented in section 4.3.1, concerned context. Diary and interview data revealed that a rich ecology of contextual elements was implicated in essay production. I drew upon cultural psychology to construct a framework for understanding these elements. Data were presented that explored the roles of specific resources. Consistent with cultural psychology, the various resources could be understood as constitutive elements, demonstrating the context-embedded nature of essay production.

In section 4.3.2, I considered the temporal shaping of action, with particular reference to mediation by documents. We saw that the cognition and action of essay production was heavily mediated (or shaped) by various kinds of documents. Diary data concerning overall patterns of action and participants' accounts of temporally more fine-grained action, conflicted with the assumption that these patterns are manifestations of mental strategies. They were more consistent with accounts of action as improvised. I also argued, using examples, that the term 'fields-for-action' enables us to more fully appreciate documents not only as semiotic, but also as material mediators of essay production. This distances us from a cognitive problem-solving account and moves us towards seeing essay production as embodied action.

In section 4.3.3, I addressed history at a more ontogenetic level, by addressing participants prior experiences of essay production. Cultural psychology encourages a historical perspective, and I found that it was essential to understanding instances of essay production to see them as part of personal practices. Evidence suggested that we might profitably consider some aspects of participants' developing practices as 'personal genres'. These are forms of action that emerge repeatedly over similar circumstances, and emerge readily due to the strong contribution of individuals' personal histories to fields for action. We saw that the concept of 'personal genres' was useful in describing
development, individuality and stability in the ways in which students produce essays. I suggested that the ontogenetic development of participants' practices of essay production involves building upon existing essay production genres, more than it involves appropriating unfamiliar ones. I further presented evidence that this can be unfortunate because alternative ways of producing essays may provide opportunities for richer learning experiences, or enable the production of better essays.

4.4.2 Reflections on the methods employed

The methods employed in the present study were effective in gaining good quality data, without causing many participants to drop out. The diary method, once explained, made modest demands on participants. This was important given that essay production on its own can be a highly demanding form of action. Frequent contact between participants and myself (the researcher) was effective in building a positive rapport that encouraged participants to make the necessary effort, and to talk candidly in interview. Rapport was also facilitated by my own status as a young research student, as opposed to a lecturer, assessor, or member of staff.

The diary method was effective in capturing temporal patterns of authentic coursework production. It did so with more depth and certainty than could be achieved through self-report techniques such as retrospective interviews and questionnaires. This study suggests that participants ordinarily reflect little upon their processes of essay production, and it may have been crucial for authenticity that the diary required minimal reflection on processes. Participants reported that the diaries had little if any influence on their actions.

While the diaries provided firm empirical grounding for the interviews, the interviews complemented the diaries by fleshing them out with more detailed temporal organisation and by addressing participants' aims, understandings and histories. The diaries recorded patterns of action almost exclusively in terms of the temporal switching on and off of engagements with various resources. The interviews allowed participants to elaborate upon the details of these engagements. For example, participants described how they engaged with these resources, and they described what factors underpinned the temporal patterns recorded in the diaries. The data supported the cultural psychological view that
it is imperative to take into account participants' own perspectives and also their histories of essay production.

The qualitative nature of much of the data presented here, reflects the exploratory nature of this study. The interviews used open-ended questions and extensive probing to explore broad themes. This allowed unexpected issues and insights to arise. Hence, although some of the claims and issues raised here could have benefited from more rigorous quantitative support, an investigation that was more focused upon producing such data may have failed to notice or address many of them. Emergent issues and insights raised by this study may be taken up in further research. Indeed, we shall see (in section 4.4.4) that the two remaining studies in this thesis will each take up themes that emerged from this first study.

4.4.3 Practical implications

Rather than having a small number of practical implications, this research might allow various stakeholders in undergraduate essay writing to draw out their own implications from the 'thick description' provided. These stakeholders include students, lecturers, schoolteachers, and 'study skills' advisers. The following examples are not exhaustive, but simply illustrative of the various practical implications that might be drawn from this study.

For students, these findings urge greater reflection. Consistent with previous research (e.g. Hounsell, 1984a; 1984b; Prosser and Webb, 1992; Campbell et al. 1998) this study gives students cause to reflect upon and to question their beliefs about what it is that lecturers are asking of them. It also urges them to reflect upon their routine ways of producing essays. While there is much to be gained from the smooth predictability of well-practised essay production genres, they can also constrain the intellectual experience of the subject matter, and the form of essay that results.

Pedagogues might reflect on how they resource students' experiences of essay production. Although this is by no means the first study to raise this issue of tensions between learning and assessment (e.g. Becker et al. 1968), the issue remains pertinent. For example, in his first university essay, TWRI received an encouraging solid upper second class grade for an essay that he produced through a process of essentially
regurgitating source texts - an approach that appears to have served him well throughout his 'A' level studies. Through their teaching and assessment practices, pedagogues might discourage over-reliance on essay production genres that do not support the kinds of experiences they want students to have, and the kinds of texts they want them to produce.

Yet, as we saw in TWRI's second essay, simply demanding richer intellectual work from students may not be enough to elicit it. Despite some appreciation of what was required, TWRI was inadequately resourced to meet these requirements. He seemed to lack appropriate ways of working, and - unreflective about his essay production processes - he seemed unlikely to adapt to similar demands in the future. Lecturers and study skills advisers might seek ways of gaining access to students' study practices, in order to bring them into focus as objects of reflection, thereby encouraging expansion of students' repertoires. Pedagogues must be sensitive to the taken-for-granted nature of their existing ways of working, and to the particular advantages that accrue from routine and familiar genres. Students are likely to be unreflectively satisfied with their current genres, which they adopted and refined over time, and which match their particular beliefs about requirements.

4.4.4 Research implications

This study presses upon us the situated nature of authentic essay production. Having described essay production practice as constituted by a rich ecology of resources, this study makes it clear that any attempt to remove essay production from authentic contexts in order to study it, inevitably transforms what is being studied. This does not imply that only studies of authentically situated activity have any value; but other research should be conducted and analysed with sensitivity to this issue. For example, in the following chapter, I will report a study in which I investigate document production under the less authentic conditions of controlled comparison. This study will be designed to preserve, to some extent, characteristics of the authentic activity uncovered here, and to allow more insight into those preserved characteristics.

The present research could be expanded to address more of the phenomenon of essay production. For example, more effort could be made to address the whole temporal span of a single piece of coursework, including the receipt of feedback from tutors. However, taking into account feedback would have meant delaying the final interviews.
considerably, thereby reducing the quality of retrospective reports, or requiring that the volunteer participants attend an additional interview. The tutors themselves could also have been interviewed. Comparing and contrasting the perceptions of students and tutors, and relating tutors' impressions of essays to the processes that produced them, could have been interesting. Also, various techniques could have been employed to examine more fully the trace documents and finished texts that students produced. These might have related processes to written products. Despite their clear relevance to this research, such connections were not empirically examined here.

The present study could be complemented by similar investigations into other contexts. It took place in the context of a single module in a single department, taken by first year students in a single university. It would be interesting and informative to find out whether the phenomena uncovered here are present in other situations, and to chart the similarities and differences between action in this and other contexts. For example, we might address how essay production is enacted in different disciplines and departments, and by more or less experienced and successful students.

A longitudinal investigation, in which students repeated their participation across numerous essays, would be of great interest. It would provide clearer empirical evidence on the stability of participants' essay production practices, across time, and across various essays. It could even chart the development of students' practices in their trajectory of participation through their degree courses. In fact, many of the participants in the present study did extend their participation to further essays, and a comparative study of more experienced students in a different department, was also conducted (Dymott and Crook, 2001). However, due to limited time and resources, these data have not yet been fully analysed.

Occupying the central 'meso level' of a three level investigation into essay production, this study will complement and be complemented by, each of the two studies that will flank it. Findings from the study will motivate and inform the micro and macro level studies. In turn, these studies will address more fully aspects that the present study could touch upon, but not fully address.

The present study offers tantalising glimpses of the roles of interpersonal contact in shaping essay production. Although the diaries showed that participants rarely spent
lengthy periods working on their essays with others, the interviews suggested that more fleeting and informal instances of talk about the essays occurred, and could be highly influential. Interviews fulfilled the valuable exploratory function of identifying these fleeting instances as important. However, the retrospective interviews could provide only limited insights into such occasions, leaving questions about their frequency, forms and functions tantalisingly unanswered. My 'macro level' study, Chapter 6 'Contexts of participation', pitched nearer the level of communities of students, will directly investigate such informal contact.

The present study also raises other questions about essay production that it cannot fully answer. The diary data revealed that essay production processes were heavily mediated by documents. It seemed that participants often worked (almost) simultaneously with more than one document. However, fleeting moments of essay production could only be inferred from participants' retrospective comments and from the relatively coarse-grained records provided by the diaries. The present study also raises the issue of document materiality. In section 4.3.2, I argued for a 'fields for action' perspective, in which documents' roles depend not only on the information inscribed on them, but also on their material properties. The data from this study however, does not allow us to address this materiality in depth. In the following chapter, Chapter 5 'Materiality at the desktop', I will present the 'micro level' study in this thesis. Through direct observation, I will investigate more fleeting engagements with documents, and will systematically address the particular significance of document materiality.
Chapter 5 Materiality at the desktop: observations of action under conditions of controlled comparison

5.1 Introduction

In Chapter 4, I presented the central, 'meso level', study in this thesis. The diary-based study investigated essay production in authentic contexts. The diaries represented 'complete' instances of essay production with a temporal granularity of half-hour intervals. The study focused particularly on patterns of engagement with documents. Data suggested that document mediation was a pervasive and important aspect of essay production. In the present study, I will further explore issues raised by the diary-based studies.

Diaries captured broad temporal patterns of engagement and disengagement with documents and other resources, and participants fleshed these out through retrospective interviews. The diaries clearly showed that essay production involved multiple source and self-created documents, and that participants often engaged with numerous documents within the same half hour. Fleeting processes (on time-scales at which we typically think of cognition as occurring) could be only roughly inferred from the diaries, retained documents and retrospective reports. Research that could describe more fleeting engagements with documents might significantly complement insights into document mediation provided by the diary-based study.

The diary-based study could also be complemented by further insights into the relevance of specifically material contexts. The issue of materiality was raised by bringing into focus, documents and other physical artefacts. I further suggested that physical properties and arrangements of documents shape essay production. However, this was based upon rather unsystematic evidence: selected examples from retrospective reports. A complementary study might examine the relevance of specifically material aspects of context in a more thorough and systematic fashion.

In the present study, I will investigate fleeting processes of document mediation and seek clearer insights into the relevance of document materiality. In order to inform and position this micro-level study, I will first review the relevant literature.

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In section 5.1.1, I will comment upon the general neglect of materiality in cognitively based research.

In section 5.1.2, I will present some experimental studies comparing paper and computers as media for reading, for planning and for writing.

In section 5.1.3, I will review an experimental comparison of paper and computers as media for the more richly resourced task of writing from a source document.

In section 5.1.4, I will reflect upon experimental approaches to literacy technologies.

In section 5.1.5, I will outline my own study - comparing the use of paper and onscreen sources in a timed 'essay-writing' task.

5.1.1 Approaches to fleeting processes and materiality

As I suggested in Chapter 3, those studies that have paid closest attention to fleeting processes of literacy have typically been allied to traditional cognitive psychology. As we have seen, the cognitive tradition has tended to neglect the materiality of writing processes (Sharples and Pemberton, 1992). This criticism naturally applies to the methods which cognitively based research has tended to adopt. For example, cognitive protocol analysis typically yields a stream of 'in the head' thoughts, de-emphasising embodied processes.

A single study is sufficient to exemplify how researchers working within a traditional cognitive perspective can construct materiality as irrelevant to investigations of writing, and to highlight the dangers thereof. Rouet, Favart, Gaonac'h, and Lacroix (1996), in a book chapter entitled "Writing from multiple documents: Argumentation strategies in novice and expert history students" investigated the processes by which students integrated material from multiple source texts. In the introduction to the paper, the authors suggest that their study addresses "the ability of students to synthesize information from multiple, contradictory sources in writing" (p. 47). In a well controlled experiment, participants first went through a fifteen minute study session, during which they had access, through a hypertext system, to seven online source texts about a historical controversy. They were not allowed to take notes while reading. In the next phase, participants had ten minutes to write an essay about the topic. They had no access
to the sources during this writing period: only a list of the sources and important names was available. From analysis of the written products, Rouet et al. (1996) found that "novices were most likely to take a stance on the issue, whereas experts tended to discuss and evaluate the problem and the documents" (p.44).

While Rouet et al.'s (1996) results are interesting, one may notice the distinctly artificial nature of the task. The authors assert that "When studying multiple documents subjects have to integrate the content representations they build for each source of information." (p. 46) It is clear that Rouet et al are referring here to representations that are 'in the heads' of their writers. In the peculiar situation of their experiment, this seems like a reasonable assumption. Participants were denied the use of notes and of sources when writing, and so it does seem likely that they had to build and integrate mental representations of the sources. However, it seems unlikely that either practising historians or history undergraduates face such a situation in their everyday activity. Even if they too build and integrate mental representations of their sources, they are likely to accomplish this through processes that involve taking notes, juxtaposing texts, and accessing those texts while they write about them. By placing constraints on the presentation of source documents, Rouet et al. effectively controlled these processes out the study: they investigate ‘writing’ as though it is a cognitive activity that is basically independent of the material conditions in which it takes place.

Although literacy research, cognitively based or otherwise, has tended to neglect the role of material contexts in writing (Haas, 1998; Selfe, 1999) one body of studies almost unavoidably addresses materiality: experimental investigations of writing technologies. (A considerable number of such studies have been conducted over the years. Dillon (1992) reviews experimental literature that compares reading from computer screens and from paper. Kellogg (1994) reviews some of the experimental literature on word processing versus composing on paper.)

5.1.2 Investigations into media for reading, for planning, and for writing

In this section, I will review some of the research investigating differences between using paper and computers in reading tasks, in planning tasks and in writing tasks. I will describe some established phenomena associated with the use of the two technologies, and will relate these to their material properties.
In the early nineteen eighties, much research was conducted comparing paper and computer screens for simple reading tasks (Gould, 1984; Wright, 1983; Kak, 1981; Muter, 1982). Seeking to manipulate variables in a highly controlled way, these experiments tended to involve simple, highly constrained kinds of reading tasks, such as proof reading for errors in spelling and grammar. The dependant variables selected for this research would typically be 'outcome measures' such as time and error rates. Very rarely were measures of process employed. These studies tended to find performance advantages for paper over computer. From a battery of such investigations, Gould (1987) concluded that this tendency was due to a combination of (individually insignificant) factors that influence the ease with which text can be discriminated from its background. Hence, for the simplest reading tasks, performance differences between paper and computers can be attributed simply to visual image quality. Modern, well set up computers, match paper for image quality and experiments comparing modern computer screens and paper tend to find no performance differences for simple reading tasks (Dillon, 1992).

Dillon (1992) reviewed also the experimental literature comparing the two media on more complex reading tasks. These tasks (e.g. searching through a text to find specific information, or suggesting changes to a text's macro-structure) involve navigation within a document, or 'document manipulation' (Dillon, 1992).

These studies typically show advantages for paper over computer. For example, Haas (1998, Ch. 3) found that subjects could recall more accurately the locations of text items when the texts were on paper, as opposed to on identically sized onscreen pages. Subjects were also able to relocate items more quickly on paper than on computer. Subjects who used a computer were also less able to indicate edits to unscramble a text into a more appropriate macro-structure. Despite the comparable legibility of well configured on-screen texts and paper, it seems that computer users tend to develop a poorer sense of the structure of onscreen texts than of paper texts. I shall suggest, when reviewing the experimental literature on writing, that this finding may be explained in terms of the material properties of the two media.

Some experimental research has also been conducted on planning. A study by Haas (1990) suggested that people plan differently on computer than they do on paper. Using a repeated measures experimental design, she compared the processes and products of
students planning and composing entirely on computer or entirely on paper. Computer users generated as much planning text, but of a qualitatively different type - with fewer notes classified as indicating 'emphasis' or 'structure'. Haas concluded that, when using computers, planning tends to focus on generating ideas, whereas, with paper, more emphasis is placed on organising and combining ideas. Planning on word processors was more like Bereiter and Scardamalia's (1987) 'knowledge telling', but on paper it was more like 'knowledge transforming' (Haas, 1990). It seems that, relative to paper, the computer's physical properties did not make it easy to create diagrammatic, spatial and typographic cues to convey and to explore ideas and relations between items.

Wood (1992) borrowed and adapted Green's (1989) 'cognitive dimensions' framework to investigate 'idea sketching'. Based partly on observation of pairs of research students using conventional media to sketch ideas for a research paper, Wood presented a number of 'dimensions' of media for planning, and explored interrelations between them. The dimension “delayed gratification”, for example, concerns the amount of time and effort involved in making or changing an inscription. Paper offers comparatively low delayed gratification for making inscriptions that are rich in typographic cues, diagrammatic cues and spatial organisation. In comparison to ‘freehand’ planning on paper, the use of mouse and toolbars means that achieving such rich inscriptions on computer tends to be a slow, effort-full process. Wood's cognitive dimensions account reasonably well for findings in the experimental literature, and his approach makes a convincing case, based on material properties of the media, for the superiority of paper over current computer systems as planning media.

There is a large corpus of literature comparing paper with computers as media for writing. As is the case for readers of online texts, writers of online texts also have problems gaining an overall "sense of text" for the documents they compose. This problem is often mentioned in the anecdotal reports of on-line writers (Haas, 1996; Chandler, 1992). There is also experimental evidence for this. Haas (1998, Ch.5) asked subjects to recall points they had made in texts that they had composed one week earlier. Subjects were able to recall more points correctly (accurately and in the correct order) from their hand-written texts than from their word-processed ones. We shall see below that Hansen and Haas (1988) account for the low 'sense of text' associated with online documents in terms of the more basic material properties of computers.
Computers may also encourage writers to attend to different aspects of the text. An interesting example is the frequently cited phenomenon of 'down-sliding'. This is a tendency for writers' efforts to become focused on the fine-grained local aspects of a text rather than its more global or macro-structural aspects. Writers report (Chandler, 1992) that on computer, they give excessive attention to producing and polishing fully formed grammatical sentences, while neglecting global issues. A number of characteristics of composing online appear to combine to encourage downsliding. Small screen size and difficulties in gaining a sense of the overall structure of text may make the local aspects of texts more clear and salient to writers. In addition, the word-processor supports easy deletion and fast production of corrections. This may lead to a 'sense of engagement' (having an interesting conversation with the system) during low level editing that is not supported by paper. Because edits are invisible, the writer may be denied this cue that editing has gone on long enough. Finally, the text typically has 'finished character'. Some writers claim that they are seduced into perfecting text because it does not look provisional - as handwriting can. The phenomenon of down-sliding is interesting because it suggests that computers, through their material characteristics, can direct attention and action in ways that writers do not 'intend'. This testifies for the structuring role of technologies.

Hansen and Haas (1988) compared paper and computer as media for reading and for writing along a number of dimensions. They present a framework to account for the established literature on reading and writing on paper and on computers up to that date. They identified four primary dimensions of technologies for reading and writing. They are;

**Page size**, or area visible at any one time. Paper typically makes more text visible at any one time. This is particularly true when sheets of paper can be laid out side by side.

**Legibility**, or ease with which letters and words can be recognised correctly. Note that Dillon (1992) and Gould (1987) identified this as the key dimension affecting performance on simple reading tasks, but for modern well configured computer systems, legibility is about equal to that of good quality printed text.
Responsiveness, is the speed with which the system responds to a user’s action. Computers tend to have lower responsiveness than paper. Page turning with paper is quicker and easier than on computer systems. A faster PC will typically have higher responsiveness than a slower one.

Tangibility, "describes the extent to which the state of the system appears to the user to be visible and modifiable via physical apparatus." (ibid. p.1083). Even the 'direct manipulation' of online documents via mouse and scroll bars is less direct than manipulating paper documents by hand.

Hansen and Haas identify three secondary factors. Each of these "induces a state or sense" in the user. Crucially, they are contributed to by the relatively concrete and material primary factors. The secondary factors are:

Sense of directness, is a feeling that what happens to the text is a direct result of the users actions. They claim that ideally the user has "an illusion of mechanical linkage with the text" (p. 1083). Systems with “low tangibility” and “low responsiveness” will induce a lesser sense of directness.

Sense of engagement, "is a feeling that the system is holding an interesting, and even fascinating, conversation with the user." (p. 1084). Modern computer systems, by virtue of fast and easy editing may foster a stronger sense of engagement in writing tasks. A key factor contributing to a “sense of engagement” is a “sense of directness”.

Sense of text, is "a grasp of the semantic and structural arrangement of the text" (ibid. p. 1084). 'Page size' and 'sense of directness' are key contributors to a 'sense of text'. Low “sense of text” contributed to by small page size and low directness explains why performance on computer, for complex reading tasks, is inferior to that of paper.

The studies reviewed in this section suggest that technologies shape literacy. They suggest that properties of material technologies impact upon reading, upon planning and upon writing. However, the studies presented so far have investigated either reading single documents or writing documents, as separate activities. However (as the diary-based study emphasised) coursework essay production involves dealing with multiple
texts, and the close integration of reading and writing. In the following section I will review an experimental comparison of paper and computers that employed a task involving more than one document.

5.1.3 An investigation into media for writing from a source

Very few studies have closely compared the use of paper and computers in tasks that combine the reading of one document with the writing of another. O'Hara and Sellen's (1997) comparative study of participants writing a summary of a source article using either paper or computer is a welcome exception. Subjects wrote a 200 to 300-word summary of a 4-page article from a general science magazine. This is a richer, more complexly resourced task than the tightly controlled ones used in most experiments. Following an independent-measures design, subjects either worked entirely on paper or entirely on computer. Data were obtained from videos of the participants and from participant interviews (which were grounded by the videos).

Analysis showed advantages for paper over computer, some of which had previously been found by research looking at activity with single texts, and others that were specific to working with multiple documents.

O'Hara and Sellen identified substantial differences between media in three main areas: annotation and note taking, movement within and between documents, and the spatial laying out of documents. Using close analysis of video footage, they found substantial advantages for paper over computer in these areas. Table 5.1 describes the functions associated with each area (identified from participants' comments) and the advantages of paper over computer in each.
Table 5.1. Summary of the findings of O'Hara and Sellen's (1997) comparative study of paper and computer in a document summarisation task.

Note-taking and annotation were considered valuable aids to text comprehension, and as resources for composing. Note-taking on computer differed distinctly from note-taking on paper. On paper, note-taking was frequent and interleaved with reading the source document: on the computer, participants moved less frequently back-and-forth between the notes and the source. This pattern may largely be attributed to difficulties in movement between online documents (as explained below). Interestingly, one participant used the cut-and-paste functions to produce his notes and extensively edited this copied text until it became the basis for his finished summary - such an approach is not well supported by paper.

Although annotation was common in the paper condition, online participants rarely made annotations to their source texts. This reflects the difficulty of doing so on computer. It was not easy to make annotations without changing the layout of the source document, nor to produce annotations that were clearly distinguishable from source text.
Movement within and between documents was also superior in the paper condition. Relative to paper, navigation around the online sources was "slow, laborious and detracted from reading" (p. 5). With paper, navigation could be ‘effortless’ and interleaved or overlapped with other activities. Part of the reason for this difference is that, on computers, document manipulation was done one handed - through the mouse - and was "spatially constrained to the active areas on screen" (p. 5). These features prevented navigation being integrated or performed in parallel with other activities. Because movement within documents appears to help readers to make connections between different parts of a text and because such connections are an important part of 'sense of text', it seems that the computer's relatively poor support of movement within documents is detrimental to their 'sense of text'.

Computers also fared worse in spatial layout. The three main uses of spatial layout identified by O'Hara and Sellen were; gaining a sense of the overall structure of the document, referring to other documents, and integrating reading with writing. Limited screen size meant that subjects could not see large amounts of text at a readable size/resolution. Paper could be spread widely and manipulated concurrently with other activities without demanding attention, and subjects arranged it dynamically and flexibly. On computer, arrangements were less fluid and were set up in (imperfect) anticipation of requirements. Also, with paper, reading and writing spaces could be accessed and manipulated independently, but subjects in the online condition had difficulties in integrating reading and writing because only one document window could accept input at a time.

O'Hara and Sellen's findings show that the technological issues surrounding this summarising-a-source task are not the same as those surrounding reading or writing only a single document. The task was not a straightforward combination of the reading tasks and the writing tasks that are typical in experimental situations. O'Hara and Sellen's task involved not only the actions involved in single-text studies of reading and writing, but also new actions, such as annotation, note-taking, and navigating between documents. As a consequence, aspects of the technologies that seemed barely relevant in single text studies, such as the various uses that could be made of space on the desktop, became highly salient issues. This shows the importance of using ecologically valid tasks in such studies.
5.1.4 Reflections upon experimental approaches

A single study adopting a more situated approach to writing technologies will provide us with some cautions towards the experimental literature. Bruce and Rubin (1993) studied the implementation of a writing technology – called QUILL – in a variety of classroom contexts. The technology was used very differently across classroom contexts and children's literacy development was found to vary with these different patterns of use. Bruce and Rubin suggest that technology should be considered not as ‘idealised’ by designers or investigators, but as differently realised across contexts. Bruce and Rubin's study alerts us to the cultural psychological principle that artefacts do not have direct effects, but may be variously incorporated into action. Two important corollaries may be taken from this. One is that we must attend to processes at least as much as to outcomes: the other, that ecological validity is of key importance.

That investigations into the effects of writing technologies have generated inconsistent findings (Bruce, 1997 Snyder, 1993) should not surprise us. Technologies do not have inherent effects because they can be incorporated into action in various ways. A key principle in exploring the roles of (material) technologies of literacy is to pay attention to processes. In the present study, I will pay close attention to processes of technology-in-use rather than focusing on outcome measures, which have dominated previous research (Dillon, 1992). As part of this endeavour, I will address the variation that will occur between participants and within experimental conditions.

Ecological validity is important because in different contexts technologies will be used differently, changing what is consequential about them. In his review of the experimental literature comparing reading from paper and reading from VDU’s, Dillon (1992) strongly criticises their lack of ecological validity: "One is struck in reviewing this literature by the rather limited and often distorted view of reading that ergonomists seem to have. Most seem to concern themselves with the control of so many variables that the resulting experimental task bears little resemblance to the activities most of us routinely perform as 'reading'.” (p. 1322). The equivalent criticism could equally be applied to the experimental literature on writing. An experimental writing task typically involves composing a short text, in a single session, in the absence of source documents (Snyder, 1993) often in an unfamiliar genre (Torrance, 1996). This lack of validity allows important aspects of the technologies to go unnoticed. For example, it was only O'Hara...
and Sellen's (1997) more ecologically valid study that showed that the use of physical space is relevant to 'real world' occasions of using more than one document. Because technologies' relevant characteristics are dependant upon the kind of action into which they are incorporated, it is essential (if we wish to understand their contribution to authentic activity) to investigate their use in realistic or representative kinds of task.

These observations do not imply that experimental investigations into literacy technologies have no worth. Although the cultural psychological approach suggests that technologies do not have inherent 'effects', it insists they have a constitutive role. Their material properties may enable or encourage certain forms of action more than others. As a partial result, certain technologies may tend to be incorporated into activity in systematic ways. Experimental research may uncover such tendencies. Experiments that focus upon processes, acknowledge diversity in processes (rejecting technological determinism) and employ more ecologically valid tasks, may be particularly valuable.

5.1.5 Outline of the present study

So, how might we profitably investigate fleeting processes of document mediation, while exploring the relevance of material aspects of context?

The technique of controlled comparison has significant potential for investigating materiality. My diary-based study has pointed to occasions on which materiality seemed to be importantly implicated in participants' actions (e.g. cases of stacking books in an organised pile, or finding one's focus of attention at a word-processor differing from that 'intended'). However, in these cases, the significance specifically of materiality is difficult to judge. Controlled comparisons allow us to make informed judgements about the contribution of specific elements in the ecology of resources that shape action. The experimental comparisons of the use of paper and computer reviewed in this chapter, for example, allow us clearer insights into the relevance of materiality. While acknowledging that there are significant limitations and pitfalls associated with this approach, I will adopt the use of controlled comparisons in the present study.

The focus of analysis in this experiment will be upon processes more than upon outcomes. The majority of experimental studies comparing paper and computer have focused upon outcomes (Dillon, 1992; O'Hara and Sellen, 1997). The intention in this
study is closely to examine processes of document mediation. By addressing diversity in patterns of action both between conditions and between participants I will avoid the technological determinism frequently associated with experimental studies.

O'Hara and Sellen (1997) made heavy use of video recordings in their analysis of processes. This real-time visual record captured aspects of process, such as posture, physical manipulations of documents, and shifts of visual attention that are not captured through methods such as spoken protocols (Hayes and Flower, 1980; Bereiter and Scardamalia, 1987) or key-stroke analysis (van Waes, 1992). In the present study, I will observe participants directly, and video-record the computer screen, the desk and their movements at it. Without requiring a full spoken protocol, participants will also be encouraged to 'think aloud' as far as they feel comfortable. This secondary source of data may help to make clearer sense of their document production processes.

The authenticity of the task is a highly significant issue. Whereas direct observation/video recording of (otherwise) authentic essay production, remains a potentially fruitful and ecologically valid approach for future research, I rejected this option due to pragmatic constraints of access and due to the relative strength of claims about materiality that could come from controlled comparisons. The task should preserve validity as far as possible, particularly in those respects that will be the focus of the analysis. Furthermore, as the reviewed literature emphasises, what is relevant about material conditions is heavily dependant upon the nature of the task (E.g. by employing a task involving switching between documents O'Hara and Sellen (1997) made particularly important, the physical space of the desktop). Hence the task must be carefully chosen.

Studies of literacy in the workplace (e.g. Adler, Gujar, Harrison, O'Hara and Sellen, 1998) suggest that it is common for people to work with more than one document at a time. Moreover, the diary-based studies in the present thesis suggest that working with multiple documents is typical when producing coursework essays. O'Hara and Sellen's (1997) study stands out as a rare exception to single-document experimental comparisons of document media. The present study will complement O'Hara and Sellen’s work while employing a task (writing an essay from two sources) that is arguably more relevant to undergraduate essay writing.
This investigation will allow the complementary use of paper and computers. Typically, in experimental studies of writing technologies (including O'Hara and Sellen's), each medium is used exclusively of the other. Haas (1999) has warned against considering various technologies as strict alternatives, pointing out that in everyday situations paper and the computer-screen are used complementarily. Moreover, data from the diary-based study suggests that participants commonly worked 'simultaneously' with both paper and computers. Unlike most experimental studies comparing paper and computer, participants in the present study will have some freedom to use the two media in a complementary fashion. Participants will be provided with both paper and computer in both conditions, but comparison will be enabled by controlling the materiality of the source texts. The source documents will be provided as computer files or as paper printouts (no computer printer will be made available). This will allow me to observe the use of online source articles and of printouts in a more ecologically valid situation, and to comment on the complementary use of paper and computer.

The use of repeated measures in this study will enhance the comparison of material conditions. A central observation from the diary-based study was the idiomatic variation between instances of essay production. Because of potentially high inter-participant variability, we may gain a stronger sense of the relevance of source documents' materiality by employing a repeated-measures design.

In addition to enhancing our insights into document materiality, repeated measures will allow me to address the theme of individual variation. In interview, participants in the diary-based study suggested that that they were consistent in their use of documents across instances of essay production. This claim is central to the notion of personal practices, or personal 'genres', as I presented it in section 4.3.3. However, the idiomatic variation observed in that study was attributable not only to 'individual differences' but also to other widely varying contextual factors. The present study will allow me to explore the nature and extent of inter-participant diversity and intra-participant consistency in more controlled conditions.

Drawing participants from those that took part in the diary-based study will allow me to make comparisons between their actions in laboratory and authentic coursework contexts. If 'individual differences' in patterns of action are preserved across these very different contexts then this robustness, consistent with the personal genre view, will
warrant explanation. Preservation of 'individual differences' would also evidence the "relative validity" of the experimental task, emphasising that it has some similarities to genuine coursework essay production.

In summary, this study will employ controlled comparison to investigate fleeting processes of document mediation, and the specific relevance of document materiality in these. Participants will be video recorded as they write short essays under timed conditions, once using onscreen sources and once using printouts. In addition to insights into document mediation and materiality, differences in action between individuals will be explored.
5.2 Method

5.2.1 Design

The study followed a repeated-measures design. The 'independent variable' was the medium of sources. There were two levels of medium: 'onscreen' and 'printout'.

The order in which participants undertook each condition was counterbalanced, as was the subject matter of the essays (see Table 5.2).

5.2.2 Participants

Eight participants took part in the study. They were recruited from the population of second year human sciences students who, as first years, participated in the diary based study reported earlier in this thesis. Participants were paid ten pounds. All of the then first year diary study participants were approached. The eight participants were selected on a first-come first-served basis.

Participants were also allocated to counterbalancing groups under no particular criteria.

<table>
<thead>
<tr>
<th>Name</th>
<th>Source medium for first essay</th>
<th>Topic of first essay</th>
<th>Gender</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSH</td>
<td>Printouts</td>
<td>Napster</td>
<td>F</td>
<td>Psy. + Ergonomics</td>
</tr>
<tr>
<td>DACL</td>
<td>Printouts</td>
<td>Napster</td>
<td>F</td>
<td>Psychology</td>
</tr>
<tr>
<td>DUJA</td>
<td>Printouts</td>
<td>Electric Vehicles</td>
<td>M</td>
<td>Ergonomics</td>
</tr>
<tr>
<td>LVAL</td>
<td>Printouts</td>
<td>Electric Vehicles</td>
<td>F</td>
<td>Psychology</td>
</tr>
<tr>
<td>PASA</td>
<td>Onscreen</td>
<td>Napster</td>
<td>F</td>
<td>Psychology</td>
</tr>
<tr>
<td>WARE</td>
<td>Onscreen</td>
<td>Napster</td>
<td>F</td>
<td>Psychology</td>
</tr>
<tr>
<td>WOSA</td>
<td>Onscreen</td>
<td>Electric Vehicles</td>
<td>F</td>
<td>Psychology</td>
</tr>
<tr>
<td>LEEL</td>
<td>Onscreen</td>
<td>Electric Vehicles</td>
<td>F</td>
<td>Psychology</td>
</tr>
</tbody>
</table>

Table 5.2. Details of participants and counter-balancing.

5.2.3 Materials

A number of materials were made available to participants during the study.
**Source articles:** Each participant wrote two essays. Both were about controversial technologies. One was about electric vehicles: the other was about 'Napster' - a music 'file sharing' technology. The titles of the essays were,

"Evaluate the arguments in favour of and against electric vehicles. What implications do alternative fuel vehicles have for transport in the future, and what should be done about them now? Base your essay upon the source documents."

and,

"Evaluate the arguments in favour of and against Napster. What implications do Napster and related technologies have for music in the future, and what should be done about Napster now? Base your essay upon the source documents."

For each essay, participants were provided with two source articles. These were edited versions of 'magazine' style articles that were available on the World Wide Web. Each article addressed the controversy quite directly. For each topic, one article was broadly positive about the technology and the other was broadly negative. Articles were presented in the onscreen condition as word documents, or, in the printout condition, as printouts of those word documents. The articles were edited to, remove hyperlinks, avoid technical jargon, ensure that page numbers were present, and to achieve appropriate lengths.

The articles on Napster were:

Rosenberg (2000) "Napster: friend or foe?", an article found at http://www.salon.com, and edited to approximately 1750 words


The articles on electric vehicles were:

Sperling (1996) "The case for electric vehicles", article found at http://www.scientificamerican.com, edited to approximately 2800 words

Fisher (1997) "The Zero Emissions Hoax", article found at http://www.rideanddrive.com, edited to approximately 1550 words. (I fabricated the name Fisher to the article because no author was acknowledged on the ride and drive web site).

**Question sheet:** Participants were also given a question sheet for both of their essays. This briefly introduced the source articles and the essay question. The question sheet was
provided in the same medium as were the source articles, either as an onscreen word document or as a printout on A4 paper.

**The Computer:** The computer was a Pentium processor, with 32 Mbytes ram. The screen was a 17-inch colour monitor operating at a 60 Hz refresh rate, and 1024 x 768 pixels resolution. A standard keyboard and two-button mouse were provided. The computer was running Microsoft Word 97 on Microsoft Windows 95. These specifications were similar to those of the computers provided by the university in its computing resource rooms.

**Blank documents:** In both conditions, participants were also resourced with blank A4 lined paper. Enough of this paper (two pads) was available for participants to make any inscriptions such as notes, plans or drafts that they wished, and to hand write their essays if they wished. In both conditions, participants were also resourced with two blank 'Word' documents (conforming to the Microsoft word 'normal' template), which they could use if they wished. One was saved as "MyEssay", the other as "MyNotes".

**Stationery:** Participants were provided with a variety of stationery. This included; numerous ball point pens of different colours; pencils, pencil-sharpener, and eraser; three colours of highlighter pens; a ruler; a stapler; and some "post-it" notes.

### 5.2.4 Apparatus

Various apparatus were used in the conduct of the study.

**Video cameras:** Two video cameras were used, to help with analysis. One was trained upon the computer screen. The other was directed so as to capture the participants face, upper body, and all documents on the physical desk top.

**Spoken instructions sheet:** A sheet of 'spoken instructions' (appendix 5.1) was read to participants before they began work on each essay.

### 5.2.5 Procedure

The procedure for each participant was as follows.

1. Provide background information and observe demonstration of computer functionality.
2. Hear spoken instructions (from spoken instruction sheet).
3. Do first forty-four minute essay.
4. Take a break (approximately 15 minutes).
5. Hear spoken instructions.
6. Do second forty-four minute essay (on different topic, with different medium of article).
7. Short interview.

In step 1, the participant was welcomed to the study. They were asked to rate various potential essay topics, including Napster and electric vehicles on how interesting they would be. They were also asked roughly what they currently knew about the two controversial technologies. Following this, they watched while the investigator ran through some of the functionality of a windows interface. Participants were shown:

- Ways to change the view of word documents (e.g. normal, page layout, and outline).
- Ways to 'zoom in and out' of a document in word (e.g. whole page, and page width).
- That more than one document may be simultaneously 'open' in Word.
- Ways to maximise, minimise, and resize document windows in word.
- How to use the highlighter button on the formatting toolbar to highlight text in various colours.

It was emphasised that participants should use, or not use, these features as they wanted, that the demonstration was to ensure that all participants shared some basic knowledge about word-processor functionality, and that they should focus on producing their essays, not upon making use of the demonstration.

In step 2, participants were read instructions from the spoken instructions sheet. (See appendix 5i). This: reminded participants of the duration of the study session; provided some introductory information on the current topic; requested that participants verbalise their thoughts if comfortable doing so; emphasised participants' freedom to use the articles, paper, and computer as they wished, and suggested that emphasis should be placed on 'deal[ing] with the issues' rather than 'surface details like spelling and grammar'.

In step 3, the study began. Participants opened a computer folder or paper envelope that contained the question sheet and the source articles, and worked on their essays for forty four minutes.
After finishing the session and (step 4) taking a break, participants were read the instructions again (step 5). The instructions were identical except that this time they contained background information about the participant's second topic (Napster or Electric cars), and they were told that the sources and question will now be in the other medium (onscreen and in a computer folder, or on paper and in an envelope).

After completing the second session, participants were interviewed. The main themes of the interviews were comparing patterns of action in each essay and relating these patterns of action to the media and to the content of the articles. The interviews were resourced by rough representations of participants' activity, recorded on 'document usage charts' of two-minute granularity (constructed by the investigator from direct observation during the experiment).

5.2.6 Analysis of data

All documents that participants made or used, were retained for analysis.

A central part of the analysis was construction of 'document usage charts'. Appendix 5.2 shows an example document usage chart. These were similar to the 'document use charts' produced in the diary-based studies, but contained data at much finer temporal granularity. From close analysis of the videotapes, (often referring also to the documents themselves) I was able to identify and record, which documents participants 'engaged with' and/or 'wrote to' within each minute of activity. 'Writing to' a document meant making some mark upon it. Annotating, highlighting and composing are all forms of 'writing to' documents. 'Engaging with' a document did not necessarily mean reading, but included any other from of encounter with it: moving, gazing at, scrolling within, touching, opening or closing. The document usage charts then, represented patterns of engagement with all self-created and source documents.

I also recorded other observations that arose during examination of the videotapes and during direct observation of the trials. Through analysing the videos in correct temporal order and attending to the unfolding of their actions it was possible to make further salient observations. For example, sometimes patterns of navigation within documents (could not show up on the document usage charts, but) allowed insights into the ways in which participants were using them. Relevant characteristics of document media were
often revealed by participants' expressions of frustration or surprise. Also salient were participants' bodily movements and their uses of the physical space of the desktop.
5.3 Results

This results section will be comprised of five sections.

In section 5.3.1 Patterns of action with printouts and onscreen sources, I will overview how participants performed the task. I will draw upon the document usage charts to present basic data regarding the creation and use of various documents. Data will illustrate the pervasive nature of document mediation. Two additional features of the data will be noted: On the one hand, there are systematic differences in patterns of action across the two levels of 'materiality', and, on the other, there is considerable intra-participant consistency in patterns of action. I will address these features in the two sections that follow.

In section 5.3.2 Materiality as shaping action, I will explore how document materiality shapes patterns of action. Using basic data from document usage charts, video data, and participants' comments, I will describe differences in the ways that paper and computers were used, and relate these to material characteristics of the media. This section will illustrate that documents' mediation of essay production is not only semiotic but also material, and will identify some material characteristics that are particularly relevant.

In section 5.3.3 Individuals as shaping action, I will consider intra-participant consistency in patterns of document production. Having noted, in section 5.3.1, significant intra-participant consistency across the two experimental conditions, I will also relate their patterns of action in the experimental situation to their patterns of genuine coursework production (as recorded in the diary-based study.) Even across these very different situations, considerable intra-participant consistency will be found. This is consistent with the view that people enact quite distinct personal practices (or 'genres') and significantly shape action as individuals.

Having seen, in section 5.3.1, that document mediation is a pervasive aspect this task, in section 5.3.4 Co-ordinating with documents as textual structures, I will the explore more closely, the nature of engagements with documents. Through close analysis of the video data I will suggest that the cognitive work of this essay production task is more heavily shaped and temporally structured through engagements with documents than we might
expect - such that we might profitably describe this task as one of 'coordinating between textual structures'.

Having argued that action is shaped by documents and their material characteristics, and also differently shaped by different individuals, in section 5.3.5, 'Beyond 'effects' of person or artefact: transactional shaping of action', I will warn against treating the roles of artefact or person in simplistic ways. I will present the example of one student who used sources in ways that reversed the typical 'consequences' associated with each medium. Consistent with the cultural psychological view, I will suggest that action should be understood as shaped through transactions involving, people, artefacts, and other resources of the situation.

5.3.1 Patterns of action with printouts and onscreen sources

In this section, I will overview patterns of action participants enacted in each condition. The data presented in this section are summarised in Table 5.3.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Minutes involving composing</th>
<th>% of composing-minutes that involved sources</th>
<th>Medium of composition</th>
<th>Any notes made?</th>
<th>Sources highlighted / Annotated?</th>
<th>Minimum number of brown sources</th>
<th>Minutes involving composing</th>
<th>% of composing-minutes that involved notes</th>
<th>Medium of composition</th>
<th>Any notes made?</th>
<th>Sources highlighted / Annotated?</th>
<th>Minimum number of brown sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>DACL</td>
<td>28</td>
<td>96</td>
<td>0</td>
<td>c n y</td>
<td>5</td>
<td>29</td>
<td>97</td>
<td>0</td>
<td>c n y</td>
<td>4</td>
<td>29</td>
<td>97</td>
</tr>
<tr>
<td>PASA</td>
<td>28</td>
<td>89</td>
<td>0</td>
<td>p n y</td>
<td>13</td>
<td>33</td>
<td>76</td>
<td>0</td>
<td>p n n</td>
<td>3</td>
<td>33</td>
<td>76</td>
</tr>
<tr>
<td>WARE</td>
<td>29</td>
<td>97</td>
<td>0</td>
<td>p n y</td>
<td>22</td>
<td>14</td>
<td>0</td>
<td>93</td>
<td>p y y</td>
<td>1</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>WOSA</td>
<td>30</td>
<td>80</td>
<td>0</td>
<td>c n y</td>
<td>9</td>
<td>20</td>
<td>25</td>
<td>75</td>
<td>c y n</td>
<td>6</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>DUJA</td>
<td>32</td>
<td>72</td>
<td>3</td>
<td>c y n</td>
<td>11</td>
<td>26</td>
<td>23</td>
<td>69</td>
<td>p y y</td>
<td>2</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>LYAL</td>
<td>20</td>
<td>40</td>
<td>85</td>
<td>c y y</td>
<td>5</td>
<td>25</td>
<td>0</td>
<td>96</td>
<td>c y n</td>
<td>1</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>COSH</td>
<td>18</td>
<td>6</td>
<td>67</td>
<td>c y y</td>
<td>9</td>
<td>13</td>
<td>0</td>
<td>100</td>
<td>c y y</td>
<td>4</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>LEEL</td>
<td>33</td>
<td>0</td>
<td>0</td>
<td>c n n</td>
<td>1</td>
<td>31</td>
<td>10</td>
<td>0</td>
<td>c n n</td>
<td>1</td>
<td>31</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 5.3. Some basic measures of participants' actions in each experimental condition.

These data indicate how participants made use of documents in each condition.

In section 5.3.1.1, I will point to the pervasive nature of document mediation. In the sections that follow, sections 5.3.1.2-6, I will explore the data in terms of the roles of
both individuals and materiality in shaping action: I will focus upon intra-participant consistency but also upon systematic differences in patterns of action between conditions. These sections will address matters such as the use of documents with composing, note making and highlighting. In section 5.3.1.7, I will summarise these findings.

5.3.1.1 Document mediation is pervasive

One of the first observations to make about participants’ activity in the experimental tasks is the richness and pervasive character of document mediation. Document usage charts showed that every participant engaged with at least one document in every single minute: every minute involved some act of reading, navigating through, moving, highlighting, and/or writing on some document. In fact, many minutes involved many of these acts being performed on more than one document. If and when moments occurred of detached contemplation (which we popularly think of as the backbone of cognition), they occurred in a context of heavy involvement with written documents - through pen and paper; keyboard, mouse and screen; hand, eye and body.

It can come as no surprise that this intensive 'writing-from-sources' task involved both reading and writing. In order to press home the pervasive nature of document mediation then, it may be helpful to consider the extent to which the periods of composition involved engagement with source texts. I have argued against artificial separations of reading and writing, both empirical (e.g. in the experimental literature reviewed in this chapter) and theoretical (e.g. the cognitive view of atomised processes). In Chapter 4, I presented data drawn from diaries showing that participants often read sources and composed text within the same half hour period and I argued that writing was heavily resourced by engagements with other texts. Present data allow us to explore at finer temporal granularity the interleaving of reading sources and composing text. Let us consider those minutes in which participants composed essay text.

Table 5.3 (above) shows the percentage of those minutes during which composition took place that also involved engaging with original source articles or with other (handmade) documents. All but one participant engaged, in each condition, with notes or source documents during at least two-thirds of those minutes in which they were actually writing their essays. Reading and writing are so tightly interleaved (in this task at least)
that they should not be understood as separate processes. (I will consider how composition is organised through this interleaving in section 5.3.4)

5.3.1.2 Using other documents when composing

Indicative of the importance of mediation, the patterns of engagement with source texts while composing provides a useful insight into participants' overall activity. Table 5.4 re-presents some data from Table 5.3. It shows what sources each participant engaged with most heavily when composing each of their essays.

<table>
<thead>
<tr>
<th>Printout</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Document</td>
</tr>
<tr>
<td>No document</td>
<td>LEEL</td>
</tr>
<tr>
<td>Original Sources</td>
<td>PASA</td>
</tr>
<tr>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.4. Table showing, for each participant, which resources participants engaged with for more than half the minutes during which they composed essays.

Like much of the data to follow, the particular pattern of data in Table 5.4 suggests that both individuals and technology shape action.

There are differences between individuals that are consistent across conditions. In the cells on the main diagonal in the table are participants whose action received the same classification in both experimental conditions. (These consistent participants are represented in bold type.) That participants are spread across the cells in the main diagonal suggests that they were not only consistent across conditions, but were consistently different from each other. DACL and PASA both made heavy use of original sources (and no use of notes) in both conditions. LYAL and COSH used mainly their notes when composing their essays in both conditions. In both conditions, LEEL made little reference to either notes or original sources. She was the only participant to compose this way in either condition. There are consistent differences in patterns of action then, between these participants.
The intra-participant variability in these data appears to be systematically related to the experimental manipulation. Each participant whose actions are not categorised consistently across the two conditions falls in a cell outside of the main diagonal. What is notable about these participants is that they all occupy the same cell in the table: they did the same thing as each other in the printout condition, and the same thing as each other in the onscreen condition. This suggests that there are systematic differences in action, associated with each technology. The three participants who were inconsistent across conditions in their use of resources while composing were WARE, WOSA, and DUJA. When composing in the printout condition they drew heavily on the original sources, but when composing in the onscreen condition they drew heavily on handmade notes.

In sum, the spread of participants along the cells in the main diagonal of the table suggests that individuals shape action in consistent but individual-specific ways. The fact that the participants who were inconsistent occupy the same cell in Table 5.4 suggests that this intra-participant inconsistency is related to the shaping of action by technology. These themes will be investigated further in sections 5.3.2 and 5.3.3. For now, we may simply note that participants tended to be consistent in what documents they refer to when composing, but also that they composed from notes more often when using onscreen documents, and composed from sources more often when using printouts.

5.3.1.3 Note making

Participants were free to make notes on paper or at the computer. (Spare sheets of writing paper, and a separate word document, entitled 'My Notes' were available in both conditions.)

Participants preferred to take notes on paper rather than on computer. Only one participant (WOSA) took any notes on computer. She did this by electronically copy-and-pasting a few sentences from a source to her essay, but forgot about them until she had finished writing because they had moved off the bottom of the screen.
Table 5.5. *Table showing whether participants made separate (hand written) notes in each condition.*

In Table 5.5, the spread of participants across the main diagonal suggests intra-participant consistency but some inter-participant diversity in note taking.

Both of the inconsistent participants took notes from the onscreen sources but not from the printouts.

### 5.3.1.4 Highlighting and annotation

I recorded whether or not participants made any marks on their source documents. This included highlighting, underlining, and making marginal notes or symbols.

Table 5.6. *Table showing whether participants highlighted/annotated sources in each condition.*

Four of the participants were consistent across conditions; three annotated both source texts in both conditions, and one (LEEL) made no marks on any of hers.

The distribution of inconsistent participants made it more common to make marks on printouts (six participants) than on online sources (four participants). The participant that bucked the trend was only slightly inconsistent. He marked none of the printouts but highlighted a single seven-word section of one of his online sources.

The marks made on printouts were far richer than on onscreen texts. None of the participants actually annotated online sources; they only highlighted them, and only
using a single colour. In contrast, those that made marks on printouts never simply highlighted them in a single colour: each used a variety of highlighter colours and/or wrote words or other symbols on the documents.

5.3.1.5 Medium of composition

Participants were free to compose (and submit) their essays either hand-written or word-processed. Consistent with the tight time constraints, none produced a separate draft and finished copy. Therefore, the medium in which essays were composed was also the medium in which they were submitted.

<table>
<thead>
<tr>
<th>Printout</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Word-process</td>
</tr>
<tr>
<td>Printout</td>
<td>DAACL  WOSA LYLAL  COSH LEEL</td>
</tr>
<tr>
<td>Hand Draft</td>
<td>PASA WARE</td>
</tr>
</tbody>
</table>

Table 5.7. Table showing which medium participants used for composing in each condition.

Participants were generally consistent across conditions in which medium they used to compose their essays (as indicated by the strong diagonal). Seven of the eight participants used the same medium to compose in both conditions.

More participants opted to word-process their essays than to write them by hand. Five participants word processed both their essays, whereas only two chose to hand-write both their essays. One participant - DUJA - composed his essay in different media in the two conditions. He composed on computer in the onscreen condition, and on paper in the printout condition.

5.3.1.6 Navigation between sources

A measure was also taken that provides a rough indication of the frequency with which participants switched between source articles. The minimum number of changes in attention from one source article to the other that could account for the one-minute-granularity representations of action, was calculated. These data are shown in the 'minimum navigtns btwn sources' columns of Table 5.3, and are duplicated in Table 5.8, below.
<table>
<thead>
<tr>
<th>Participant</th>
<th>Printouts</th>
<th>Onscreen articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>DACL</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>PASA</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>WARE</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>WOSA</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>DUJA</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>LYAL</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>COSH</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>LEEL</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>9.4</strong></td>
<td><strong>2.8</strong></td>
</tr>
</tbody>
</table>

Table 5.8. *Minimum estimate of navigations between source articles.* (Often, both sources were engaged with within a single minute. Although these minutes may involve many shifts in attention between source articles, the most conservative possible number of shifts was calculated. Occasions when the change in attention from one source article to the other involves an intervening period, for example of composing text, are nevertheless counted as navigations.)

According to these data, there is a general tendency for more frequent navigation between printouts than between onscreen articles. All but one participant navigated more frequently between printouts that between onscreen sources. (LEEL is the exception: she is estimated as navigating only once between sources in each condition). A two-tailed paired-samples t-test was performed on these data. It showed that there were significantly more navigations between printouts than between onscreen sources ($t = 2.763, df = 7, p < 0.05$).

Aside from the general tendency to navigate more often between printouts than between onscreen sources, there is no apparent relationship between the number of navigations a participant makes in one condition and in the other. Certainly there is no linear correlation ($r = -0.089, df = 6, p > 0.05$).

### 5.3.1.7 Summary of patterns of action with printouts and onscreen sources

Data presented in this section have demonstrated three things.

First, participants make heavy use of documents throughout the writing process. All but one participant made notes from and/or highlighted each of their source texts, thereby changing what documentary resources were available to them. All but one participant also referred to notes and/or sources texts in more than two-thirds of the minutes in which they composed text.
Second, there were some systematic differences in the ways that participants made use of paper and onscreen documents in different ways. For example, six participants highlighted and/or annotated their printouts, often using rich forms of annotation. In contrast, only four participants highlighted their onscreen sources, and none annotated them. Such systematic tendencies suggest that document materiality shapes action. I will pursue this issue further in section 5.3.2 Materiality as shaping action.

Third, participants showed considerable intra-participant consistency across conditions. For example, the only participant that made neither notes nor highlights/annotations with their printout sources was also the only person that made neither notes nor highlights/annotations with onscreen sources. Such intra-participant consistency and inter-participant diversity suggests that individuals characteristically shape document production. I will pursue this issue further in section 5.3.3 Individuals as shaping action.

5.3.2 Materiality as shaping action

In section 5.3.1, I noted that patterns of action varied somewhat systematically according to source medium. In the present section I will investigate in more depth how document materiality shapes action. Expanding upon the findings presented in section 5.3.1, I will consider the ways in which paper and computer documents are incorporated into; note making (section 5.3.2.1), highlighting and annotation (5.3.2.2), composing text (5.3.2.3) and navigating within and between documents (5.3.2.4). In each section, I will relate the ways documents are used, to their material properties. I will conclude (in section 5.3.2.5) by summarising the findings.

5.3.2.1 Note making

Some of the main findings of the present study regarding note-taking are given in the bullet points below. In the text that follows each bullet, these findings are related to the material characteristics of the media.

- Paper, not computer, was the medium in which participants chose to take notes.

A number of features of the two technologies as media for creating inscriptions contribute to this tendency. The notes that people made had properties that could only be achieved with difficulty at the computer. Participants used:
1. **Spatial organisation** e.g. COSH organised some of her notes into a loosely tabular form).

2. **Symbols and diagrammatic forms**, such as lines, arrows, ticks, crosses, ‘therefore’ symbols, encircled words, etc., (WARE used such a system to categorise the notes she made).

3. **Typographic features** such as size variations, underlining and heaviness of script.

Paper offers low ‘delayed gratification’ for making such inscriptions and controlling their spatial location. Achieving such rich inscriptions on the computer is far more demanding, typically requiring the time and visual effort of pointing-and-clicking on toolbars.

Other reasons for taking notes on paper concern the business of managing multiple documents. As we shall see below, there are general advantages of managing sheets of paper over managing computer files and, particularly, attempting to interleave the use of two onscreen documents can be problematic. Because half of the sources were onscreen, and most of the essays were composed onscreen, using onscreen notes would generally have created this problem for participants.

- The taking of notes was more common from onscreen sources than from the printouts.

Assuming that note taking and highlighting/annotation serve similar functions, participants may note-take from onscreen sources because highlighting/annotating them is not easy (see section 5.3.2.2). Further, due to difficulties in using two online documents at a time (section 5.2.3.4), participants that word process their essays may make notes from online sources so that they will later have a *paper* document to resource their word-processing.

**5.3.2.2 Highlighting and annotation**

Regarding the annotation and highlighting of sources the main observation is;

- The marks that were made on printouts were richer than those made onscreen.
The only form of mark that participants made on onscreen articles was yellow highlighting. In contrast, each participant that marked their printouts used a richer array of techniques. They never simply highlighted (or underlined) paper sources in a single colour: they used a variety of colours and/or inscribed words or other symbols on the documents. As reported in section 5.3.2.1, paper has lower ‘delayed gratification’ for controlling the location of inscriptions: participants could almost effortlessly make inscriptions in the margins of paper documents, but they doubted that this could be done with ease on the computer. Participants also commented about the effort involved in making any annotations distinct from original article text, a problem not faced when handwriting on sources. Regarding varying the colour of highlighting, participants felt that this was much easier on paper. On the computer this typically involved shifting visual attention away from the target text, and onto the highlighter icon, selecting from a menu of colours, and then relocating the target text. Using printouts, one participant worked with three highlighter pens on the desk, just to the side of the document she was reading. Such an arrangement makes it quite possible - and video suggests this is what occurred - to put down one pen, pick up another of the desired colour, and use it on the text, without ever taking visual attention away from the text. This operation can be performed using peripheral vision alone, although tactile cues and memory for the location of each pen may facilitate.

- More participants made marks on printouts than on on-screen sources.

Although the advantages of paper over computer as a medium for annotation/highlighting may contribute to this finding, other considerations are also relevant. As other observations from this study show, participants have good reason to prefer to draw upon a paper document when composing than an onscreen one, especially if they prefer to compose on computer. Hence some participants opted to compose from highlighted printouts in the printout condition, and from paper notes in the onscreen condition.

5.3.2.3 Composing the text

Participants typically composed their essays on computer as opposed to on paper: Eleven essays were word processed, and five were hand written.
Participants sometimes composed on the computer in ways that paper did not support.

Participants using paper tended to compose in a very linear fashion, incrementally adding sentences to the bottom of their emerging essays. They very rarely made ‘corrections’ to the text that they had written, although occasionally a participant would cross out the most recently written sentence (or sentence fragment) and proceed to write something else.

Those composing on computer often did so in ways that paper did not support. Although every participant composed both of their essays in broadly linear fashions, it was not uncommon for them to type new text into earlier parts of their draft. At least two participants split existing paragraphs in two and added text to the first new paragraph. Those who word-processed often made changes to the text they had written. They frequently made typing errors or spelling mistakes and often corrected them using the spell checking features of the computer.

LEEIL’s approach to composition was clearly not one that paper would have supported. In the printout condition essay, she wrote sixteen sentences in the first fourteen minutes of composing. At this point she declared “I am just adding to it now. I think I have got mostly what I wanted to say. Now I am just going to make it, a bit, more.” She spent the remaining twenty-two minutes editing the document. These edits involved reworking sentence fragments and correcting typing errors. They also involved adding three more sentences. Each number in Figure 5.1 represents a sentence in each paragraph of her final essay. (spaces represent paragraph breaks). Each number corresponds to a sentence and the temporal order in which it was written.

| 1,2,3,4,12,13 | 14,15,17 | 7,18,8,9 | 10,11,5,6,16,19 |

Figure 5.1. The order in which LEEL composed the sentences in her finished (printout condition) essay. Each number represents a sentence. Spaces represent paragraph breaks.

Clearly, the order in which sentences appear in the essay is substantially different to that in which they were written: a phenomenon that did not occur in hand-written texts, and which paper, because text is fixed to pages, does not readily support.
Participants may have tended to prefer composing onscreen because in this medium, text is not fixed to pages. It therefore supports changes to existing text, and patterns of composition that paper discourages. For example, when composing one of his essays on paper, DUJA commented that he would have liked to insert an argument in an earlier part of his draft, and that the computer would have supported this.

The fact that text is not fixed to pages, but is more highly malleable on computer also seems to have its drawbacks. Many investigators have referred to the ‘intangibility’ of onscreen text. Tangibility "describes the extent to which the state of the system appears to the user to be visible and modifiable via physical apparatus." (Hansen and Haas, 1988, p. 1083). LEEL had trouble with the intangibility of onscreen text. While typing her essay, she reached for the delete key but hit ‘insert’. This put the computer into ‘overwrite mode’. Finding that her edits now had the side effect of deleting existing text, and unaware why, "why is it doing that!" (LEEL protocol), she employed the same ‘work around’ that she used when working at her home computer - inserting temporary paragraph breaks to protect text that she did not want to overtype during editing. One drawback of onscreen texts’ freedom from a fixed position on the page is that not all means of acting upon text (including using overwrite mode or failing to ‘save changes’) are always clear and obvious to users. This is one respect in which onscreen text may be considered ‘intangible’.

5.3.2.4 Navigating within and between documents

One of the main findings concerning movement between documents was:

- Participants switched more frequently between articles when using paper than when using the computer.

This observation corresponds to the less systematic observation that switching attention between documents tended to be more efficient on paper. Switching attention between paper documents tended to be quite simple. The large space of the physical desktop meant that documents could be laid out adjacently, so that numerous documents were visible at one time. Participants could know the location of other documents without any change in gaze because they were present in peripheral vision; they could make use of the visual distinctiveness of each document and they could bring different documents
into close attention through direct physical manipulation or through a change of posture or gaze.

In the onscreen condition screen space was limited, and participants rarely had two documents open and simultaneously onscreen. They tended to move between online documents by using the mouse to click on a representation of a document - identifiable mainly by its name. This presumably demanded more visual attention and cognitive effort than navigations between paper documents: participants were often observed to pause when selecting a document from those listed in the computer folder - apparently working out which was which. Occasionally, when attempting to switch between one onscreen document and another, a participant would minimise a document and then accidentally re-open the same one. Such errors did not occur in the printout situation, where 'this source document' and 'that source document' were distinguishable not only by name, but were also visually distinct, and had been placed by the participant in distinct spatial locations.

A number of other, less systematic, observations may be brought to bear on the topic of movement within and between documents.

- Participants set out documents in space more dynamically, flexibly, efficiently and effectively.

A common arrangement of documents in the printout condition, in the very early stages of each session, was to place the two sources (front pages visible) and the question sheet next to each other. All three documents would be visited a number of times within the first few minutes before a more earnest reading of one or other printout began. In the later stages of the sessions it was common to work with the two paper sources arranged so that one document, the one most relevant to current composition, was on top and the other was placed underneath. This meant the second document was partially visible, close at hand, but clearly not the current focus of attention.

It was rare in this study for participants to have more that one document onscreen at a time: participants tended to work with onscreen documents 'sequentially', navigating between them quite rarely. However, one participant - DACL - did compose onscreen through the heavy use of on-screen documents. She spent some time placing her essay document in the left of the screen and a source to the right, and reducing font size in an
effort to make more text visible at a time. Setting up the screen in this way, to begin composing, took fifty-one seconds. Later, she finished with the first source and arranged the second in its place. This took a further forty-four seconds. Even these time-consuming arrangements only set up the sources in a far from ideal way: neither window contained the full width of a page, meaning that reading an entire line of text involved moving a cursor to laterally shift the image of the document within its window:

"it was just trying to fit them on the computer screen. To fit one source and the essay was quite difficult. I thought it would be quicker than like having to keep minimising the sources and then writing the essay... but you couldn't see all the writing at once, in the source unless it took up the whole screen. Which defeats the purpose. So I tried to make the writing smaller but if I had made it all fit so I could see it, it would have been too small to read." (DACL interview).

Clearly, the limited space on the screen meant that satisfactory spatial arrangements of documents were unlikely. Further, while paper documents can be moved directly using two hands, spatial manipulation of onscreen documents is less direct - involving drag-and-dropping and window resizing techniques that are less easily controlled, and that demand more visual attention. These features of the technology tend to discourage frequent switching of attention between documents, and mean that, as O'Hara and Sellen (1997) note, spatial arrangements of documents are less dynamic and flexible.

- Participants tended to 'find their way around' documents more efficiently and more often on paper than they did on screen.

There were many situations within the experiment in which 'finding one's way' around a document was implicated. For example, it is disadvantageous to lose one's place in a document when interleaving its use with attention to other documents, as when composing from, or taking notes from, a source. It can also be advantageous to have a sense of the total length of a document and one's current position in it. Some informal observations may be made regarding navigation within documents.

Participants appeared to jump around printouts more than they did onscreen articles. They occasionally showed that they were unaware of the length of onscreen articles, despite having engaged with them for some time (such as expressing surprise upon finding that they had reached the end of the document).
Paper has advantages in that certain operations may be performed without removing visual attention from one's current place in the document. This means that one does not have to leave and then re-locate one's place. Participants were observed doing all of the following activities in strict parallel with reading paper documents: reaching for, and moving other documents; putting down a highlighter pen of one colour and picking up another, and thumbing through the current document to establish how many pages remain. These actions could be performed in parallel with reading because they did not require visual attention: they could occur through tactile information and/or peripheral vision. In contrast, equivalent operations at the computer often involved accurate mouse 'point and clicking' that required visual attention.

Paper also had advantages for operations that did involve shifts in visual attention. Whole pages of text were visible at a time (in contrast to the restricted space of the screen) and participants could (and often did), use their hands to keep track of points to which they wanted to return. Hence some participants moved their hands down the side of each page as they were reading. When they took notes on separate sheets they could relocate where they had left off reading because their hands literally pointed it out.

"When I am following anything on paper, you will tend to find I am doing this [puts paper to margin of a paper document and moves finger slowly down]... I am pointing vaguely to where I am so that if I get distracted or I want to make a note or something like that I can come back to where I am, and find it." (COSH interview). Similarly, one participant was seen to leaf through a document using one hand to turn pages and the other to hold the whole document and mark a place within it. O'Hara and Sellen point out that participants seem to pick up information about documents incidentally when working with them. For example, in physically manipulating paper documents one gains a sense of their length. It seems that paper can provide visual-peripheral and tactile cues that usefully orient users, but that do not demand attention. The computer screen cannot provide cues through these channels.

5.3.2.5 Summary of materiality as shaping action

I described participants' use of paper and computer documents in; note taking, highlighting and annotation, composing text, and navigating within and between documents, and I was able to relate differences in the use of paper and computer documents to their material properties. My observations were consistent with those of
O'Hara and Sellen (1997). For example, movements within and between paper documents were faster and less effortful than between computer documents. Also consistent with O'Hara and Sellen, I found that paper offered many advantages absent from onscreen documents. For example, tactile cues, cues from peripheral vision, and two-handed document manipulation were among some of the helpful characteristics of paper that were absent from computer documents. The ability to make dynamic and flexible use of the large physical desktop space appeared to be a key advantage.

A notable feature in the current study was that participants tended to use paper and computer in a complementary fashion. For example, they often made use of the benefits of word-processing while avoiding the pitfalls of navigating between multiple computer documents, by taking paper notes from onscreen articles, and using these to compose. In this and other ways, they could ‘work around’ difficulties associated with the characteristics of each medium.

Through identifying patterns associated with the use of paper and computer documents and identifying material characteristics that appear to underpin these patterns, in this section, I have illustrated that documents mediate cognition and action through not only their semiotic, but also their material properties.

5.3.3 Individuals as shaping action

In the diary-based study of authentic coursework, patterns of essay production differed substantially between individuals. Although I tied this diversity to participants' personal histories through the concept of 'personal genres', other contextual factors varied in an uncontrolled fashion across essays, and it was not possible to disentangle 'personal factors' from other resources of the situation in accounting for the diversity.

The present experiment offers the opportunity to explore the extent to which patterns of action vary between participants when circumstances are more controlled, and also to investigate intra-participant consistency across circumstances. In section 5.3.1 patterns of action in two experimental conditions were presented (and will be reviewed in the following paragraph). In this section I will compare participants patterns of action under experimental conditions with their patterns of action in the diary-based study.
Data presented in section 5.3.1 suggest that individuals shaped action in characteristic and consistent ways. The strong diagonals in Tables 5.4, 5.5 and 5.7 showed that there was *intra*-participant consistency, and *inter*-participant variety in; what sorts of documents resourced the actual composing of texts, whether or not notes were taken and whether essays were hand written or word-processed. Beyond those gross measures, participants also showed consistent idiosyncrasies across conditions in the details of their action. For example, as we shall see below, DACL, in both conditions, dealt with her sources in a particularly linear way, both when initially reading them and when composing from them. Another example is the way that, COSH, after thoroughly reading her sources, took time to take notes. She was the only participant to do this, and she did it in both conditions.

Having found considerable intra-participant consistency across experimental conditions, to what extent are these consistencies traceable to participants' diary data? Although the coursework was, for each participant, an activity involving numerous sessions, numerous locations, a far larger and more open-ended set of social and cultural resources, and far longer time-scales, certain comparisons of activity across the contexts can be made.

Table 5.9 compares participants' actions in the experimental situation with their coursework activity, as recorded in the diary-based study. (For clarity of presentation, the data from only one of the experimental conditions is shown. The printout condition was selected because sources in the genuine coursework were more often on paper than on-screen.)
Table 5.9. Actions in the experimental printout condition and in the coursework.

Certain rules of data analysis were necessary for the construction of the ‘coursework’ data in this table. In the genuine coursework, some participants hand-wrote drafts of their essays before typing them at the computer. The term ‘medium of drafting’ refers to the medium on which participants first composed basically complete (if rough) full text versions of their essays. Composing excludes periods of neat copying already-drafted text. Consistent with the analysis of experimental data, time periods (this time, half-hours) during which ‘composing’ took place are defined as occasions during which a participant “wrote to” a document classified as a ‘draft’ or an ‘essay’.

These data are re-presented below (Tables 5.10 - 5.13) in a form that supports clearer analysis of intra-participant consistency and variety.

As with the experimental conditions, it is clear (from Table 5.9) that hand-made documents or original source documents were frequently used during coursework composition. Table 5.10 shows which documents were referred to by participants during at least half of the time-units in which composition took place.
Table 5.10. Table showing which resources participants engaged with for more than half the time intervals during which they composed essays.

Four of the eight participants were consistent across the compared situations in what sources they referred to when composing. LEEL stands out as the only participant to draw neither on original nor home made sources for more than half her ‘composing time’ in both situations. DUJA, DACL, and PASA were also consistent across situations – drawing mainly on original sources in both situations. These data hint that the individual may be a source of consistency even between these very different situations.

Although four participants were not consistent across the two situations, patterns of inconsistency sometimes reflect the very different situations in which the two types of essay were written. COSH was classified as inconsistent across the two situations. In the experimental condition she spent approximately eighteen minutes composing her essay: in her coursework she spent as many as (approximately) twenty-one hours! Having composed laboriously from sources in her coursework (a process which also involved a great deal of reworking text), COSH composed from notes in the very different, time-constrained situation of the laboratory.

Sometimes, inconsistent classifications mask similarities in action across situations. Although it appears from Table 5.10 that WOSA made little use of notes/plans or sources when composing her coursework, she actually used these texts in 40% of her composing time. Both of these figures would have been above 50% if time spent making final edits to it were excluded from the analysis.

WARE’s inconsistent data also mask a deeper consistency in her activity across situations. In her coursework, WARE engaged heavily with her original source texts to
construct what she called a 'plan of paragraphs'. This 'plan' set out the structure of her essay, and points to be made within each paragraph. She composed her essay in the experimental situation in much the same way that she composed the 'plan of paragraphs'. The difference was, in the coursework situation there was time to type up her 'plan of paragraphs' on the computer, and she wrote it only in detailed bullet point form: in the experimental situation, with no time for separate writing up, WARE's "plan of paragraphs" took the form of full essay text.

<table>
<thead>
<tr>
<th>Printout</th>
<th>Coursework</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>DACL</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.11. *Table showing whether participants made separate (hand written) notes in the experiment (printout condition) and in their coursework.*

Four of the eight participants were consistent, across the compared situations, in whether or not they took notes. The only participant who did not take notes in the coursework situation was DACL. Consistent with this, she took no notes in either experimental condition.

Four participants were inconsistent across the compared situations. They made notes/plans in the coursework, but not in the experiment (printout condition). We might expect more note-taking in the coursework situation because; more sources are available, more time is invested over numerous sessions, and longer, more developed essays are expected.
Table 5.12. *Table showing whether participants highlighted/annotated sources in the experiment (printout condition) and in their coursework.*

As with the note-taking data, the data on the presence or absence of highlighting/annotation suggests, on the one hand, intra-participant consistency, and on the other, a general trend across the conditions.

Five of the eight participants were consistent across the conditions (three highlighted/annotated sources in both conditions, and two highlighted sources in neither condition). On the other hand, three participants that highlighted/annotated the printouts in the laboratory setting did not mark sources in the coursework. This difference may be due to in part to the fact that in the coursework their original sources were books. In most contexts, leaving marks in textbooks is considered unacceptable. These problems were absent in the experimental situation, as printouts were used.

Table 5.13. *Table showing which medium participants used for composing/drafting in the experiment (printout condition) and in their coursework.*

Four of the eight participants were consistent across the situations; they drafted their essays on computer in both situations (these participants also word-processed the essays they wrote in the on-screen experimental condition). PASA was also consistent in hand-drafting each of her essays.
There is no clear pattern in the data for the other participants, who were not consistent across the printout condition and the genuine coursework. DUJA hand drafted his coursework essay (as he did for his essay in the on-screen condition), but word-processed his essay in the printout condition. WOSA drafted some sections of her coursework essay by hand and the rest of it on computer. Although WARE appears inconsistent because she drafted her coursework on computer, recall that she wrote something very close to a draft of her coursework essay on paper.

In this section, we have seen that there is some intra-participant consistency in actions, not only between experimental conditions, but also between experimental and authentic contexts. This was evidenced in tables that represent quite coarse measures of action. More subtle intra-participant consistencies may also be noted. For example, a specific individual's notes are often recognisable across the experimental and coursework situations not only for handwriting but for how much use is made of the spatial arrangement of text, and for the use of symbols to express certain meanings.

What implications might we draw from these data? They suggest that individuals have a considerable role in shaping patterns of action. Attempts to account for action must avoid technological determinism and incorporate the individual as having a shaping role. These data are also nicely consistent with the notion of personal genres presented in Chapter 4. The observed intra-participant consistency is congruent with participants' claims that they enact similar ways of producing essays from one instance to the next.

5.3.4 Co-ordinating with documents as textual structures

In previous sections we saw that document mediation was a pervasive aspect of participants' actions. We saw that participants often made notes and/or highlighted and annotated the source articles, and that they made heavy use of source articles or self-created documents when writing essay text. Furthermore, we saw that documents' material properties shaped action in some basic respects – such as whether participants highlighted or annotated sources, and how frequently attention was switched between them. While these observations are based at a level of whether or not a document was 'engaged with' or 'written to' in any minute, we might profitably consider more closely the detail of these engagements.
In the present section, I address how documents' textual structures shape participants' engagement with them. Documents are structured in ways that make it appropriate for us to engage with them in certain ways. For example, though we do not have to read novels in a linear way, we take for granted that they are structured in such a way that we are likely to get the best from them by reading them from beginning to end. The source articles used here also have features that encourage a linear reading of them: issues are introduced before being discussed, rebuttals follow the claims they relate to, and arguments develop forward through the text. When seriously reading the source articles, although they vary in thoroughness and pace of reading, all but one of the participants adopted a largely linear 'beginning-to-end' approach. Hence the need to understand a text, 'suggests' or indeed almost 'demands', a certain approach to it, or process of coordinating with it.

This study emphasised that during composition, the emerging essay text is a strong organiser of current activity. In the same way that - when reading a text - the sentences that came before provide context for interpreting the current sentence; when writing, the sentences that came before can provide context for producing the next sentence. One effective and (temporally and cognitively) efficient way of producing a (linear) text is to compose it linearly. Using this approach, each freshly-written sentence provokes attempts to produce (and constrains what might be) an appropriate 'next' sentence. All but one of the participants in this study composed their essays in a strongly linear fashion. Hence the need to produce a linearly structured essay, under these timed conditions, tends to 'suggest' a certain (linear) approach to producing it.

We have seen then, that documents (because they are structured according to certain cultural conventions) encourage certain ways of engaging with, or co-ordinating with, them. Documents cannot be dealt with in just any way: their structures constrain and enable only particular ways of engaging with them effectively.

The present task involves dealing with at least three structured documents - the two source articles and the essay - each of which must be engaged with appropriately. Different participants achieved this in different ways. It seems highly probable that different ways of doing this are consequential for what is learned in the process, and how the essay turns out.
Let us consider one participant’s engagements with her documents. The incorporation of documents into DACL’s action seems curiously mechanistic. On beginning the printout condition, DACL spent the first two minutes looking at the question sheet and the front sheet of each article. She then began reading one. She read through it linearly, highlighting as she went. (The only break in this strictly linear reading process occurred halfway through, when she flicked quickly to the end of the article, and then resumed reading and highlighting from where she left off). She then read and highlighted the other source in the same linear fashion. She composed her essay in a completely linear way – each new sentence was added to the end of the emerging essay. What was most surprising was how she used her sources in this. For approximately the first 22 minutes of composing she used only the article that she had read first, and for the remaining 6 (approximate) minutes, she used only the other article. Note what a simple pattern of engagement with each document she enacted. More surprising still, while composing the text of her essay in a strictly linear fashion, she worked through each source in what was also a linear fashion. This was evidenced by the turning of pages in the sources as she composed: she progressed through each document gradually, page by page, breaking this pattern only once with each source – by flicking forward before rapidly returning to the page she had flicked from. Her interview confirms this linearity.

DACL “[after reading and highlighting the sources I] then worked through the sources and wrote the essay... as in like read the highlighted bits again and picked out the main points.

Roy. “How did you go from one highlighted bit to the next?”

DACL “I put my own words in between. ...I just looked at them in the order they were in, in the article.”

What do we learn from this? Firstly, by looking closely at the nature of DACL’s engagements with documents we learn more about what kind of private 'in-the-head' cognition was involved in producing the essay. We see that DACL identified the next point to write about, by forward-search through her source articles. (And we can see some advantages to this approach. For example by writing about points as you find them in the text, you avoid the problem of knowing what point you want to address next and having to search the texts trying to find it.) Secondly, of course, we learn something about the essay itself. Most obviously, we learn that the organisation of issues in the text is one that is not entirely new but is somewhat inherited from the sources.
Consistency in DACL’s activity suggests that her relentlessly linear use of sources was not a one-off outcome of the particular texts used. DACL’s pattern of use of on-screen texts was almost identical to her use of the printouts. In fact when using the less easily navigable onscreen documents, her reading and highlighting of texts and her use of texts when composing, were even more linear; in neither of these activities did she scroll a source text backwards. Also, her pattern of composing the essay deviated only slightly from the absolute linearity described for the composition in the printout condition. When turning to compose from her second source she had already written three paragraphs. The next paragraph she wrote (also linearly) was inserted between her original first and second paragraphs. On completing that, she composed the final two paragraphs of her text. All the while she had been working linearly through her sources.

DACL’s use of source documents in such a consistently linear fashion is a particularly striking example of how source documents can structure action through time (and thereby structure essays). What was surprising about DACL’s effort was that she seemed happy to allow her source texts to heavily shape the form of her emerging essay. However, we can see that the task had to be managed in some way.

WARE’s actions in the printout condition were more consistent with what we might typically expect. She also composed her essay linearly (on paper) but, when composing, she navigated frequently both within and between her source texts. This suggested that the structure of the (emerging) text was structuring activity in time, and that the structure of the source articles was a less important organiser of her activity.

When WARE worked with onscreen sources, other structures came into play. She added to a list of notes as she was linearly reading the first source - Boehlert “Artists to Napster: Drop Dead” — commenting, “I am trying to pick out the ‘against’ side of Napster”. On finishing that text, she commented, “That’s [the notes] all just muddled together, just interesting points. So I need to start getting some, ‘for’ and ‘against’ arguments [...] make this a bit clearer.” Looking over the notes she had made, she made a separate list, headed “AGAINST”, incorporating some of the points from the previous list. Then she (linearly) read the other original source text and made a list of notes under the heading “FOR”. On completing the second source article, she commented “Right, for and against [...] It will probably be easier to keep the arguments separate and not try and mix them up”. She then began composing her essay in a linear fashion. She drew on the
‘against’ list first, making all her against arguments, before using the other list to make her arguments ‘for’ Napster. There was a marked consistency between the order in which the points appeared in her two lists and the order that she wrote points in her essay (and therefore in which they occurred in the essay text). This suggests that, rather like DACL did with the original sources, she drew upon the structure of her notes to organise her composing. Notes may be seen as documents that provide intermediary structures between (the reading of) sources and (the composition of) essays.

In what was republished (Hutchins, 1997) as a “seminal paper from the Laboratory of Comparative Human Cognition”, Hutchins (1986) discussed, hypothetically, the use of a checklist in performing some task. He proposed the view that,

"Thinking consists of bringing ... structures into coordination with each other so that they can shape (and be shaped by) each other. The thinker in this world is a very special medium that can provide coordination among many structured media, some internal, some external, some embodied in artefacts, some in ideas, and some in social relationships." (Hutchins, 1997, p. 352)

In this section, I have suggested that DACL took a surprisingly simple approach to achieving coordination between her source articles and her essay. I suggested that other participants achieved the coordination between their sources and essays in various other (apparently more complex) ways. The quote from Hutchins nicely emphasises that such coordination is not a trivial counterpart to the thinking that goes on in literate action, but is constitutive of cognition-in-action.

5.3.5 Beyond ‘effects’ of person or artefact: Transactional shaping of action

In the present section, we shall see that technologies do not have inherent effects on activity, but may be incorporated into it in various ways. I will warn against assuming direct ‘effects’ of technology, through the example of one participant who used sources in a way that reversed the typical ‘consequences’ associated with each medium. Alternative to viewing activity as ‘affected by’ technology (or people), I will suggest that action should be understood as shaped by transactions involving people, technology and other resources of the situation.

I have demonstrated that both individuals (section 5.3.3) and technology (the medium of document presentation – section 5.3.2) shape action. Regarding the shaping of action by
technology, I have identified, using basic data, general (i.e. shared across participants) tendencies in patterns of action, associated with one medium or the other. Regarding the shaping of action by individuals, I have presented basic data showing that specific individuals’ actions are frequently consistent across situations, but divergent from the actions of others. This is consistent with the claim – Chapter 4, from the diary based-study – that participants develop stable but idiosyncratic practices. I have associated technologies and people with specific ‘tendencies’ in action, deliberately avoiding the claim that technologies have ‘effects’ upon action.

The data show that technologies do not have direct ‘effects’ on action: they can be incorporated into action in many different ways. We have seen that different participants used the printouts and onscreen sources in different ways from each other. Further, even when two participants acted similarly to each other in one condition, they were not always consistent with each other in how they acted in the other condition. For example, WARE and PASA were quite similar in their use of paper sources: both highlighted their printouts, made no notes, and used the printouts to compose linearly on paper. However, when they used onscreen sources, their patterns of action were quite dissimilar; PASA again made no notes and composed using her sources, but WARE chose to make extensive notes and to use only these when composing. Findings such as these suggest that the manipulated media do not have direct effects on processes but - at the very least - some kind of interaction exists between characteristics of people and of source media.

An example from a single participant will illustrate more richly the point that technologies do not have inherent effects. Many previous studies have suggested that users of paper documents tend to gain a richer “sense of text” than users of onscreen documents (Hansen and Haas 1988; Haas 1996). This has been attributed to the superior ‘tangibility’ ‘responsiveness’, and ‘visible area’, of paper over onscreen documents (Hansen and Haas 1988). Users of paper documents, then, tend to gain a better sense of the conceptual and spatial structure of the document. However, we must avoid the conceptual slip of claiming that paper ‘causes’ readers to develop a stronger sense of text. DUJA’s action demonstrates why. DUJA used his printout and onscreen sources in quite different ways. In the printout condition, he laid down the paper sources side-by-side and continually switched his attention between one printout and the other. He did not read either document in a systematic way. In contrast, conscious of the difficulties of
‘skipping’ around onscreen texts, DUJA read these sources in a more linear fashion. As a consequence of the different ways in which DUJA approached the two kinds of articles, and in direct contrast to the usual findings, DUJA felt that he actually gained a stronger ‘sense of text’ for the onscreen articles than for the paper articles:

"on the computer it wouldn’t be so easy to flip between two documents, on the computer. So y’know its easy, and I probably got confused as well, y’know, confused myself [.] because I was reading both sides of the story, which conflicted, which kind of confused me, whereas on [the computer], um, I had one document open, skimmed through it, made notes, and then did again with the other document. Whereas if they were on the paper I would still flip through both of them kind of thing ... what I am trying to say is it was on the computer so I had to do one [article] and only one, and then do the other. And with the paper I had two, so I did both all the time kind of thing, which confused me. I mean, you can tell, I wrote a hell of a lot more on the computer one because I had assimilated it easier because there was no conflict going on."

"I think I got to know the [online articles] easier because I was actually going down the page as I was scrolling. So it was easier to get the information. Whereas with the [printout] one I was all over the place really. Just sort of like picking bits out, whereas on the computer, I mean, it’s more difficult to pick things out on the screen because you have to scroll down, so if you are going to scroll down you might as well start at the beginning. Whereas [on paper] its like ‘Right. OK. Where’s the meaty middle bit?’ kind of thing, or the ending."

In this particular case then, DUJA responded to the characteristics of onscreen texts that are usually associated with a poor sense of text (small visible area, difficulties relocating parts of the text, inability to spread out pages, etc.) by incorporating them into his action in an effective and systematic manner. In contrast, he responded to the opposite characteristics of paper documents (usually associated with a strong sense of text) by incorporating them into his activity in a less thorough manner. The result, in terms of DUJA’s eventual ‘sense’ of the two kinds of text, was the opposite to what one might expect from their material characteristics. (Note that the two media did not ‘cause’ DUJA to use them in the specific ways that he did; other participants used the two kinds of articles quite differently.) The implication of this example is that - consistent with the cultural psychological view - although technologies participate in shaping activity, it is the nature of their incorporation into action, not the technologies themselves that have meaningful implications.

This example illustrates that human reflection complicates the relation between technologies and action. DUJA took a systematic approach to his onscreen sources after
being dissatisfied with his unsystematic approach to the printouts. The document media did not simply act upon him; he responded to them reflexively. In activity theoretic terms, technologies can have implications for given operations, but their characteristics may also motivate different choices of operations to realise an action. Because the person can reflect, and apply some agency, technologies do not have inherent effects. If people were not reflective, and attempted to perform the same operations regardless of technologies, then technologies could be understood simply as having ‘effects’ upon those operations. But people are reflective and technological circumstances may or may not motivate individuals to reorganise action in various ways.

The data in this study are consistent with the ‘transactional’ alternative to a ‘causal’ understanding of technologies – which is readily derived from cultural psychology. In this study, we have seen that action is shaped by a number of sources including; the person (with their history of practice), the setting (incorporating technologies with distinct physical characteristics), and activity (such as the tight time constraints of experimentation and the looser ones of coursework). All these resources form a complex ecology, in which their articulation shapes action. As action unfolds through time, opportunities and constraints are in a constant state of flux. Further to this, human beings are reflexive; actions and goals may be subject to constant renegotiation.
5.4 Discussion

This study - the 'micro level' one of the three that will make up this thesis - investigated processes of document mediation at fleeting time scales and explored the specific relevance of document materiality. In section 5.4.1, I will review my findings and indicate some implications. In section 5.4.2, I will reflect upon the methodology adopted.

5.4.1 Findings and implications

The present study allowed greater insights into fleeting processes of document mediation than were permitted by the diary-based study. The diary-based study suggested that document mediation was both pervasive and strong, but could provide only limited insights into fleeting processes of document mediation. Studies that have addressed these fleeting document production processes have generally tightly constrained or de-emphasised document mediation (e.g. Hayes and Flower, 1980; Flower et al. 1990).

Complementing insights from the diary-based study, I found that even when investigated at fleeting time-scales, document mediation was pervasive. Participants engaged with one or more documents in every minute of the task. They made their environment more supportive by creating trace documents (notes) and annotating sources. Most of the minutes in which they wrote their essays involved also engaging with other documents.

One might be surprised not only by the frequency of participants' engagements with documents, but also by the strength of documents' mediating roles. The most striking example in these data is of DACL, a participant whose essay text, and whose process of composing it, was structured very directly by the structures of her source articles. The cognitive work of the task appeared so strongly shaped through patterned engagements with documents that I suggested that we might profitably describe this task as one of coordinating between textual structures. The very applicability of such an analysis, demonstrates how fundamental document mediation is to this task.

We not only saw that participants' cognition and action is heavily shaped through their engagements with documents, but also that these engagements are shaped by documents' material properties. Participants used paper and computers in different ways. They tended, for example, to take notes from onscreen sources, but to highlight and annotate
the printouts. Material characteristics of documents that were relevant to the task could be identified and related to participants' patterns of action. Consistent with the findings of O'Hara and Sellen (1997) many advantages of paper were identified. Participants were able to make use of tactile cues, peripheral vision and two handed-document manipulation, to navigate between documents and to perform other operations, with an ease not seen with onscreen documents. The use of space, tactile cues, two handed manipulation, peripheral vision and positioning the hand to keep ones place - these were integral to performing the task, and highlight its embodied nature. That many participants enacted quite different patterns in the two conditions (e.g. taking notes from onscreen sources, but not from printouts) emphasises the power of document materiality to shape cognition and action.

Another theme addressed by this study was the shaping role of the person. Intraparticipant consistency across conditions, and between the experiment and the coursework situation was testament to the role of the individual in shaping action. It demonstrated that, in addition to material artefacts, individuals have a shaping role in document production, with different individuals shaping action in characteristic ways. Although intra-participant consistency may be accounted for in numerous ways, we may note that the observed consistency is congruent with the notion of personal historical 'genres', presented in Chapter 4.

Having attributed shaping roles in essay production both to artefacts and to people, I emphasised that technologies do not have inherent effects upon cognition and action. I presented the example of one student who used his source documents in ways that reversed the typical 'consequences' associated with each medium. Consistent with the cultural psychological view, the data suggest that cognition and action are shaped through complex transactions involving persons, artefacts, and other resources of the situation.

5.4.2 Reflections on the methodology

The present study effectively complements the diary-based study. The experiment yielded direct real-time observations that support and develop claims and themes raised in the diary-based study. In combination, the experiment and diary-based study provide convergent validity for claims about the pervasive nature and strength of document
mediation. The experiment also yielded direct observations of fleeting 'operations' not provided by the diary-based study.

The use of laboratory methods raises dilemmas between ecological validity and close control of variables. The experimental situation was constructed specially to allow close observation of action, and controlled comparison between the use of paper and onscreen sources. Doing this meant that the experiment is a situation bereft of much of the rich mediating ecology of genuine coursework activity. For example, time constraints were different from their coursework situations: the task was done in a single session, and the temptation to simply stop and do something else was effectively removed. Because of many such differences, I cannot claim that the action observed in this experimental situation is 'the same' as that which occurs in genuine coursework essay production. However, the experiment allows some insights into some particular aspects of essay production. We know from the diary-based study that a large proportion of essay production time was spent alone at some desk, dealing with more than one document. Diary study findings suggested that we might fruitfully explore engagements with multiple documents at fleeting time scales and the relevance of material contexts. The present study has investigated these issues as they are manifested in a different, but related, task. The experimental task, like genuine coursework activity, involved participants in dealing with multiple documents, taking notes or making highlights, composing text from sources, etc. Although the details of action in the two tasks surely differ, we may have some confidence that the phenomena explored here - pervasive document mediation, the shaping of action by material conditions and by individuals with diverse practice histories - are also present in genuine coursework activity.

One of the consequences of employing a task that is specially constructed for the purposes of investigation is that it lacks the familiarity of routine everyday activity. Recall that, in Chapter 4, I argued that the routine character of essay production was central to its structuring. As a consequence, the action observed in the experimental situation may have lacked some of the smooth and unproblematic character of more familiar (coursework) activity. The observed action may be patterned quite differently from what would have occurred if participants had already written a number of essays under similar conditions (longitudinal investigations could investigate this). This should be borne in mind when comparing printout and onscreen technologies: participants had
generally had far less experience in working with onscreen sources, and, given the opportunity, may have learned, over repeated experiences, to deal with them more effectively and efficiently. For example, they may have become more efficient at using the mouse and/or keyboard to switch between onscreen documents. Because participants were more experienced in the use of paper documents then, the comparison between media is somewhat 'unfair'. Despite this limitation however, the study also reveals material differences between media that appear fundamental, such as the use of tactile cues and visual periphery when working with paper.

The use of repeated measures required that two sets of well-matched source materials be used in the present experiment. Care was taken to limit the potential variation caused by differences between the two topics ('Napster' and 'Electric vehicles'). The essay questions had comparable structures, and documents were selected and edited so that the number of words in each topic, interest level, and difficulty of each topic was approximately the same. Participants varied in which topics they found more interesting and more difficult. Overall, the two topics were judged as about equally interesting (although some participants commented that style of the electric vehicles articles was more 'scientific', and the Napster articles were more journalistic). Generally, it seems that the two sets of questions and articles were quite well matched. This would have minimised any variation created by the topics and questions themselves, enabling clearer conclusions about the role of the manipulated variable, 'article materiality'.

The repeated measures aspect of the experimental design had both benefits and drawbacks. As I have previously discussed, the main advantage of the repeated measures design is that it provided the opportunity to investigate individuals themselves as sources of intra-participant consistency and inter-participant variability. The use of a repeated-measures design is typically considered inappropriate when substantial relevant learning is expected to take place from one condition to the next. This is because such learning complicates comparisons between the two conditions. In the present study, it seems that such learning did take place. In interview, participants often commented that the approach they took in their second essay was influenced by their approach in the first (repeating what was successful and changing what was unsatisfactory). This phenomena does indeed prevent us from establishing to what extent intra-participant consistency (and variability) resulted from learning within the experiment, and to what extent it
resulted from other, perhaps more stable, characteristics of each individual. I have remained agnostic on this issue. I do suspect however, that more learning occurred between essays in the experiment than normally occurs between coursework essays. The two experimental conditions were more similar to each other than any two genuine coursework essays might be. As a result, experiences from the first essay might be unusually relevant to, and unusually likely to shape action in, the second essay.

Finally, this research could quite profitably have been expanded in a number of ways. Given sufficient time, I could have analysed activity to a granularity of far less than a single minute. More temporally fine-grained 'document usage charts' would present a clearer picture of how the interleaving of attention between documents was managed by each individual in each condition. A clearer understanding of participants' engagements with documents would also have resulted from systematic records of participants' movements within documents. Such data yielded insights into DACL's peculiarly linear approach to her documents. However, to record all of the other participants (more fluid) movements within documents would have required prohibitive investments of time. A larger research project might also have attempted to relate processes to products. My analysis has emphasised the processes by which essays were produced, but I have not related these to the finished essays. With more time for analysis (and perhaps a more thorough control of participants' prior knowledge of the topics) it would be worthwhile to identify links between process and product. Another kind of outcome to which processes could have been related is participants' learning. For example, it might have been interesting to relate their processes to the 'sense of text' that they gained for each article, or to the knowledge they gained about the topics. These issues could be explored in future investigations.
Chapter 6 Contexts of participation

6.1 Introduction

In Chapters 4 and 5, I presented the 'meso' and 'micro' level studies in this thesis. The 'diary-based' study investigated instances of authentic essay production as they were organised in time. It identified a rich ecology of relevant resources, focusing particularly upon documents. The 'materiality at the desktop' study complemented the diary-based study by focusing in - a 'micro' level analysis - on fleeting aspects of document mediation and by exploring the particular significance of the materiality of documents.

The present, macro level study will constitute a broader lens on essay production. It will emphasise activities that embed essay production and explore its social and institutional contexts.

Social context was glimpsed but not fully explored by the diary-based study. Diaries recorded those rare occasions of any length in which participants worked with, or received help from, classmates, friends or family. Interviews suggested further, that more fleeting instances of informal social contact also resourced students' essay production. However, participants could not claim to recollect all such instances, or to remember them in detail. The present study will investigate more directly and thoroughly, interpersonal contact and its role in students' academic endeavours.

The diary-based study also raised questions about the embedding of essay production in the more encompassing activity of academic endeavour at university. Essay production realises objectives that go beyond the essay itself. These broader activities motivate, shape and give meaning to essay production (e.g. diary study interviews suggested that essay production was more clearly oriented to the project of getting a degree, than directly to the pursuit of knowledge). Other forms of out-of-class study are of particular interest because of what they have in common with essay production. They are not only co-constitutive, with essay production, of the same overarching objectives, but share other common characteristics. Like producing essays, activities such as doing other coursework, reading around lectures and preparing for exams may each involve interpreting a question, finding source materials, reading them, and note making. Furthermore, they share common social and institutional contexts and are likely to be
similarly shaped by these. The present study will not be limited to investigating essay production, but will investigate the broader activity of students' academic endeavours. I will explore the broader project that embeds essay production and gain insights into essay production from similar activities, similarly embedded in shared social and institutional contexts.

The diary-based study also raised questions about how academic endeavours are embedded in patterns of everyday life at university. We saw that essay production takes place, alongside other activities, in the fabric of students' lives. Data showed that it is shaped, by competition for time with alternative activities, and by articulation with simultaneous activities. Instances of interpersonal contact relevant to essay production were also embedded within the fabric of participants' everyday lives. The diary-based study could not fully explore this fabric because diary data included only periods of work on the essays. The present study will more directly explore fabrics of undergraduate life and the embedding of academic endeavours and interpersonal contact within them.

Any exploration of everyday undergraduate life will illuminate institutional context. The university gives shape to participants' academic pursuits. It awards the degree towards which students work, it assigns coursework and sets deadlines, and it provides teaching in given places and at given times. Students' non-academic and social lives also involve the university. Loughborough University provides various bars, sports facilities, student societies and a popular night-club. Many students also live in university accommodation. Some halls of residence provide students with meals, thereby dictating to a large extent what, where and when they eat. In these and other ways, the university shapes not only the academic, but also the recreational and social lives of students. The present study will explore the role of the university in shaping academic endeavour, interpersonal contact and the everyday lives of students.

As I discussed in Chapter 3, research into student literacy, particularly in the growing 'Social Practice'/Academic Literacies' tradition, has made significant progress in exploring social and institutional university contexts. These studies have focused particularly on the sense that students make of the university and of their role within it. They helpfully explore the university as a site of discourse, ideology and power. However, as I argued in Chapter 3, this rather 'ideal' perspective might usefully be complemented by exploring the material nature of the university. Through illustrating
how the university patterns students’ activities in space and time, the present study will emphasise material aspects of the university context. It will emphasise that the university is constituted by arrangements in space and time. Hence this study will take up the theme of materiality that is encouraged and enabled by the cultural psychological perspective, and that runs throughout this thesis.

One study that revealed something of the role of the university in student life was Becker et al.'s (1968) ethnographic research into "the academic side of student life". Four participant observers spent one or two years with students at the University of Kansas. They accompanied students both in and out of classes. The main (emergent) focus of the study was students' attitudes toward the academic work and their pursuit of grades at the expense of richer learning experiences. This study draws attention to the role of the university in shaping these attitudes. It also found that institutional living arrangements played a strong role in students' academic and non-academic lives. Becker et al (1968) noted, for example, the ways in which different forms of living groups support and inhibit study. By implicating institutional arrangements of space in the academic and social lives of students this finding suggests the relevance of the material aspects of the university.

Other studies have investigated relations between university residence arrangements and academic and social life, but using relatively coarse empirical methods. Typically, these studies adopt a factorial approach. From university records, direct correlations between accommodation types and grades have been sought (e.g. Grant, 1968). Questionnaire studies have also incorporated students' attitudes and extracurricular activities (Baird, 1969; Kuder, 1972; Schrager, 1986). Although some statistically significant relations have been found (e.g. Maurais, 1968), these broad-brush methods have yielded mixed results (Pugh and Chamberlain, 1976; Pascarella, Terenzini and Blimling, 1994).

The issue of residence arrangements has been incorporated into the broader project of creating student "learning communities" (Gablenick, MacGregor, Mathews and Smith, 1990). The ‘learning communities’ perspective typically views learning not in academic terms only, but in terms of ‘whole person’ development. For Brower and Dettinger (1998), learning communities consist of three elements: academic, social and physical, which promote the development of students’ professional, ethical and civic responsibilities. The idea of the “living-learning community” emphasises the place where
the community lives. Empirical studies of learning communities tend to rely on data from university records, from questionnaires and/or from interviews (Blimling, 1993, Kanoy and Bruhn, 1996; Ketcheson and Levine, 1999). Few studies have taken a fine grained approach to investigating the benefits of student communities (Crook, forthcoming). This movement then, brings attention to the role of the university in shaping academic and social life and to the role of community in student learning. It suggests a need for rich, explorative investigations into these issues.

The current trend towards virtual universities also makes pertinent the materiality of universities and the functioning of student communities. With recent advances in information and communication technologies, much attention has been devoted to how these may support distance learning in higher education (Van Dussen, 1997; Rada, 2001). Crook and Light (1999) however, warn against information technology led visions of the future of education that neglect how socio-cultural contexts motivate and otherwise resource undergraduate study. Indeed, some attention has been paid to the issue of student collaboration in the virtual university and to the establishment of online learning communities in higher education (Palloff and Pratt, 1999). We might usefully contribute to debates around these issues by exploring whether and how students in a bricks-and-mortar university, function as a community of learners.

What methods could be used to gather rich data exploring the fabrics of everyday life at university, and the embedding of academic endeavour and interpersonal contact within them? A participant-observer ethnography in the tradition of Becker and colleagues (Becker et al. 1968; Becker, Geer, Hughes and Strauss, 1961) could yield such rich data, but would require a considerable commitment of resources. One observer can only be in one place at a time, making it difficult to incorporate the experiences and patterned engagements with university resources of a variety of students. A further problem is the issue of access. To accompany a student throughout their entire day would require from them a prohibitive level of commitment, and would doubtless influence their day's events. Retrospective interview or questionnaire data (as I found in the meso level study) could not provide sufficiently detailed accounts of participants' activities as they unfold through the hours across a number of days. These considerations suggest that some form of self-report diary may be appropriate.
Because the diary is to be used throughout the day, it should be highly portable. Participants should be able to carry it with them throughout their everyday activities, such that they could make frequent recordings, and not rely on recalling events after delays of many hours.

Participants must also be able to make recordings with ease. Recording diary entries by voice has apparent advantages over writing by hand. The physical act of writing requires a flat space, is slower than speaking, and lacks the richness of expression that may be conveyed through the voice. Because of its greater convenience, and the desire for frequent recordings of rich character, a voice recording method will be employed.

Eight first or second year students at the department of human sciences at Loughborough University will participate. They will each carry a digital dictaphone with them for one week. They will make frequent recordings that will create detailed accounts of the pattern of their week. Recordings will describe; their academic and non-academic activities, their movements from place to place, and with whom they spend time. Participants will particularly report details of interpersonal exchanges that have any relation to academic work. This study will explore the social, institutional and activity contexts that embed essay production. It will emphasise how interpersonal contact and academic endeavour are shaped by the university and will explore relations between the two.
6.2 Method

6.2.1 Participants

The participants were 1st or 2nd year students studying Psychology or Ergonomics in the Human Sciences department at Loughborough University. Participants were selected to reflect a range of ages, life circumstances and accommodation arrangements.

Thirty-one 1st year students, constituting a randomly selected third of the relevant population were approached in person and invited to take part. They were offered 10 pounds for their participation. Fifteen 1st year students expressed an interest - giving their ages and basic accommodation details. This represents a response rate of 48%. From these, three participants were selected, as shown in Table 6.1.

<table>
<thead>
<tr>
<th></th>
<th>Self catered hall</th>
<th>University flat</th>
<th>Private house</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychologists</td>
<td>GRKA-F19</td>
<td></td>
<td>MCHI-F36</td>
</tr>
<tr>
<td>Ergonomists</td>
<td></td>
<td>MATO-M18</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.1. First Year Participants (each participant is represented by their pseudonym, gender and age)

The entire 2nd year population of eighty-two students was contacted via email. They were offered 15 pounds for their participation. Eighteen students expressed an interest - giving their ages and basic accommodation details. This represents a response rate of 22%. Five participants were selected, as shown in Table 6.2.

<table>
<thead>
<tr>
<th></th>
<th>Self catered hall</th>
<th>University flat</th>
<th>Private house</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychologists</td>
<td></td>
<td>LYAL-F20</td>
<td>WOSA-F28,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GOCA-F19</td>
</tr>
<tr>
<td>Ergonomists</td>
<td>ANJA-M19</td>
<td></td>
<td>GRWI-M19</td>
</tr>
</tbody>
</table>

Table 6.2. Second Year Participants (each participant is represented by their pseudonym, gender and age)

6.2.2 Apparatus & Materials

6.2.2.1 Dictaphones

Each participant was issued with a small digital dictaphone on which to record their messages.
Most participants used a Panasonic dictaphone (size 90mm \* 55mm \* 12mm). This automatically recorded the date and time at which each message was made. Two participants used other makes of dictaphone. These had shorter durations and lacked the time-stamping feature. Participants using these dictaphones stated the current time in each message they recorded. Table 6.3 gives details of dictaphones and their allocation.

<table>
<thead>
<tr>
<th>Dictaphone make</th>
<th>Participants</th>
<th>Duration (mins)</th>
<th>Time Stamping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panasonic</td>
<td>6</td>
<td>60</td>
<td>Y</td>
</tr>
<tr>
<td>Sony</td>
<td>1 LYAL</td>
<td>16</td>
<td>N</td>
</tr>
<tr>
<td>Voice it</td>
<td>1 GRKA</td>
<td>22</td>
<td>N</td>
</tr>
</tbody>
</table>

Table 6.3. The allocation and characteristics of dictaphones.

6.2.2.2 Instruction sheets

Each participant received an instruction pack (see appendix 6.1), which was the basis for all the instructions that they received. Participants were given the pack to take with them, but it was also read to them as a central part of their introduction and instructions for the study. The pack consisted of three sheets of paper.

The first sheet introduced the purpose of the study. A firm sense of the purpose of the study was considered important for: enabling participants to make appropriate recordings; making them feel like insiders in the research; and sparking their interest in the study. The study was introduced as focusing 'on the informal learning that occurs when people share spaces and activities'. The sheet's main purpose was to make this idea accessible. First, it emphasised the potential for informal learning when: working with others, socialising with others, and observing others. Then, it introduced the idea of 'learning-events', defined as occasions that 'establish or change your relationship to the work you do'. The purpose of the study was thus accessibly defined as identifying 'what sorts of learning-events occur' and identifying 'the activities, the people, and the places that enable their occurrence'.

The second sheet indicated what to record on the dictaphone and when to make recordings. Having introduced the purpose of the study in the first sheet, the second sheet was described as telling participants 'what you actually need to do'. **Participants were told that they should aim to record 'everything' that happened in their week, regardless of whether informal learning occurred.** They were told that their
dictaphone record should give a clear indication of all the places that they went, people
they were with (and around), and every activity they did. They were verbally encouraged
to report, roughly, the topics of their conversations (pilot research had revealed that
through the process of recalling conversations, participants often found that some work­
related topic came up). They were asked to pay special attention to any informal learning
that occurred and were encouraged to reflect upon whether learning-events typically
occur in such situations. They were also instructed to give approximate starting and
stopping times for each activity and place. The second sheet also advised making a
recording 'whenever you are changing locations' and, if possible, when changing
activities. Finally, it emphasised that: 'the more recordings you make the better. This
research aims to record all people, places, activities, and learning that makes up your
day.'

The third sheet emphasised the breadth of concerns addressed under the heading of
informal learning or 'learning-events'. It showed diagrammatically many aspects of the
relationship between the participant and their work, such as: accomplishment of work,
feelings towards work, ways of doing work, and the scheduling of work. In this way, the
third sheet emphasised that any event that changed or established any of these aspects
was relevant to this research.

6.2.3 Procedure

The procedure followed a simple temporal pattern.

• Participants were introduced to the study and began making recordings.

• Participants met with me within two working days and I provided feedback on their
diary recordings.

• Participants returned their dictaphones after seven days of recording.

• Participants were interviewed within three days of returning their dictaphones.

These phases are elaborated below.

In their introductory session, participants were introduced to the basic nature of the
study, told what to record, and trained to use a dictaphone. They were given instruction
sheets; these were read to them, and their questions encouraged and answered. Along with an emphasis on complete and frequent recordings, participants were encouraged to think of their dictaphone messages as ‘their own’ - to enjoy making the recordings and not to worry about including ‘irrelevant’ comments for their own interest or pleasure. The effort required of participants was considerable, and this measure was aimed at keeping motivation high and increasing the volume of useful material.

Within two working days of making their first recording, participants met with me and I provided feedback on their recordings. This meeting ensured that recordings were sufficiently detailed and frequent. It also helped to reassure participants and to motivate them to optimise their participation.

Participants returned their dictaphones at least one week after beginning the study. One participant, WOSA, recorded only 6 days of data because she became unavailable for a later interview. If their recordings were likely to exceed their dictaphone’s capacity, participants visited me within the week and exchanged their current dictaphone for another (none made a trip into the department especially for this purpose).

Within three days of their last recording, participants were interviewed. The interviews were semi-structured and guided by a written schedule (appendix 6.2). They were resourced by a complete transcript of their dictaphone recordings. Interviews typically lasted just over one hour. They began with a review of the dictaphone transcripts. The participants clarified ambiguities in their transcripts, and were asked to elaborate their reports of selected incidents. Participants then described key people, places, and activities in the recorded week, in terms of how each “help or hinder you in being a psychology (or ergonomics) student”. They were asked how typical a week this was, and were invited to reflect upon; what kind of a student they were, the relationship between their academic and social lives and to compare themselves with others on their course.

The data were recorded between the fifth and tenth week of a 15-week semester. Seven of the eight participants recorded data for a full week. The other participant, WOSA, recorded only six full days of data, beginning at 2 p.m. on a Friday and ending 2 p.m. the following Thursday. The final Monday on which any data was recorded was a public holiday. Two participants, MATO and GOCA, were making recordings that week.

The total time covered by the dictaphone recordings is summarised in Table 6.4.
<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Average per person</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Days</td>
<td>Hours</td>
</tr>
<tr>
<td>Regular week days</td>
<td>37</td>
<td>888</td>
</tr>
<tr>
<td>Week ends</td>
<td>16</td>
<td>384</td>
</tr>
<tr>
<td>Bank Holidays</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>1320</td>
</tr>
</tbody>
</table>

Table 6.4. *Week day, weekend, and bank holiday time reported on the dictaphones.*

### 6.2.4 Analysis of Data

Transcripts of the dictaphone data (with the date and time stamps incorporated) were the main focus of analysis. Performing each transcription before conducting the relevant interview enabled a more informed and better-grounded interview, and allowed the clarification of ambiguities in the dictaphone data. After having conducted all the interviews, I listened to the interview tapes while examining and annotating each transcript. After doing this for each participant, I transcribed selected portions of each interview (parts of the interviews, such as resolutions of ambiguities in the dictaphone records, did not merit transcription).

Analysis of the data involved becoming intimately familiar with the fabric of each participant's week, as revealed by their dictaphone data and further contextualised by the interviews. I made complete linear passes through each dictaphone transcript, gaining a sense of the temporal unfolding of their activities, and how these activities were shaped by social and institutional contexts. I made lists of the people, places and activities that made up each participant's week and recorded the time spent by each participant in selected activities and places.

Examination of the data suggested that it would be desirable to develop a scheme for identifying and classifying discrete occasions in which social interactions involved talk related to academic endeavours yet were not directly imposed as academic requirements (and further, to identify the activities, persons and places that enabled these events). I termed these instances 'Academic Events'. Two defining characteristics of Academic Events are their informal and interpersonal nature.

I chose to exclude university-imposed group-work and formal teaching from the analysis. Clearly, both are loci for important learning. However, this study was directed
towards academic experiences outside of these contexts, and this method was unsuited to examining in-class interactions and intensive group collaboration. These have been studied elsewhere (e.g. Mercer, 1995). Academic Events then, could occur in informal collaborative study (outside of university imposed group work) and in less intensely collaborative interactions.

Academic Events must also be interpersonal in nature. The data yielded various insights into participants' individual academic endeavours. However, in order to explore relations between academic endeavour and social context, I limited the 'Academic Event' notion specifically to instances of interpersonal contact.

Each Academic Event was classified into one of three mutually exclusive categories intended to represent different levels of engagement in academic ‘content’. These categories were developed through examination of the data. They were intended to allow the events to be unambiguously classified from the dictaphone records. Simultaneously, they were intended to indicate the probable richness of disciplinary content communicated. Event categories are described below.

1. For an Academic Event to be classified as 'document present' it is necessary and sufficient for a participant to engage in talk related to academic work while simultaneously engaging with a relevant document.

2. For an Academic Event to be classified as 'course-specific', it is necessary that some disciplinary content or some specific about a particular piece of work be communicated. A simple reference in talk to the difficulty or ease of some specific piece of work is sufficient for classification as a 'course specific' event (because something, if only its difficulty, is communicated about content).

3. For an Academic Event to be classified as an 'academic life' event, talk must relate to academic work, but no academic content, and nothing about a particular piece of work must be communicated.

Example events from each category will be presented in the results section.
6.3 Results

The results will be reported in five main sections.

In section 6.3.1, I will consider 'how participants spent their weeks'. I will overview the activities, people and places that made up their weeks. This overview will illustrate how participants' time and academic and social activities were shaped by institutional arrangements.

In section 6.3.2, 'the Academic Events and their disciplinary content', I will begin to explore relationships between informal contact amongst people and their academic endeavours. We shall see that academic activity was frequently referred to in participants' informal contact with other people. I will describe this contact using a three-tier categorisation scheme, indicating approximately how much academic content was expressed in these 'Academic Events'. Data will suggest that although informal contact that relates to academic activity was quite frequent, this contact tended not to focus upon or involve a great deal of disciplinary 'content'.

Having seen that academic endeavour is frequently referred to in informal social contact, in section 6.3.3, 'academic uses of informal academic contact', I will consider the implications of this informal social contact for academic endeavour. Although this type of contact involved relatively little construction or communication of disciplinary 'content', it appeared to contribute to the resolution of broader dilemmas about academic endeavour that come out of the students' participation in their university degree courses.

In section 6.3.4, 'settings of informal academic contact', I will describe the contexts that enabled 'Academic Events': the people, places and activities that made them up. Data suggest that Academic Events were particularly likely when participants came together with others' with whom they shared common academic endeavours. Institutional arrangements that brought appropriate people together in space and time were particularly important in fostering Academic Events.

In section 6.3.5 'the dynamics of informal academic contact' I will consider how Academic Events' were woven from these contexts. I will discuss three 'mechanisms' of informal learning: 'talk in work', 'talk about work', and 'observation'. Through this
analysis, it will become clear that informal learning often occurred without being actively sought. Informal learning appears to hinge less upon the granting or frustrating of an individual's quests for knowledge, and more upon how thoroughly that individual is immersed in a social world of practice.
6.3.1 How participants spent their weeks

The dictaphone data provided detailed records of how the participants spent their weeks. In this section, I will roughly characterise this time. This will reveal something of the texture of their social and academic lives as university students.

I will address how participants spent their time in terms of; what (6.3.1.1) they spent time doing, where (6.3.1.2) they spent their time, and with whom (6.3.1.3).

6.3.1.1 Activities that made up the week

What did students spend their time doing?

The dictaphone data strongly convey a general sense that participants' daily activities were less rigidly organised than most members of western societies. They had great freedom in how they spent their time, and appeared to organise their time quite spontaneously. As we shall see their academic endeavours took up less time than a standard working week. They were largely free to pursue this work as and when they chose, and did not confine it to ordinary daytime working hours. Nor, in general, was their time strongly organised by other activities. Although some took on organised extracurricular activities, including part-time work, committee membership of a university society, or tennis lessons, such time-tabled activities usually took up only a few hours per week. Participants living in some halls of residence had meals prepared for them. This did organise their day somewhat, but also freed up time that might have been spent in buying and preparing food, and washing up.

Most participants' time then, was loosely organised and decisions about how it should be spent were made somewhat spontaneously. They were among other students with similarly unconstrained time. During daytime, evenings and weekends academic or recreational activities might be postponed due to spontaneous invitations from friends. Data included such spontaneous visits to town, invitations to play darts, or to join in computer games.

Although most participants' time was relatively unconstrained by time-tabled commitments, participant MCHI was an exception. As a wife and mother living in a family home thirty minutes driving time outside of Loughborough, her time was more
heavily constrained. She took primary responsibility for the running of her household and day-to-day upbringing of her child. Everyday activities such as providing meals and taking her child to and from school, in addition to academic pursuits, meant that she was consistently busy and her time quite tightly constrained.

Let us consider more closely participants' academic activities. Table 6.5 indicates how much time participants spent studying, and in what kinds of study.

<table>
<thead>
<tr>
<th></th>
<th>Total hours</th>
<th>Mean (&amp; std dev) hrs/week</th>
<th>Mean hours per day</th>
<th>Percentage of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual study</td>
<td>168</td>
<td>21 (6.7)</td>
<td>3.1</td>
<td>65</td>
</tr>
<tr>
<td>Lectures</td>
<td>57</td>
<td>7.1 (2.2)</td>
<td>1.0</td>
<td>22</td>
</tr>
<tr>
<td>Group coursework</td>
<td>21</td>
<td>2.6 (2.4)</td>
<td>0.4</td>
<td>8</td>
</tr>
<tr>
<td>Joint study</td>
<td>10</td>
<td>1.3 (1.8)</td>
<td>0.2</td>
<td>4</td>
</tr>
<tr>
<td>All study</td>
<td>265</td>
<td>32 (9.6)</td>
<td>4.7</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6.5. Time spent in different kinds of study over the week. [The time spent on each activity was calculated using a simple heuristic. Each hour of the clock was classified by its predominant activity. Throughout, group coursework refers to coursework for which group participation is compulsory.]

On average, participants worked reasonably hard. They averaged 32 hours of study per week (although the standard deviation shows that this varied substantially between participants: the range was 12 - 42 hours). This is slightly less than a standard working week of approximately 38 hours.

Participants worked alone most of the time, spending very little time working with others. Two thirds of the total study time was spent working alone, in individual study. Approximately one fifth of the time working was spent in lectures or tutorials.

Participants averaged 2½ hours per week working with others on group coursework. Group coursework was a particular feature for second year ergonomists; unlike the other participants, the majority of their modules included group coursework. Participants worked with others in joint study, (working together on academic tasks other than university designated group work) only very rarely - for just over one hour per week on average. The amount of such joint study varied substantially between participants (std. dev. = 1.8): five participants spent no hours in joint study, one spent two hours, and two spent four hours. Approximately half of this 'joint study' was accounted for by participants working with others on a single 2nd year statistics module (referred to as
'EDA'). This suggests that only certain unusual circumstances provoke joint study among these participants.

Because the figures in this table were calculated heuristically, they do not represent exactly how much time was spent on each activity. Each hour of the clock was classified by its predominant activity. I judged this to be the most satisfactory method of capturing duration information because the dictaphone data often lacked precise timings. For example, a participant might report the two or three activities that made up their previous two hours without being able to indicate when each one began or ended. The actual time spent in joint study activity may be higher than represented here, because periods of joint study were often too brief (e.g. occurring in two-minute conversations) to be the main activity within any hour. Nevertheless, the rarity of protracted occasions of working together is note-worthy.

Before addressing what places made up participants' weeks, a little reflection on the focus of these academic efforts is appropriate. The vast majority of individual study time was devoted to producing coursework: only the most enthusiastic participants spent any time studying their lecture notes or 'reading around lectures'. Participants reported that coursework was what they spent the most study time doing during the first two thirds of each semester, after which preparation for exams takes an increasing portion of time. Assessment, and especially assessed coursework, heavily shapes these participants' academic efforts.

Although coursework did not usually take the form of an essay, it often had considerable similarities with essay production. It typically involved producing some document, such as a report or some long written answers to a set of questions. Like essay production, it often involved making use of source documents and also considerable efforts in interpreting requirements.

6.3.1.2 Places that made up the week

Where did participants spend their time? Participants spent most of their time around their residence – be it a hall of residence (n=4), student house (n=2), or private home outside of Loughborough (n=2). This was a site mainly for: relaxing and socialising with other residents; private study; and domestic activities, such as eating. Evenings out,
usually at bars and public houses, on and off campus, were slightly less frequent than evenings at home.

We shall see that the academic department was a key site for contact with course mates. Participants spent a mean of 15 hours (std. dev. = 2.2) in the department over the course of the week. This translates to 3 ¼ hours per working day (they spent no time in the department during weekends or public holidays). The university department (defined here as including all lecture theatres in which departmental lectures were taking place) is a site participants used for: lectures; computing facilities, submitting coursework, and other administrative activities.

A key feature of this department is a spacious and well appointed ‘coffee room’. This is located quite centrally within one of the main departmental buildings. It houses the blank forms that students fill in when they submit coursework, the student notice boards, and a photocopier for student use. Student pigeonholes are located just outside of it. It was a place where departmental students frequently met, by arrangement or by chance. It was the site of most group meetings and a frequent site for breaks in lectures. When on campus, participant MCHI based herself in the coffee room (this week and all others), doing much of her independent study there, despite frequent distractions from course mates and others. Other students occasionally conduct independent study in the coffee room, but most participants felt that it has too many distractions from other people.

Indicating the strength of their own homes as a base for their activities, participants spent relatively little time during weekdays visiting friends outside of their own house or hall of residence. The exception to this was GWRI, who spent approximately 15 hours at other students’ houses. Although three participants spent weekends away from their homes (two visiting family, and one visiting friends) these occasions are probably over represented in these data because each participant reported weekends away as unusual and two were special bank holiday arrangements.

6.3.1.3 People that made up the week

Who did participants spend their time with? This is very much tied up with where they spent time. While in the department, participants tended to be amongst or with course mates. When at home, they were usually around those they lived with. Participants
generally spent more time around their residences than in the department and the people with whom they lived were typically closer friends. Socialising outside of these locations was more often done with friends from their 'living group' than with course mates. Occasionally, living group friends were also course mates. First year students are apparently allocated specific rooms in halls without consideration of their course; the students that surround them are generally from other courses. Often these friends are the ones that students find off campus accommodation with in subsequent years. Hence the three 2nd year participants sharing with other students had chosen, in general, to live with students other than course mates: only GOCA shared a house with a course mate - one with whom she had also shared a hall of residence in her first year. They shared this house with three other students from their previous living group. It seems that accommodation arrangements shape these participants' friendships and social lives more strongly than do academic courses.

Living arrangements seem to have shaped the social lives of the two mature participants living in 'non-student' houses outside of Loughborough. They both spent less time in the company of students. Furthermore, their student-friends were almost exclusively course mates and others from the same academic department. They were also unusual in spending significant portions of their time with non-students: MCHI had her own family and WOSA lived with a partner and visited friends in nearby villages.

6.3.1.4 Overview of participants' weeks

Regarding what participants did (and when), I noted that participants time was organised quite loosely by the university. On average, they worked for less hours than a standard working week. Apart from a few scheduled hours (lectures and group meetings), they could work when they wanted. They tended to work alone. Outside of group coursework, they very rarely worked together with others in periods exceeding just a few minutes. Most participants also had few other demands on their time. They were generally not tied to jobs or even to routine extra-curricular activities.

In general, where participants spent most of their time was in and around their residences. Their house, flat, or hall of residence was where they ate and slept. Moreover, it was their main base for both studying and relaxing. Time in departmental spaces was relatively unusual, and was typically brought about by lectures or group
coursework. Participants would occasionally linger in departmental spaces in between these commitments, socialising in the coffee room, or spending time in the computer lab.

Regarding who they spent time with, participants made closest friends with, and spent most of their time in company with, the people with whom they lived. In the course of everyday work and relaxation, they were likely to be based at home and to spend most time with those with whom they shared domestic space. Typically, when they went out to socialise they would do so with friends from their house, flat, or hall of residence. They saw much less of their course mates than their other student-friends, both during the daytime and evenings.

Having now roughly sketched participants' ordinary activity, in the next section I will begin to address relations between (informal) social contact and their academic endeavours.
6.3.2 'Academic Events' and their disciplinary 'content'

Although participants rarely worked closely with others outside of group coursework situations, the dictaphone records showed that their informal talk quite frequently referred to their academic endeavours. One way in which informal social contact might usefully contribute to students' academic endeavours would be if they communicated and constructed academic disciplinary 'content' through their talk. In this section, I will summarise those occasions in which participants talked with others about academic work, focusing particularly on the extent to which they communicated and constructed academic 'content' in their talk.

Participants were asked to report on their dictaphones any instances in which their talk with others related to academic work. From their dictaphone transcripts I identified all such instances. I developed and employed a scheme (see methods, section 6.2.4) intended to classify these events meaningfully, but without interpreting beyond what was said in the dictaphone recordings. This scheme is intended to indicate approximately how much academic/disciplinary 'content' was communicated in each event. The 'document present' category was intended to indicate potentially rich communication/construction of academic content. The 'course specific' category was expected to indicate some construction/communication of content, and 'academic life' events appeared to involve none. Before looking at the frequencies of each kind of event (section 6.3.2.4), I will first characterise the events that fell within each category. I will start with the potentially richest in content, the 'document present' events.

6.3.2.1 The 'Document present' events

Those events that appeared richest in academic content appeared to also involve the presence of a relevant document. Accordingly, the presence of a relevant document was chosen as a potentially useful, and somewhat objective, indication of an event's potential richness. For an Academic Event to be classified as 'document present' it was necessary and sufficient for a participant to engage in talk related to academic work while simultaneously engaging with a relevant document.
'Document present' events involved less disciplinary content than we might have imagined. Some document present events did involve close collaboration. For example, LYAL worked with others on a (supposedly individual) statistics assignment:

"We have just finished doing our 'EDA'. We started in the coffee room. It was me, Sonia, Jane and Lesley. And we were trying to do the answers to the first bit of the coursework. We then went down to the computer room and did the analysis on the data, which is the second bit of the coursework, and it went alright." (LYAL dictaphone entry).

But such close collaboration was very uncommon. Instances of reading peers' work were more common kinds of ‘document present’ events. These readings were generally quick, as opposed to close. For example, one ‘document present’ event occurred when a course mate looked at MCHI’s practical report: "she was just flicking through the pages and she was having a little look, just generally at the body." (MCHI interview). Other such readings appear limited in depth, e.g.:

"I am now in the computer room doing some work. I spoke to a couple of the people in the room about their 'Organisation Behaviour' coursework. [I] Had a look at it, and [that] helped me in finishing off mine." (ANJA dictaphone entry).

Often, ‘document present’ events involved even less collaboration or content. Some were based on exchanging or gathering source materials, e.g:

"[In] the library, [a friend who] had already done the work ... was saying to me what the best books were. We had a selection and she said, 'oh that's a good one that’s got a lot in it', so she dictated my book selection from the library." (MCHI dictaphone entry).

In some such events it is not even clear that any discussion of the book contents occurred, e.g. "I have photocopied the notes I need out of the short loan book for social and I have passed the book on to Jenny." (MCHI dictaphone entry).

6.3.2.2 The 'Course specific' events

For an Academic Event to be classified as 'course-specific' it was necessary that some disciplinary content or something about a particular piece of work be communicated.

Within the ‘course specific’ category too, events tended to involve less academic content than might be expected. Some events did contain a substantial element of disciplinary content, such as this conversation with course mates:
"we talked in our group a bit about the 2 bits of coursework that had to be in, 'EDA' and 'Organisational Behaviour'. We chatted about what our conclusions were what theories we had added to the third question." (ANJA Dictaphone entry).

Often however, it appeared that academic content was touched upon quite superficially, such as in these exchanges:

"Sandie brought up the subject of statistics for next year, the start of the 2nd year, and she was saying that that module is causing her some worries and she is wondering if the university does some courses over the summer that would bring her up to scratch and um we talked about that really just that she wanted extra tuition so that she is prepared for the lectures." (MCHI Dictaphone)

"[A girl in the year above] came in [to the departmental coffee room]. I spoke to her about the Stats EDA module because she did really well last year in it. She said it was really hard. She said that she wrote five thousand words for it. So I am not looking forward to that. (GRWI dictaphone)

It was not always possible to gain a strong sense of how much 'content' was communicated/constructed in course specific events. However, it could be noted that the focus of talk was rarely upon disciplinary content per se and more often upon the efforts that would be required to get some piece of coursework done. I will examine the significance of this in section 6.3.3.

6.3.2.3 The 'Academic life' events

For an Academic Event to be classified as an 'academic life' event, talk must relate to academic work, but there must be no evidence of academic content, or anything specific to a particular piece of work being communicated.

"I told him to sit and watch a video but he said he has too much work to do" (GOCA dictaphone).

"I have just gone outside my room and met some of the people from my floor in the corridors. They wanted me to go out with them this afternoon but I am working. And they were moaning that I do too much work... I don't know whether I do or not." (GRKA dictaphone)

These events often occurred with friends on different courses or from outside of the university.
6.3.2.4 Frequencies of the three types of 'Academic Event'

Data presented in sections 6.3.2.1-2 suggested that 'document present' and 'course specific' Academic Events tended to involve less academic 'content' than we might have expected. Table 6.6 indicates frequencies of each class of Academic Event identified.

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Frequency</th>
<th>Percentage of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document present</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Course Specific</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Academic life</td>
<td>55</td>
<td>43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>127</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 6.6. **Frequencies of each category of Academic Event.**

A total of 127 Academic Events were identified from the diary records. This represents a mean of 2.3 Academic Events per day.

The distribution of Academic Events across categories suggests that events are more often sparse in disciplinary ‘content’ than rich in it. Only 16 events over the 55 recorded days were classified at the richest level - ‘document present’. We saw in section 6.3.1 that extended periods of joint study were rare. The present table suggests also that fleeting instances of close joint study were also rare. The remaining 87% of Academic Events were divided equally between the ‘academic life’ and ‘course specific’ categories. While the ‘course specific’ events communicate or construct some disciplinary or course related content, the ‘academic life’ events (constituting 43%) communicate/construct none.

6.3.2.5 Summary of 'Academic Events' and disciplinary 'content'

In summary, the Academic Events that participants experienced revolved less around constructing/communicating disciplinary ‘content’ than we might have imagined. The one-dimensional coding scheme employed in this section focused upon ‘content’. Its application suggests that content was a less salient feature of participants talk about work than we might have imagined. Participants’ talk with others rarely seemed to address directly some concept from their discipline. It tended to concern broader aspects of their academic lives.
If participants were talking about work, but not necessarily about disciplinary ideas, we may then ask whether this talk had any useful consequences for the students. In the following section, I will explore the contribution of this talk to participants' academic lives.
6.3.3 Academic uses of informal social contact

In section 6.3.2, we saw that participants' informal social contact was more sparse in disciplinary 'content' than we might have expected. Constructing and communicating disciplinary 'content' is, however, only one aspect of the job of being a psychology/ergonomics student.

In this section, I will explore how informal contact contributes more broadly to students' academic lives. From inspection of the data, I will suggest that informal social contact contributes particularly to the resolution of three dilemmas of student academic life. I will address each in the sections that follow:

- Section 6.3.3.1 Dilemmas about academic products. E.g. 'What should my coursework be like?'

- Section 6.3.3.2 Dilemmas about time and effort. E.g. 'How much effort should I devote to academic pursuits?'

- Section 6.3.3.3 Dilemmas about study technique. E.g. 'What 'study skills' should I utilise?'

6.3.3.1 Resolving dilemmas about products

One of the functions fulfilled by Academic Events was getting work done. Participants' concerns and study efforts were almost always directed towards meeting the assessment demands of the institution, rather than on learning for its own sake. Their concerns are also reflected in their talk - participants tended to talk about coursework rather than their discipline per se. One of the functions of this talk was developing knowledge about what was required in these assessments.

As we have seen, coursework was sometimes shaped by close collaboration. All the 2nd year participants in this research collaborated with others on their statistics ("EDA") coursework. All the participants found this collaboration valuable:

"Sonia is very good at EDA coursework, and she's the one that pretty much tells us what that's about. So she helps us with that. Our EDA at the moment, if she wasn't helping with that, it wouldn't have been very good." (LYAL interview).
As we have seen however, such close collaboration was rare; for these participants it was almost exclusive to one statistics module.

Social learning typically contributes more subtly to the resolution of dilemmas about products. Participants were very often involved in relatively brief exchanges about 'what the question means'. GRWI and GRKA provide typical examples:

“I probably asked [a course mate] if he had put any theories in the first half ... I had been worrying about whether to put theories in it because [the question] says [describe a job] from a personal point of view so I don't know if I should use other people's theories in it, so I have been asking quite a lot of people what they have done for that” (GRWI interview);

“The social psychology question we got set, I wasn't quite sure about it, and I am still not, but I rang Lucy to see what she thought about it. And then and then another essay... I wasn't sure about that one, so I rang her up and spoke to her about it to see if she had a better idea of what we are supposed to do ... she just told me what she thought about the question, and then I would take that on board kind of thing... ” (GRKA Interview).

Dilemmas in interpretation of assignments persisted beyond the early stages of thinking about them. For example, in the later stages of writing, ANJA compared his 'Organisational Behaviour' coursework with two of his friends:

“made a phone call to [LEEL] and in the course of it mentioned the coursework and found out a little bit about the conclusion - what sort of structure the conclusion was. And how it compared to mine”

“[I] spoke on the phone to Jenny from my class asking how many words her OB [coursework] was so I could compare mine.” (ANJA dictaphone entries).

As we saw in Chapters 3 and 4, interpretation of writing requirements is an integral and complex aspect of essays writing in academic contexts (Hounsell, 1984a; Flower, 1990a). Dictaphone data suggest that constructing appropriate interpretations of requirements is not only a central feature of coursework essay production, but is often central to other academic activities.

In the face of interpretative ambiguity, participants suggested that reassurance from course mates plays a valuable role in getting work done. This is illustrated by the following two quotes:
"I said [to a course mate] 'how would you deal with this particular essay?' ... she said 'I'd talk about the background... and then... the symptoms, then categories of aphasia, and then I would talk about the theories.' and I was like 'Uhh', and she was like 'What?', and I said "Well I thought of doing it like that" and she said 'Well why don't you?' and I was like "I don't know" - so I just needed the confirmation." (WOSA interview),

"if you are a bit unsure about if you are going about [coursework] the right way, you can talk to someone else and they are sort of like 'yeah well that is how I am doing it, and that is what I have looked at' then that helps you to work." (LYAL interview).

The second of these quotes highlights the particular value attached to the opinion of a course mate who is working on the same assignment.

The peculiarities of individual assignments are not the only things about which shared interpretations are valuable. Academic Events involved constructing shared interpretations of the requirements of whole written genres:

Report writing: “Susan and Jenny joined me in coffee room, I had photocopied my report. Susan had a read of it and she was saying, ‘in the discussion do you have to mention the results? I've covered mine in the results section’. So we got the 'how to write a report in the human sciences' guidelines and went through. In the discussion, that's the place you address the results and interpret the results. So we had a quick discussion on that aspect..." (MCHI dictaphone)

Essay writing: “[A course mate] reads mine and I read hers and she always complements mine, but it is not ever as good as hers. I can see when I look at hers it's just so balanced and it just exactly what it is supposed to be and ... it inspires me for next time to try and be more balanced and stuff.” (WOSA interview)

References: “She also asked me how I do my references because she needed help with them so I told her.” (GRKA dictaphone)

The sharing of tid-bits of situated knowledge often smoothes the path to appropriate products for assessment. For example, in the following quotes course mates share useful information or opinions about what written sources to use:

"I would not have known to read this article, which was on the learn server, if it had not been for a girl on my course who told me that that is what she is using to write it." (GOCA dictaphone)

"I just got off the phone to one of my friends on my course - Lucy. I was talking to her about what I have done over the weekend really, and we did talk about what work we can be doing this week and what books we need to get out for the essays. We were also talking about the recommended
reading for one of our modules... we have not really got direct recommended reading so we were just talking about how we would have to get general text books and write notes on them. She also reminded me that we have a multiple-choice test Thursday ... which I had kind of forgotten about." (GRKA dictaphone)

The second of these quotes illustrates that it is not only books about which relevant knowledge is shared; GRKA’s course mate usefully put her in touch with pertinent information about the course, in this case an impending test.

In sum, for students in their day to day lives, getting to grips with disciplinary content is an abstraction. Their concerns are more concrete. They must complete coursework, sit exams, and obtain grades. (It is through these concerns that coming to grips with disciplinary content is, or is not, achieved.) Their course then, presents them with dilemmas about the products of their efforts: What is required in this piece of coursework? How should this essay question be answered? In some cases, other people contribute to the resolution of these dilemmas through direct collaboration - but this is rare. On other occasions, peers help with the non-trivial task of interpreting assignment requirements, and judging the quality of potential solutions. Course mates also share other knowledge developed from participation on the course - such as which books are useful for a specific assignment. This also helps them to meet their assessment needs. As one participant reflected: “people on my course, I do rely on them a bit. Obviously they can’t write your essays for you, but you do find little things from people you know.” (GRKA interview).

6.3.3.2 Resolving dilemmas about time and effort

More than in many jobs, a Loughborough Human Sciences student’s time is their own. Their department timetables for them only a few hours per week of lectures and tutorials, which they can often miss without direct repercussions. Hand-in dates for coursework and exam timetables are the main other academic constraints on their time. Unlike most employers, the university allows its students to spend most of their time away from supervision, in places, in company, and in activities of their choice. It also provides its students with a wealth of possible leisure activities and with social distractions from other students whose time is similarly their own. The university will tolerate a range of academic performance before excluding a student, although it will reward a higher performing student with a better class of degree. Faced with such freedom, students must
resolve the dilemma of how much time and effort to devote to their studies. The university setting also provides one of the key resources through which participants seem to resolve this dilemma - access to other students.

A notable feature of participants' dictaphone records was that they often compared their own progress at work with others. For example, one participant elaborates on a conversation with a course mate that he mentioned on his dictaphone:

"You ask people how much they have done and you hope they will say 'I haven't started it' or that people are at least at the same stage as you or haven't done as much as you. If they say they've finished it [shows irritation] ahhh!" (GRWI interview).

The dictaphone entries included many instances when awareness of others' work rate changed the relationship between participants and their work. For example, MATO felt guilty for not doing work when his flatmate was working hard, "[I have] been in Russ's room watching him do some work, it's making me feel like I should be doing work..." (MATO dictaphone).

The most common way in which other people influenced the participants' relationship to their work, according to the participants themselves, was motivation. Many felt that drawing comparisons with others was a particularly potent source of motivation. GRKA received a motivational jolt when she noticed that another student had progressed further in a piece of coursework than she:

"While I was in the Wavy Top computer room I saw a friend off my course. She was doing her web page and she had done quite a lot of it she had nearly completed it which made me think that I should really start designing my own, and deciding what I could do it on, and things like that." (GRKA Dictaphone).

One participant clearly takes inspiration from a hard-working boyfriend:

"Last year he was a finalist and I saw how hard he worked. I mean I was always with him, but he was always doing sixteen hours of work a day and that kind of gives me a lot of [J well [... I think if he has managed sixteen hours of work a day then I am sure I can manage eight." (GOCA interview).

Another participant values the motivational aspect of peer comparison so much that she attributes earlier low motivation to lack of peer contact, and even shapes her current contact with peers to foster it:
"A lot of what I ring up [course mates] for ... is just to see how other people are getting on, because it gives me confidence. They don’t even tell me what they have done, they just tell me how much they have done, and it gives me confidence and motivation to just push on with it. ... it makes me more competitive ... not against them but just to actually get on with it. That’s how I get motivated. Otherwise I will leave it. Which is why, when I did my A levels, and was doing it part time, and had nobody to compare it with, I just used to leave it. ... Now I find that if I know what stage everybody else is up to, it makes me get on with it, because I think ‘well they have done it and I have got to start doing it’, so I get motivated. ... I have made this conscious decision to always talk to people who I know will do it early. I won’t talk to people who leave it to the last minute because I know I am not capable of doing as good a work if I leave it to the last minute. So I have made a conscious decision to always ask certain people that I know will have already started it because ... it is a good habit for me.” (WOSA interview, emphasis as spoken).

For one participant, social comparison is related to a competitive attitude towards grades, which is nuanced by comparing effort levels. She feels that comparing grades with others is important for motivation:

“Just knowing what other people have got, I think, is important ... if you are doing better than people I think that makes you a little bit more, that makes me motivated to work... I am like, [triumphant gesture] ‘Hooray! I am going to work harder and I am going to keep getting better grades’. If I get worse grades I am like ‘Oh shit! I am going to work harder.’” (GOCA interview).

She also shows considerable interest in relations between grades and expenditure of effort.

“I think it is important to know what other people are getting, and why they are getting it, and how much effort they are putting into it, and how often they are going out. It wouldn’t help to just know that the average for so and so people was ‘this’. That wouldn’t help because you wouldn’t know how much time other people had put into it, and how often other people are going out, and that’s important as well. Because if [her hardworking course- and house mate] gets 3% higher than me ... I think ... ‘Oh fuck it ... I have enjoyed my life and I have got a grade that is pretty similar to yours’. And I love it when I get higher grades than her, and she has spent thirty hours and I have spent five ... I’d rather come out with a 2.1 and have had a good time that come out with a first, because people who get firsts have to work their arses off and they just don’t enjoy it. I think it’s important to know how hard other people work in what grades they are getting.” (GOCA interview).

Comparison is not the only way in which participants gained motivation from others. This participant describes how he and a course mate gained motivation through coordinating their academic efforts and free time: “We said to each other ‘get it done by
Wednesday afternoon and we will go out Wednesday night, and we'll have Thursday & Friday to just tie it up' ... it's a sort of motivation and reward thing” (GRWI interview). MCHI similarly reports that she and her closest friend at university involve each other in scheduling their work so that they can “stay level with the workload” (MCHI interview).

In a situation where time is only loosely organised by the academic department, other people act as resources for resolving dilemmas about how to spend that time. In this section, we have seen participants compete with others in terms of academic performance, draw comparisons with them about current levels of progress, and collaborate with them in scheduling their work. Each of these contributes to the resolution of dilemmas about how to spend time.

6.3.3.3 Resolving dilemmas about study technique

In their day-to-day academic efforts, participants enact personal study practices. In Chapter 4 I investigated the diverse and consequential personal practices involved specifically in the production of essays. The diary studies left the tantalising impression that although such personal practices were often hidden from public view and were rarely reflected on publicly or privately, they were sometimes appropriated from others, or shaped by awareness of others’ practices. Present data allow further insights into the social shaping of personal study practices.

The university setting presented participants with substantial freedom not only in how much work to do, but also in how to work. Although institutional expectations are in place about the finished products of individual coursework assignments, the manner in which these are produced is left open to the individual (within certain constraints, such as plagiarism rules). Even in group assignments - where some aspects of work are constrained by, or negotiated with, other group members - individual students often enjoy considerable freedom in how they make personal contributions. Other work that is not directly assessed, such as ‘reading-around’ lectures, note taking and revision, can be conducted in any fashion of the student’s choice. Although Loughborough University provides resources such as course materials, books and also study advice (through a ‘flexible learning’ advice centre and through lecturers), students are free to study as they please. This freedom creates dilemmas, which, although they may not be consciously experienced, must be resolved in practice.
In the dictaphone data, there were few comments about exposure to the details of others' study practices. One conversation about ways of making notes was reported. Another conversation was reported about how two friends on different courses like to study together in the same room, asking each other questions. There were very few more similar recordings. It seems that personal study practices were rarely an explicit focus of interpersonal contact. This is consistent with the diary studies' findings that one's own detailed practices were rarely a focus of personal reflection. Participants were more concerned with less detailed aspects of practice such as the allocation of time, or with resolving dilemmas about finished products.

Although rarely reported, some exposure to others' working practices is a feature of life at university, and can resource reflections about one's own practices. In interview, participants often showed awareness of others’ practices. For example GRKA expressed some dissatisfaction with her note-taking practices in her dictaphone:

"I have just come back from the library. I was making notes from a journal article we were recommended to read for shaping the discipline. By taking notes I mean actually writing everything. I have not really got the hang of taking notes." (GRKA dictaphone).

When, in interview, I asked her why she was dissatisfied with her note-taking, she compared it to other people’s in general:

"I can take notes, but they are always longer than everyone else's ... it just took too long" (GRKA interview).

When asked to give examples, she drew comparison with a course mate whose notes she had seen when revising with him:

"during the exams we were like sitting in our rooms asking questions to each other and things like that, and, his notes, he had like an A4 side of just bullet point notes to trigger his memory and I had loads of pages with loads of notes on ... he looks at mine and he can’t understand why I have written so much and I can't understand why he has written so little, how did he know just to write those specific things.” (GRKA interview).

Hence her reflections about her own note taking practices were resourced by her knowledge of others’. It seems then, that knowledge of others' study practices might be a valuable resource in the development of one's own.

But what is the extent, and what is the source, of knowledge about others’ practices? It seems that this knowledge is usually somewhat limited. GRKA reported that she was not
aware of any other course mates' note-making practices: "I don't really talk to anyone else about [...] Because they are not in the same building as me, I don't really see their notes or anything like that." (GRKA interview). This participant knows about the note-making practices of another course mate only through being exposed to his notes when working closely with him, and she is ignorant of others' note-making practices. It seems that in general participants learn about others' detailed study practices mainly through working closely with them and not through active enquiry; when asked to describe the study practices of others, participants typically mentioned what they had noticed when working with others on group coursework. These experiences, for example, often allowed them to identify group members that were badly organised. Knowledge of the details of others' practices was generally somewhat superficial, and limited to those people with whom they had worked.

It seems that day-to-day life at university did not resource spontaneous reflections on the details of one's own study practices, which are usually enacted alone and beyond the 'horizon of observation' (Hutchins, 1990) of others. It seems that those rare instances of close collaboration with others, such as working on group coursework, provoke and resource such reflections. If one takes the position that well resourced reflection on detailed study practices is a valuable process, then such exposure to others' detailed practices is to be encouraged. In section 6.3.5, I will consider dynamics that shape exposure to others' practices.

6.3.3.4 Summary of academic uses of informal social contact

We have seen that the institutional context of university grants students' considerable freedom in their academic lives. Students therefore face dilemmas about academic products, about time and effort and about study technique. These are a broader set of concerns than simply constructing or communicating disciplinary knowledge.

In this section, we have seen that informal social contact was a resource that participants drew upon in resolving these (institutionally imposed) dilemmas. First, although participants rarely collaborated closely with others, contact with others helped them interpret academic tasks. Second, in a situation in which the allocation of time is relatively unconstrained, informal contact with others helped participants resolve time-based and effort-based dilemmas. Third, although knowledge about others' detailed
study practices was not made salient in the dictaphone recordings, some such knowledge was gained, and resourced participants' reflections about their own practices.

Having identified informal contact as a valuable resource in the resolution of some key dilemmas of academic life, I will explore the settings that enable this valuable contact.
6.3.4 Settings of informal academic contact

Informal social contact must occur in some setting. In this section I will explore the settings that enable informal social contact relevant to academic life. I will consider three important aspects of these settings. First, I will consider what people (6.3.4.1) played a role in participants' Academic Events. Second, I will consider the places (6.3.4.2) and, third, the activities (section 6.3.4.3) in which they were embedded.

6.3.4.1 People as contexts for informal academic contact

Table 6.7 shows what kinds of people were involved in ‘Academic Events’ of each kind.

<table>
<thead>
<tr>
<th></th>
<th>Document present</th>
<th>Course specific</th>
<th>Academic life</th>
<th>Total</th>
<th>Percentage of total</th>
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<td>45</td>
<td>13</td>
<td>72</td>
<td>57</td>
</tr>
<tr>
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<td>6</td>
<td>25</td>
<td>32</td>
<td>25</td>
</tr>
<tr>
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<td>2</td>
<td>5</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Partner</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>56</td>
<td>55</td>
<td>127</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6.7. *Types of people involved in each kind of Academic Event.* [In order to assign each person involved in an Academic Event to a single category, individuals were always assigned to the first applicable row in this table. E.g. friends that were also students were classified as students.]

Although participants generally spent more time with other students, course mates were involved in over half the Academic Events that were identified. Not surprisingly, they were involved in a higher proportion of ‘document present’ and ‘course-specific’ events. Other students were involved in one quarter of Academic Events. Most Academic Events with other students were at the ‘academic life’ level. Lecturers were involved in relatively few informal events (reflecting their limited accessibility). Partners, family, and non-student friends figured less prominently.

It seems that people’s potential for Academic Events depends upon what they have in common. Common interests, experiences, and especially common participation generate great potential for learning. People on the same course go to the same lectures and are set the same assignments and exams. They develop ‘insider’ knowledge and
perspectives and practices that are valued for their use in these common enterprises. We see evidence of this in the numerous and rich Academic Events which course mates co-constitute. Academic Events involving other students tended to relate to those aspects of their lives that were shared with participants. Other students were involved in similar dilemmas about the allocation of time to work and leisure and many Academic Events with fellow students concerned such matters. As fellow students and apprentice academics they may also have the interest and intellectual resources to co-constitute more ‘disciplinary’ events. Friends, family and partners, unconnected with the university, played more limited roles. Their contributions also tended to come about through their joint activities with participants. For example, they frequently contributed to the scheduling of work - through the process of arranging shared leisure time with participants.

Contrasting the roles of two people who were central to MCHI's life, highlights the importance of common participation. Her husband never attended university. MCHI describes his role in her academic life mainly as a distraction:

MCHI: “[When] I am working he will constantly come in and interrupt me with things like, ‘oh can you get me some shaving foam on Monday?’ , ‘Do you want a packet of crisps?’ ... all through the evening there might be four or five events, where he will come in and start a conversation, and if I don't answer or just go ‘uh-huh’. He'll get upset.”

Roy: “Do [your family] help in work in any way?”

MCHI: “Not at all. Not even in the slightest. I will even say to my husband ‘I have just finished this essay, would you read it through?’ and he'll say, ‘I don't understand it’, and I will say ‘I don't want you to understand it. I just want you to read it through to see if it flows, if it's English.’ and he will pick it up [mimes a cursory glance] and go ‘hmmm’, and then walk off. I will say ‘Is that it?’ and he will say ‘Well I don't understand it. What's the point!’

His other contribution arises from his shared participation with MCHI in family life: “My husband tries to stipulate that I don’t work weekends.” (MCHI interview)

By contrast, her course mate and best friend at university plays a very different role in MCHI’s working life – one that is enabled by her participation in the same course.

“She is sort of a fundamental support system. You see I have got a home life and a university life. And the university life is Susan. ... this week we have done revision plans for over Easter and we have done it together. And it is sort of a motivator. If I say to her, well I have done this bit of work
she then knows that she is going to do it, to stay up. And likewise if she has completed a bit of work I know I have got to do it, to stay together: level with the work load, because we have both got exactly the same attitude to work, marks, exams, everything... Say we have got six pieces of work to do and notes, and she says 'Well I am going to do cognitive notes tonight so that I am free to do social tomorrow' and I think yeah, that's fair enough, I will do the same. And I said to her 'Oh, I didn't do cognitive. [For] biological there is 20 pages in the text book so I will work on that all day Wednesday', and she said 'I don't know whether to go to the library now or do, um biological notes'. And I said 'Well you have got time to go to the library tomorrow, but biological notes is quite time consuming... It is organisation of work. We help each other with that...'.

(Interview, emphasis as spoken)

Their relationship, and the benefit they reap from it, is not based on a common knowledge of their discipline, Psychology, but on their common participation in the enterprise of being 1st year psychologists at this University. They share experiences of situated activities (like the time it takes to do biological notes, which books are the best for reading up a particular lecture, and what to do before Friday’s deadline) and use them to structure their work activities.

We have seen that different people tend to contribute in different ways to participants' academic activity, and that their potential contributions are often related to their participation in common activities. But the potential value of contact with other people can only be realised in setting. In sections 6.3.4.2 and 6.3.4.3 I will consider what places and activities enabled Academic Events.

6.3.4.2 Places as contexts for informal academic contact

Table 6.8 indicates the places that were constitutive of Academic Events.
Table 6.8. Types of places involved in each kind of Academic Event.

The participants' own residence was the site of the most Academic Events. Participants spent a lot of time around their residences, so one might expect this. Life 'at home' differs starkly between participants. Two mature participants lived apart from other students - one with a partner, the other with her family. Two participants lived in student houses, two in self-catered university flats and two in fully catered university halls. For those living in halls, communal dining areas and others' rooms within the hall are defined as 'own residence'. For those in fully catered halls, meals were the setting of many Academic Events. One's own residence is also the site of much socialising with people with whom the residence is shared. This creates good opportunities for Academic Events. Finally, phone calls (contributing 20 events) are often held at home.

Despite spending much less time in the department, participants had nearly as many Academic Events there as at home. Not surprisingly, events that took place in the department were more often of a discipline specific kind. One is more likely to be among course mates in the department than at home. Within the department are some key places for Academic Events. Many events occurred in and around lectures. The department also has two computer rooms designated for students' use. These were the sites of many Academic Events. GRWI suggests that a combination of factors encourage Academic Events in computer rooms.

“You ask people how they are getting on with work. You just talk about the course ... you just get to see people outside of a lecture and you can sit down and they are sitting down and you can talk, rather than you are walking towards somewhere. There’s no time limit. But at the same time there’s a lot of people around so you can’t talk about personal stuff.” (GWRI interview)
The department also has a **coffee room**, which was the site of many Academic Events. This too is a place where people congregate for indefinite periods of time and it is often used for formal and informal group meetings. Recall that MCHI, who lives a half-hour drive from the university bases herself in the departmental coffee room between commitments at university. Despite having few events at home, she amassed the most Academic Events over the week - twenty-eight in total, nineteen of which occurred in the department.

Relative to one's own residence and the university department, few Academic Events occurred in other places. Events at **others' residences** include casual visits to friends. ‘On campus’ and ‘off campus’ Academic Events tended to occur in (and walking to and from) campus refectories during the day, and in (and walking to and from) pubs and bars, on and off campus, during the evenings. Participants typically felt that evenings, especially evenings out, were not the time or place for academic types of conversation. Despite this, a number of Academic Events did occur on evenings out, especially during their early stages.

We have seen that places shape Academic Events. The university department and the home were the main sites for these. Despite spending less time there, participants had more Academic Events in the department, and these tended to be of a more course-specific kind. We will understand the role of places in more depth when we consider the activities taking place within them.

### 6.3.4.3 Activities as contexts for informal academic contact

Table 6.9 indicates what activities were contexts for Academic Events.
This table illustrates the embedding of Academic Events in everyday activities. It is intended to reveal how Academic Events were embedded in and enabled by larger activities. For the purpose of analysis, activities were divided into three main categories: non-work activities, various forms of study and use of communications technologies. If an Academic Event took place through telephone or email, then its activity context was defined as the use of that technology. Other events were categorised according to the main activity that could be judged as responsible for the participant being in the situation in which the event occurred.

This embedding of informal learning in everyday activities can be described heuristically as taking one of two forms. One form of embedding is 'interruption' - in which the learning takes place as part of a brief interruption to the host activity. The other form of embedding is 'integration' - in which learning is more seamlessly embedded in wider activities. In working through these different activities in the table, I will describe how they embedded Academic Events through interruption and integration.

Non work activities is, of course, an extremely diverse category including; relaxing alone or in company, domestic chores, eating, and travelling. When Academic Events occurred in non-work activities, they often appeared seamlessly 'integrated' into low-key, day-to-day leisure activities in domestic spaces and occurred with housemates, flatmates, or hall neighbours. We see this in cases when work 'comes up' as a part of wider conversation.

One situation that invites the integration of Academic Events is dining in hall:
"At the dinner table, you have got to go there, it's not same as when you are at the pub. I mean you go to dinner everyday three times a day, so you've got to talk about something, and if work comes up you might as well talk about it at the dinner table rather than sit there in silence. ... It's not too bad because I mean everyone does different things and it is interesting to find out what people do. We don't talk about it every dinner time but if it comes up we will probably end up chatting about it." (ANJA interview).

As described here, the dinner situation seems to provide an imperative to talk. It is not only a situation in which the topic of work might arise, but one in which the topic 'might as well' be developed; this situation enables and shapes the conversation and the learning that goes on as part of it. The way that learning is integrated in activities like dining in hall blurs the distinction between work and leisure. It makes it a matter of interpretation whether people are working together through talk, or socialising together through talking about work.

Phone calls are the activity contexts of twenty Academic Events. Phone calls are, of course, activities that are rich in talk. Calls that embedded Academic Events were usually held with course mates. They were sometimes made for work purposes, but more often work came up in the course of more general conversations. Communication technologies have the property of enabling conversation, and therefore Academic Events, at a distance.

Readers may be surprised that lectures were the context for a large number of Academic Events, given that formal aspects of the lectures were excluded from the analysis. However, walking to a lecture, waiting for it to begin, breaks within it, packing up afterwards and walking away, showed themselves to be prime contexts for Academic Events. ANJA corroborates this when asked to elaborate on an Academic Event that took place during a lecture.

"I might have turned around to people behind me and said how are you doing with such and such a piece of work... That's what normally happens in coffee breaks and the beginning and end of class just all the time. 'How are you doing with this piece of work? Duh duh duh duh.' That happens more, with people you don't know, in the class. Whereas you wouldn't speak to them if you met them in the street or something. But in class it seems lots of people - at the beginning when you are waiting for the lecture, or at he end when you are packing up, or in the coffee breaks - speak about coursework. Like, ask, 'How are you getting on with it?'; maybe whip it out and have a look at each others', or something like that."(ANJA dictaphone).
These are occasions when course mates congregate together and have time in which they can converse.

Waiting for lectures, and breaks within them, seem to provide an imperative to ‘pass time through talk’ similar to that of eating in hall. Because these departmental situations involve the presence of classmates, they are particularly likely to embed course specific learning. GRKA commented about such situations: “you do talk about work to people on your course because it is what you have in common kind of thing... so you are bound to talk about it really.” (GRKA interview). Note that students in these situations are only ‘bound’ to talk at all by being co-present in a situation that invites talk.

Notice that working alone is an activity context for more than twice as many Academic Events as working together. Typically, these events occurred when the participant was interrupted from what they were doing. The relatively high frequency of events when working alone is accounted for by mainly by brief social interruptions. In this case, work at home was interrupted by a house-and-course mate: “Still doing work. Alison just popped in to tell me that the biology exam has been put back a few days so that’s quite good news.” (GOCA dictaphone). Similar interruptions that embed Academic Events often occurred when working alone in departmental computer rooms or in the coffee room. In cases such as these, it is valuable to consider the activity which is being interrupted, for this may shape the interruptions. An activity like working alone in a public place where talk is accepted and where the student is surrounded course mates, is likely to yield different kinds of interruptions than dancing with friends in a night-club.

Protracted periods of working informally with others were rare, accounting for the low frequency of ‘working together’ events. Notice that all of the events with this activity context were at the document present level. This reminds us that this activity, though rare, was probably constitutive of events that were more protracted and richer in nature.

In sum, we have found that Academic Events rarely happened through participants collaborating closely with others, but were typically embedded in other kinds of activity. Situations that invite the ‘passing of time through talk’ seem especially to enable and shape Academic Events.
6.3.4.4 Summary of settings for informal academic contact

In the present section, I have explored relations between Academic Events and settings. I examined how Academic Events were enabled by particular kinds of people, particular kinds of places and particular kinds of activities.

The richness and nature of a person’s potential contribution to Academic Events depended in large proportion upon common participation in academic pursuits. Valuable informal contact is enabled by certain kinds of places and activities. Waiting for lectures, working in departmental spaces, and eating meals in halls are institutionally organised activities in which social learning is readily embedded: They bring appropriate people together in time and space, and enable appropriate kinds of talk. Having explored the settings through which Academic Events occurred, in the following section I will consider the more detailed dynamics that occurred in these settings.
6.3.5 The dynamics of informal academic contact

Having described the academic functions that informal social contact can have and also considered how particular places, people and activities enable it. However, I have not yet addressed explicitly the dynamics that shape informal social learning in these settings. In this section, I will begin to explore these dynamics. Data will reveal that informal learning was frequently not actively sought, but incidental. While informal learning may also occur through actively sought discrete packages of information, this incidental character encourages a view of community life as an immersive environment through which informal learning emerges almost inevitably, as a continual organic process.

In sections 6.3.5.1 to 6.3.5.3, I will consider three 'mechanisms' of informal learning. The first two are kinds of talk: 'talk in work' and 'talk about work' (Lave and Wenger, 1991). The third is 'observation'. While 'talk in work' is often directed towards accomplishing work, the other processes may result in informal learning, yet arise without this purpose, as everyday aspects of community life. In section 6.3.5.4, I will briefly demonstrate that talk in work, talk about work and observation, are patterned not only by particular settings, but also by interpersonal relations. In section 6.3.5.5, I will use a more lengthy extract from one participant's dictaphone recordings to convey something of the immersive character of community life and its rich potential for informal learning.

6.3.5.1 Talk in work

People talk in work to get work done. This occurs when informal (or formal) groups collaborate directly in co-accomplishing work, as did LYAL and her course mates for their statistics coursework. Sometimes talk in work involves turning to others when working more independently - perhaps with a simple query about institutional administration, such as the date of a deadline. Other times the query concerns more equivocal matters – as when WOSA asked a friend about suitable structures for a coursework essay. Recall also that both MCHI and GRWI regularly accomplished the scheduling of their work collaboratively, through talk.
Talk about work exists as both a part of ‘talk in work’ and as a separate phenomenon. People talk about their experiences of work as a part of accomplishing work. In this example MCHI and a friend talk about their own experiences of doing work as means of organising their future efforts. It is therefore an example of talk about work, constituting part of talk in work.

"We discussed what we did last night. She did cognitive I did biological. We exchanged which books were best for the notes that were necessary ... It took her 3.5 hours to do the background reading [for the cognitive psychology module] and the additional notes last night. And I said although there wasn’t that much for biological it still took some time to find the information. But we have exchanged the books so I know which book has got all the information in from yesterday's lecture." (MCHI dictaphone).

By sharing her experiences MCHI’s friend’s talk has decided which book MCHI will work from, and perhaps resourced her with an expectation of how much time the work will take. This process was mutual. MCHI also used her personal experience to advise her friend:

"she said 'I don't know whether to go to the library now or do biological notes'. And I said 'Well you have got time to go to the library tomorrow, but biological notes is quite time consuming'." (MCHI interview).

But people also talk about work outside of the explicit purpose of achieving it. Here a friend shares with MCHI an experience of expending unnecessary effort:

"Michelle has just grabbed me before the start of the lecture, just to thank me for the help that I gave her over the phone for the standard deviation. She said that she had come in and used SPSS and that SPSS had given her all the figures anyway - that's after she spent 4 hours doing it by hand, so I had a little giggle" (MCHI Dictaphone).

Lave and Wenger (1991) draw attention to the practice of telling ‘stories’ that, among other functions, serve as ‘packages of situated knowledge’ and ‘support communal forms of knowledge and reflection’ within communities of practice. (They give examples from midwifery (Jordan, 1989) and photocopier repair (Orr, 1996)). Although extensive ‘story telling’ is not clearly evidenced by these data, anecdotal information is propagated to some extent around the community of course mates. In the following quote, we see that
‘second hand’ information about others' personal experiences is sometimes shared, and resources reflection.

"Two girls on my course ... that I vaguely know ... told me that a mature student that they know had finished the essay already which is a bit surprising, and made me think that maybe I should really get started" (GRKA dictaphone).

In another example, GOCA painted quite a detailed picture of a classmate’s academic life. This was despite never having spoken to the classmate in question, just hearing about her from friends:

"there is people like this girl called Tiffany who is the girlfriend of a friend of mine. ... and in her coursework I know she gets always in the 70’s but I also know that she has got very good time management and that she is always doing coursework or reading for the lectures, but then I also found out that she got about the same as me overall last semester so that was good to know ... I have never spoken to her ... me and a friend both talk to her boyfriend. You kind of pick these things up just from what you hear around". (GOCA interview)

If information (in story form or otherwise) can be passed around ‘second hand’ it clearly has greater potential to become a widely shared communal resource.

‘Story telling’ is a central element of some communities of practice (e.g. Orr, 1996). It is seen as a way of displaying membership and making an identity in a community. The present data do not allow me to examine this notion in depth for these participants, but there is evidence that one’s identity as a member of the student community is contributed to by giving personal anecdotes. MCHI reports a conversation she had with a friend who was handing some coursework in: "she said ‘it’s crap’ and ‘I have been up all night’ and she hasn’t done any discussion. She is so laid back and I wish I could do it and I can’t. " (MCHI interview). Through telling the story of how she wrote her coursework, and her failure to include a key section of it, she develops an identity (for MCHI at least) as a particular (‘laid back’) kind of student.

6.3.5.3 Observation

Informal learning occurs not only through talk, but also through observation of artefacts and activities. The notice board, on which each student's marks for each module are posted, is a means by which students gain a sense of their own performance relative to the others in their class. Talk is not necessary to this learning. Often the observation is of
some activity, rather than of some artefact per se. When MCHI tutored some friends in the construction of a web page, they sat around a computer as she helped one of them to undertake the task. They observed web page construction practice, mediated by computer and explained through talk. Another example of importantly observable activity is the lecture. MCHI reported noticing the absence of many students from a lecture she attended, and drew the conclusion that they were preparing coursework for submission the following day. Similarly, GOCA used the observed behaviour of a course mate in lectures, together with an overheard conversation, to form opinions about that person as a participant in the course:

"there's a mature student on our course and I don't know her, I have never spoken to her, but I have heard her talking in the toilets to her friends and I know that she failed some of her modules last year, and some of the questions she asks in lectures you just think 'how is she on this course? How did she get into this course?' and you have to feel sorry for her because you just know that she is working hard, because she is always working, but she is just not getting the grades and its not surprising because she is dumb." (GOCA interview).

This suggests that a relatively rich appreciation of aspects of the course community can be gained even without centrally participating in talk, in or about, work.

6.3.5.4 Interpersonal relations and patterned access to community resources

Talk in work, talk about work and observation of work are forms of access to the practices of a community; but access is not uniform or unbounded - it is patterned. Direct observation and co-participation make some aspects of students' working lives, such as group meetings and lectures, transparent. Access to the opinions and personal study practices of others is more limited. Community members may or may not: share information, opinions, or anecdotes through talk; give access to artefacts such as books, lecture notes, and essays; or give access to activities, such as the demonstration of how to design a web-page. While certain aspects of practice are unavoidably public, members of student communities exercise some control over others’ access to their practices.

This control is shaped by institutional assessment practices. Most participants, in interview, mentioned experiencing dilemmas between co-operation and competition. GOCA reported experiencing a dilemma about whether to point out an error in her house/course mate's statistics coursework:
"she came and checked [her printouts] with me to see if hers were right ... She wants to get top marks and she won't help anyone else, but today her EDA was wrong, well I think they were, so I did a bit of work to check ... and realised that hers was wrong and I was like, well shall I go and tell her, because she wouldn't come and tell me if it was the other way round" (GOCA interview).

Illustrating a similar dynamic, MATO reported ‘distancing’ himself from a “leeching” friend who was reluctant to share the benefits of his efforts with other group members:

"he’d be trying sort of leeching ... like at the moment he wants the book that I got from the library but if I hadn’t told there was a book in the library ... you know its petty from me, that kind of competition ... it feels like he is going to take my work... he doesn’t want to give anyone the benefits of his work, and he doesn’t see the benefits he is getting from them." (MATO interview).

MCHI limits the extent to which she and friends read each others texts, for fear of plagiarism:

"if we are not doing the same topic we will read each others work, but if it is the same essay title we don’t because her work will influence mine and mine will influence hers. Even on hand-in day it just goes, we don’t see it." (MCHI interview).

In addition to assessment practices, interpersonal relationships also shape access to others' practice. All participants communicated more with some course mates than with others:

"There are about 4 or 5 little groups that make up the class. There is 34 in the class and I speak to just over half of them. The others I wouldn’t speak to about work or anything because we just don’t get on ...I don’t really know a small proportion of my class and I wouldn’t want to ask them in case they got funny about it." (ANJA interview).

Often, close access is limited to a very few friends. MATO, for example, reported that he has friendship involving significant access with only one friend from his course, and because that individual does little work, “there is no one I can leech off” (MATO interview).

Institutional assessment practices and friendship groups are not the only elements that pattern access to community resources: we saw in section 6.3.4 'Settings of informal academic contact', that institutional arrangements of time and space also play important roles. We have already seen that lectures (institutional artefacts) are a key source of access to course mates, and that halls of residence (institutional spaces) provide access to
the wide community of students in general, but often provide little to access to course mates. A quote from GRKA illustrates this:

"I didn’t see many friends off my course [in the recorded week] because I didn’t have many lectures. We don’t tend to meet up out of lectures. We don’t really see a lot of each other when we haven’t got work to do and we haven’t got any lectures. I go out with people from my hall rather than people on my course but that’s because everyone is better friends with people in their hall rather than people on their course." (GRKA interview).

This situation shapes knowledge about others working practices. As noted earlier, GRKA was exposed to the note taking practices of only one person on her course, someone who also lived in the same hall. "I don’t really talk to anyone else about [...] because they are not in the same building as me, um, I don’t really see their notes or anything like that." (GRKA interview).

6.3.5.5 Access, intentionality and immersion

The analysis of mechanisms of learning raises the interesting issue of intentionality: talk in work is defined by the purpose of achieving work, but talk about work often occurs without that intention. Similarly, although learning from observation can be intentional (e.g. going to watch MCHI’s demonstration of constructing a web page) it is often unsought (e.g. COGA observed another student asking questions in lectures). I have given many other examples throughout this chapter of learning that was not actively sought, but arose unexpectedly in some setting. GRKA and LYAL both point to the role of the campus university in shaping such incidental learning:

"if I go out I might see people off my course and talk about work which might help me but I can’t predict when that is going to happen" (GRKA interview)

"in some setting that has nothing to do with work ... you might bump into someone and they might just say something that is going to help you with your work, and you wouldn’t get that if everyone was in their own separate places." (LYAL interview)

This incidental learning takes us away from considering learning as a process within an individual that is facilitated or inhibited by a cultural context, and encourages us to consider participants as (more or less thoroughly) immersed in a community of practice. MCHI is one of the participants most thoroughly immersed in the practices of her course.
Other people shape her practice, keeping it appropriate, and she does the same for them. Her (edited) dictaphone entries for Monday afternoon and evening illustrate:

15.20 19/03 the last message [at time 13.59} was that I had been grabbed in the corridor by Michelle. And asked when the social psychology essay was going to be set and when it had to be handed in so I then went to [my next lecture]. spoke to Susan and asked her if she knew - and she didn't. She said that she thought we had to do it over Easter, but I am not to sure ... Susan said there's no point in trying to find out, because we'll find out on Wednesday, but its important to me to find out because if I know what work needs to be done I then organise my week...

16.24 The lecture has now finished I have been to [the relevant lecturer's] office and he's not in, and the staff in the social sciences general office were as useless as a chocolate teapot, so I am going to go home and have a look in my social psychology folder to see if there's any directions for coursework hand-in which we should have been given...

16.25 As we came out of [the lecture], Michelle said that she would, uhh, go and find out about the social psychology essay ... because I have got to rush home tonight.

17.16 I've got home and checked my social psychology folder. In the instructions it says that the essay will be set in week 7 .... So I phoned Susan and just let her know. She was working on her project so she couldn't talk.

22.06 Just got off the phone to Michelle. She rang me up regarding the social psychology essay being set. So I have clarified the position for that for her, and she said, "What are you doing?" I said, "Sitting here writing my notes up for 'Shaping', what are you doing?". She said "Oh I'm doing my practical and I am struggling". So I said, "What are you struggling with?", and she said she didn't know how to calculate the standard deviation so I just sat here and talked her through doing the calculation [by hand]. Then she said, did I know how to do it on SPSS and I said 'yes', and she was on her computer at home on the phone to me whilst I was trying to dictate how to use SPSS. But we had to abandon that because I couldn't remember how to switch from window to window without being in front of the computer myself... So I have arranged to meet her tomorrow if she needs me to go through SPSS on the computer with her. Then she was saying it was the first time she had written a report on her own and she was a bit worried about how to write a report so I basically went through some bits and pieces. I said it's not necessarily right but it is my understanding. This is how I do it [describes an imperfect structure for practical reports]. Um anyway, that's what I have told her and she said 'thank you very much'. She is going to stay up all night tonight doing her report so she won't be at lectures tomorrow, and - another cheekly request - can she have my notes from lectures tomorrow. So I am now taking notes from her tomorrow in the lectures, so I am really glad I did my report at the weekend...
Through access and shared concerns, these students become able to participate successfully in their courses. Here we see MCHI in close contact with people on her course. This contact occurred through being ‘grabbed’ in departmental corridors, through lectures, and through telephone calls. Because they each participate in the course, their concerns, knowledge and perspectives overlap usefully. MCHI is asked about the deadline because it also applies to her. MCHI does not know, but appropriates the deadline issue as a - now shared - concern; one that MCHI and Michelle will resolve collaboratively. Indeed, Michelle will eventually learn the deadline from MCHI. Shared concerns and access to others are strong features of MCHI’s life as a student.

In everyday activity MCHI is immersed in access to others. Without explicitly seeking it, she is put in touch with the knowledge, perspectives, and practices of her friends. She is exposed to Susan’s perspective on finding out a deadline, when her original concern was just to know its date. On the telephone, she was confronted with Susan prioritising a specific piece of work over continuing to chat. Without wondering, she discovered also that Michelle: had never written a practical report alone, was having difficulty with statistics, would stay up all night working, and would miss the next day’s lectures. When I asked her to elaborate on being ‘really glad I did my report at the weekend’. She commented:

“There is no pressure on me to get it finished... mine is done and it is in the bag and it is handed in and I don't have to sit up all night and do it. And I can still go to my lecture tomorrow but she has got to work all night and she is going to miss the lecture... I am quite smug that I have done my work ... and it also reinforces it that I am doing it the right way so I am not under that pressure” (MCHI interview).

Hence this too, was an instance of informal learning.

The idea of ‘immersion’ suggests a move away from considering learning in terms of discrete conscious events. Like the air we breathe, access to others' practices might be a valuable resource for us, and one whose quality varies, but one that typically remains unexamined. Learning from others, like breathing, may be an ongoing process that is necessary for, but less salient to us than, many of our other activities. The notion of the ‘Academic Events’ suggests conscious nuggets of learning that can be related as and when they happen. But the relevance of some experience may only become apparent after the event. For example it seems that, MCHI's friend's story about spending hours
calculating something by hand, only to find that a computer program performs this calculation by default, could be very useful to MCHI if, and only if, at some later date, she needs to do the same calculation herself. In a continual stream of experience, it may not be possible to identify those aspects worthy of considering learning. Most of experience may remain 'tacit' or unexamined; it may perhaps remain so even in its future application. Any given aspect (or combination of aspects) of 'background' experience may or may not shape future practice.

The level of immersion indicated by the quote from MCHI, though valuable, is not inevitable. Much of this chapter has been devoted to considering how access is shaped, enabled and constrained by the settings of activity.

6.3.5.6 Summary of the dynamics of informal academic contact

In this section, I have considered three ‘mechanisms’ of informal social learning, as forms of access to others’ practice. I found that both talk and observation are important means of access, and that they are complementary. The distinction between talk in work and talk about work raised the issue of intentionally. In both talk and observation, valuable learning often occurs without being actively sought. Access then, is not only a matter of granting or frustrating an individual’s quests for knowledge. It is also about being immersed, to a greater or lesser extent, in communities of practice. This is a useful perspective from which to consider how institutional artefacts such as, halls of residence, departmental buildings and lectures, shape informal social learning. It places emphasis on what levels of access they provide, to what communities of practice.
6.4 Discussion

This discussion will be comprised of three sections. I will first review the results (section 6.4.1). I will then discuss some implications of this study (section 6.4.2). The chapter will conclude with some reflections upon the methodology (section 6.4.3).

6.4.1 Review of results

These data explored social and institutional contexts relevant to essay production through description of eight participants' ordinary lives during one week at university. This macro level study allowed insights into broad social and institutional contexts that were pointed to, but not fully explored, in the 'meso' level study. Data allowed clearer insights into how everyday life at university was structured through engagements with other people and with institutional arrangements. I explored particularly, relations between the informal social contact enabled by life at university and participants' academic endeavours. The category of academic endeavour is relevant: as the encompassing project of which essay production is a part; as a set of activities with characteristics in common with essay production; and as undertaken in, and similarly shaped by, the same social and institutional contexts.

In section 6.3.1, I overviewed how participants spent their time. Academic demands on participants were considerable - including weekends, they worked on average around five hours per day - but their academic department left them relatively unconstrained over when and where they worked. They tended to work alone, at times and in locations of their choosing. Their places of residence appeared to quite strongly shape their lives. They spent large proportions of their work and leisure time in and around their accommodation and their social lives revolved heavily around those with whom they lived.

In section 6.3.2, I considered the role of social context in academic life through identifying 'Academic Events' experienced by the participants. When participants talked with others about academic work, their talk involved little construction or communication of disciplinary 'content'.
Data presented in section 6.3.3, suggested that, despite involving little disciplinary 'content', participants’ informal contact with others, shaped their academic endeavours. Specifically, informal social contact helped participants to resolve dilemmas presented by the university. These dilemmas were about academic products, about time and effort, and about study techniques.

In section 6.3.4, I explored how informal contact was shaped by settings. Informal contact concerning academia was enabled by particular kinds of people, places and activities. Institutional arrangements of time and space that brought appropriate people together particularly enabled useful informal contact. Examples included meals in halls of residence, lectures, and time spent in the departmental coffee room.

In section 6.3.5, I explored informal social contact in terms of access to and immersion in the resources of relevant communities. Data suggested that informal learning that arose from social contact was not always intentionally sought, but was often 'incidental'. The data also suggested that learning from others may not be best understood in terms of discrete units of learning but in terms of a more general level of immersion in, or access to, relevant resources of practice.

6.4.2 Implications

The data presented here encourage a relational view of learning. A cognitivist view, in which learning is the acquisition and manipulation of symbols within some domain of knowledge, fails to capture much of what participants were doing in their academic endeavours. Institutional demands presented students with dilemmas about academic products, about time and effort, and about study technique. These non-trivial dilemmas were central to participants' academic efforts, but are not easily incorporated into a 'content' oriented view of learning. Further, because a 'content' view of learning appears to neglect these issues, it would risk devaluing or underestimating the contribution of other people to the academic life of students at university.

Cultural psychology implies a broader, more relational view of learning, that more readily incorporates both the dilemmas experienced by the participants and the roles of other people in their resolution. Minick, Stone and Forman (1993) express this broader view nicely,
"educationally significant human interactions do not involve abstract bearers of cognitive structures but real people who develop a variety of interpersonal relationships with one another in the course of their shared activity in a given institutional context. ... modes of thinking evolve as integral systems of motives, goals, values, and beliefs that are closely tied to concrete forms of social practice." (Minick et al. 1993, p. 6 - quoted in Daniels, 2000).

The data were particularly congruent with the 'communities of practice' perspective (Wenger, 1998), which emphasises the value of access to fellow community members and to common resources of practice.

In providing the institutional context for students' academic endeavours, pedagogues and policy makers should keep in mind the learning potential of student communities. The present study showed that university creates common experiences and dilemmas for students. Those on the same degree course tend to attend the same lectures, share departmental spaces at the same time, and are often set the same coursework for the same deadlines. The data show that such arrangements support informal learning. We might contemplate however, an intervention to make learning more 'student-directed'. In such a programme students might select their own topics of study and work at their own pace. While this alternative may well have certain advantages, we would do well to consider its implications for informal learning from peers. If it were likely to reduce the extent to which students have common experiences and dilemmas and to bring students together less often in space and time, then the loss of community may have negative consequences for their learning.

These data also suggest that the materiality of the university is important to the functioning of student communities, and therefore to students' academic endeavours. Institutional arrangements of space and time bring students physically together in ways that enable valuable interpersonal learning. Proponents of virtual universities may argue that technologies such as shared bulletin boards and email discussion groups could provide students with access to each other and therefore foster effective learning communities. However, these data suggest that particular settings shape the informal learning that occurs through them. It follows therefore that the informal learning that occurs through these technologies may differ significantly in quantity and character from that which goes on in shared physical spaces.
The often incidental nature of participants' informal learning points to a particular challenge for supporting virtual communities of students. Participants often gained insights into others' practices not by actively seeking them out, but by incidentally happening across them in the course of other everyday activities in shared settings. It seems unlikely that such informal learning could be successfully replaced by technologies that gave students access to each other, but whose only function, from the students' perspective, was to support peer learning. For virtual communities, it may prove particularly difficult to resource, or to provide alternatives to, the incidental learning that occurred in this bricks and mortar university.

6.4.3 Reflections on the methodology

The digital dictaphone proved an appropriate means of data collection. Participants readily took to the use of the dictaphones - in some cases with surprising enthusiasm. On average, participants made one recording approximately every two waking hours. Although the richness of recordings varied somewhat between participants, the dictaphone records were sufficiently detailed to provide a strong sense of the structure of each participant's week and of the nature of their talk with others. Because they were reporting recent events, the reports could be more detailed and accurate than data from retrospective interviews or questionnaires. The ease of making recordings by voice seemed to result in more richly detailed, personal, and enlightening reports than could be expected of written records.

The fact that participants had already completed dictaphone diaries helped to ground and improve the richness of the interviews. The interviews were resourced by full transcripts of the dictaphone recordings. These usefully informed interview questions and grounded interview answers. In addition, through the process of completing their dictaphone diaries, participants had become more aware of their own activities and informal learning than they were prior to the study. Participants acknowledged this increased awareness in interview and often prefaced observations about their academic lives with comments such as 'I hadn't noticed, before this week, that...'. The dictaphone method had made them participant-observers of their own activity.

The voice recording method was not perfect however. Participants sometimes delayed making recordings until it was convenient to do so. They were often unwilling to make
recordings in the presence of other people. Their ordinary activities often gave them frequent opportunities to make recordings, but in some cases they were in continual contact with others for long time periods, and recordings became less frequent.

One of the main challenges presented by the dictaphone data was to analyse it so that it could be meaningfully summarised. Part of this process was the categorisation of activities. The first distinction made was between study activity and non-study activity. Although drawing this distinction allowed me to report roughly how much time the participants spent studying, I found that there was no clear-cut distinction to be made between work and non-work activities. Participants often spent time with friends talking about work, at various depths, and in various settings. Some such instances, such as coffee room meetings that were pre-arranged for discussing statistics, were classified as study. Other activities, such as discussing work at the beginning of an evening's drinking, were classified as non-study. Although these examples were relatively easy to classify as study and non-study, it was not always clear on which occasion more academic work was accomplished. The distinction that I made between study and other activities must therefore be considered somewhat artificial. However, I consider it a success of the study that the dictaphone data themselves confront us with the artificiality of the distinction.

Any attempt to summarise the interpersonal contact that participants had would inevitably have limitations. I attempted to do this by identifying and classifying 'Academic Events'. This did provide useful insights into learning through social contact, and into the degree to which disciplinary 'content' was involved in that learning. One limitation to the approach was that no account was made for the impact or duration of each Academic Event. For example, a passing comment about the difficulty of some coursework and a protracted in-depth discussion about possible answers would each be classified as a single 'course specific' Academic Event. I made no distinction between the impact of events because these data did not allow it. Participants were not asked to reflect upon the importance of each work-related experience that they had, because this would have burdened them greatly. Furthermore, as some participants commented, their experiences often became valuable only at a later time. For example, the knowledge that a particular friend performs well in a certain module might not at first be useful, but could become useful if one experiences later difficulties with that module. As I argued in section 6.3.5, it may be more profitable to say that participants are (more or less)
immersed in situations that provide them with useful and unexamined tacit knowledge, than to assume that learning occurs in discrete conscious events. Although it remains a useful construction, the notion of Academic Events may not do full justice to the immersive character of community participation, nor to the continual, incidental and ongoing character of this learning.
Chapter 7 Conclusion

The present chapter concludes this thesis. It is comprised by four main sections.

In section 7.1, I will present an overview of the thesis. By reviewing each chapter in turn, I will remind readers of the structure, content and central argument of the thesis.

In section 7.2, I will revisit questions raised at the outset of this research. For each question, I will bring together findings gleaned from each of the empirical studies.

In section 7.3, I will reflect upon the research methodology. I will argue that the three empirical studies form a coherent and complementary set. Together, they explore a wide range of mediation: technological, social and institutional. Their complementary nature is further underscored by each study echoing a different one of Leont'ev's (1981a) three levels of activity.

In section 7.4, I will consider some implications of this thesis. I will consider direct implications of my findings, for research and for support of essay production. I will also discuss the broader implications for understanding and investigating cognition and action.

7.1 Overview of the thesis

This thesis applies a cultural psychological approach to investigating undergraduate essay production.

In Chapter 1, I introduced essay writing as important in the academic lives of many students and as involving documents and other resources. In Chapter 2, I contrasted traditional cognitive and cultural approaches to psychology. Traditional cognitive psychology tends to model writing as an in-the-head cognitive process. In contrast, cultural psychology sees cognition as inseparable from embodied action and as embedded in technological, social and institutional contexts. I proposed that cultural psychology would provide a more adequate basis for my investigation. In Chapter 3, I reviewed some approaches to studying literate action. I concluded that there was a need for studies informed by cultural psychology. These studies should include technological,
social and institutional contexts, in accounting for essay production as temporally structured action.

In Chapter 4 - the diary-based study - I investigated authentic essay production as temporally organised engagements with resources. Participants used self-report diaries to record temporal patterns of coursework activity, with particular emphasis on engagements with documents. The diaries also grounded interviews that addressed participants' own perspectives and their histories of essay production. Essay production activity was found to be richly mediated and inherently improvised. Participants' personal histories heavily resourced their improvisation. They spent much of their working time alone and reported idiosyncratic approaches to documents, which they enacted routinely and with little conscious reflection. To emphasise their idiosyncratic, private and taken-for-granted nature, I called these approaches 'personal genres'. The investigation provided tantalising glimpses of the importance of documents' materiality and of social and institutional contexts. These were each examined in the two studies that followed.

Chapter 5 - the 'materiality at the desktop' study - focused on finer-grained temporal patterns of action and their specifically material mediation by documents. Employing direct observation under conditions of controlled comparison, it revealed that material characteristics of paper and online documents, shape their incorporation into action. I charted some of these characteristics. However, these material characteristics did not shape action deterministically. Consistent with the view that artefacts do not have inherent 'effects' on action, individuals differed in how they used them.

In Chapter 6 - the 'contexts of participation' study - I investigated the social and institutional contexts in which essay production is embedded. Data were collected using highly portable dictaphones, on which participants made frequent recordings for a period of one week. Although, consistent with the diary-based study, participants rarely worked with other students in protracted periods of collaborative voluntary study, more fleeting and serendipitous interpersonal exchanges enabled valuable informal learning. This learning related to the resolution of lived concerns and dilemmas that arise from participating in their degree courses, to a greater degree than it involved the construction or communication of disciplinary 'content'.

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I highlighted the benefits that students gained from immersion in contexts that provide rich access to relevant communities of practice and described some of the institutional, architectural and geographical arrangements that enable this.

As a whole, this thesis has taken a cultural psychological approach to researching essay production. It has addressed various forms of context and characterised essay production as constituted by these contexts. It thereby demonstrates the utility of the cultural psychological approach for investigating essay production and contributes evidence in support of cultural psychological theory.

7.2 Revisiting research questions

Having reviewed the thesis chapter by chapter, I will now bring together the findings from the three studies, to form answers to questions that I raised and developed in the opening chapters. The questions concerned:

1. the relevance of documents and other resources to essay production processes;
2. the roles of other people in essay production processes, and,
3. the development of essay production processes across instances.

The cultural psychological approach has helped me to raise and empirically investigate these questions. The answers, drawn from the rich descriptions of action provided by the studies I have conducted, are consistent with views of cognition and action advocated by cultural psychological theory.

1 What have we found regarding the relevance of documents and other resources to essay production?

I found that a rich variety of resources were involved in essay production. Interview data from the diary-based study particularly emphasised this. Ideas from the cultural tradition (Lave, 1988; and Leont'ev, 1981a) enabled me to construct a broad framework that incorporates many diverse resources. The framework showed resources, coming from person, from setting and from activity; and also varying in longevity, from fleeting to continuous.

Consistent with cultural psychological understandings, essay production was found to be genuinely context-embedded: documents and other resources mediate and thereby give
shape to essay production processes. In the diary-based study, we saw that the mediation of documents was heavy and pervasive throughout authentic coursework essay production. I illustrated some of the ways in which essay production was organised through different kinds of coordinations with various documents. For example, I described a case in which cognition/action was structured through successive transformations of text from original source texts, into notes, into a draft and finally into a finished essay. In the 'materiality at the desktop' study, I examined participants' more temporally fine-grained coordinations with documents. I considered how documents' own structures constrain what forms of engagement with them are appropriate for certain purposes. These observations resonate with Hutchins' (1997) account of cognition, as coordination between various sources of structure.

Data from these studies encourage us to think of essay production as improvised with documents and other resources. We saw in the diary-based study, that participants' overall patterns of action, as represented in the diaries, were not determined in advance, but were improvised with an unfolding situation. Participants' accounts of their more fleeting engagements with documents as going 'off-course' or taking unintended directions similarly support this view. These observations are somewhat inconsistent with the assumption in more cognitivist literature (e.g. Torrance, Thomas and Robinson, 2000; Flower, 1990b) that patterns of essay production could be accounted for in terms of writers' in-the-head 'strategies'.

Thus, documents and other artefacts may be seen as resources that shape the unfolding of cognition/action. We may see them as elements in the developing situation (or field for action) that enable cognition/action. The function of taking notes and making highlights can therefore be seen as enabling further, future action - through changing the resources of person and setting. An example of AUKA's actions, from the diary-based study, illustrates this view. Conscious of her tendency to be distracted by irrelevant material when using indexes, she does not simply resolve to resist such distractions, but she sticks post-it notes into her books to act as book marks. In this way, she changes her setting to enable different patterns of engagement with her texts. We arrived at a perspective that sees essay production as embedded in, structured through, and inseparable from, engagements with documents and other resources.
These studies have importantly demonstrated that mediation by documents and other resources is not only semiotic, but also material. This was illustrated by the diary-based study: the examples of creating an ordered pile of books for reading (COSH), and of using post-it notes as book-marks to provide an alternative to indexes (AUKA) suggest that the specifically material properties of documents contribute to 'fields for action'. Using controlled comparison, the 'materiality at the desktop' study more systematically addressed the importance of document materiality in shaping action. I identified some relevant material aspects of documents and observed how documents with different material properties were variously incorporated into action. In the 'contexts of participation' study, it became clear that institutional and architectural arrangements mediated interactions between students, not (only) through conveying meanings, but (also) by physically bringing together or separating students in space and time. The cultural psychological approach insists that this material mediation is inseparable from cognition/action. These studies have allowed me to explore the character of material mediation. They enable a fuller appreciation of the roles of documents and other resources - in an account of essay production as embodied activity, as opposed to an 'in the head' cognitive problem-solving process.

The data also illustrate that documents and other resources do not have straightforward effects, but may be incorporated into cognition/action in various ways. This is shown in the diary-based study, in which we saw that different participants used artefacts such as books and notes differently. The same observation was also made about deadlines, which are institutional artefacts. In the 'materiality at the desktop' study, I examined this diversity more directly, finding that, although material properties of documents shaped action, individuals incorporated these artefacts into their action in diverse ways. That artefacts may be used in diverse ways is central to cultural psychological theory. This explains why simplistic measures of essay production processes - such as whether or not the student uses a plan - often fail to yield useful insights. It also warns against the idea that such documents or other artefacts can provide technological 'quick fixes'.

It may be useful to summarise in more condensed form, my findings regarding documents and other artefacts. I have shown that documents are elements in a rich ecology of resources that shape essay production, and I have charted that ecology. I have explored some of the ways in which various resources shape essay production, often
focusing upon (strong and pervasive) document mediation. We have seen that essay production is improvised with respect to documents and other artefacts. I have accumulated evidence of the improvised nature of essay production and challenged more cognitive perspectives, from which the individual is the source of the structure of action. We have seen that documents and other resources do not have straightforward effects on activity but may be incorporated into action in a variety of ways. My data explored some of this variety. I showed that the mediation of documents and other resources is not only semiotic but also material. I have identified aspects of the materiality of documents relevant to a writing-from-sources task and explored how documents with different material properties were variously incorporated into action. We have arrived at a perspective from which documents are seen as one of many resources that mediate essay production. They are material and semiotic artefacts that writers actively draw upon in shaping improvised cognition and action.

2 What have we found regarding the roles of other people in essay production?

The diary-based study addressed the roles of other people in essay production. It showed that, in most of the periods of essay production that participants recorded in their diaries, they worked alone. It was noted however, that this was not always the case: some protracted instances of working together did occur. For example, friends guided one participant through the whole essay production process and other participants had their drafts read by other people. Moreover, interview data from the diary-based study suggested that other people did commonly become involved in participants' essay production, but in more informal and fleeting exchanges. This informal contact often involved making interpretations of the essay question. For the particular students and essays investigated, the 'other people' were often family members or students on other courses: they were not always students doing the same course or essay.

The 'contexts of participation' study explored social contexts that embed essay production and other forms of academic endeavour. I found that life at university created dilemmas for students - about academic products, about time and effort and about study techniques. Other students' resolutions to shared dilemmas were often influential resources in shaping participants own academic efforts. Different participants had different levels of immersion in student communities of practice and access to shared resources. I considered how this access was shaped by broader social and institutional
contexts. I particularly explored how institutional arrangements of time and space, such as lectures and halls of residence pattern this access.

3 What have we found regarding the development of essay production across instances?

Findings from this thesis impress upon us the importance of personal histories of practice in shaping action. The diary-based study of authentic everyday activity provided considerable evidence to suggest that participants were drawing heavily on prior experiences in shaping their essay production. It appears that the strong contribution of personal history to fields for action, in familiar situations, enables the ready emergence of familiar forms of action. These observations suggest that essay production should be understood as historical 'practice' rather than as isolated incidents of activity.

The term 'personal genre' captures something of the historical nature of participants' patterns of action. It refers to patterned engagements with documents that participants routinely enacted with little apparent reflection. Genres have been described as "typified", "temporarily-stabilized", and "tool-mediated" forms of action (Russell, 1997). These genres are "typified" in that they are reproduced time after time across instances of essay production. That genres are "temporarily-stabilized", emphasises their potential for historical change. Because genres are enacted through tools (typically texts), their development is to be understood as changed relations between a person and text. Hence, development occurs when, for example, a student adopts a new kind of written plan or engages differently with source texts. Further, genres have been described as "operationalized action" (Russell, 1997). Operations occur at a level of activity that is taken for granted; they are not normally objects of reflection. I have suggested that the development of essay production genres is hampered by the lack of conscious reflection that students seem to apply towards them.

That the genres I describe are 'personal', emphasises that they are enacted and developed mainly in private, and that, in part consequence, their form is often idiosyncratic. I identified, from self-report data, some of the ways in which personal genres may develop, including invention, refining, and appropriation. I suggested that genres develop according to the contexts in which they are enacted. It seems that they tend to develop into idiosyncratic forms by being continually refined by individuals in relatively private circumstances, although appropriation from others sometimes occurs.
More generally, this thesis promotes a cultural psychological view of development - as changes in relations between person and context. I have outlined a complex ecology of resources that shape essay production, and emphasised its context-embedded nature. Development in essay production practice might involve changing relations with these resources. These changes might be termed trajectories of participation in communities of practice (Lave and Wenger, 1991).

Despite its historical orientation, the present study has directly documented little ontogenesis. The data that most closely addressed developmental changes at this level were the retrospective self-reports participants gave in the diary-based interviews: they did not come from longitudinal studies or from comparisons between students in different years. I will consider how ontogenetic themes of research could be pursued in the section on 'implications'.

This section, 'revisiting research questions', has shown that cultural psychology is a suitable theoretic framework for investigating the issues raised at the outset of this thesis. In contrast to the traditional cognitive psychological approaches, it is attentive to essay production as resourced, 'in the world' activity. It has shaped a research agenda directed towards important aspects of essay production. It has inspired an empirical approach that provided richly textured descriptions of essay production activity. This research supports cultural psychological theory through its findings, such as those that demonstrate the constitutive nature of context and the central importance of history.

7.3. Reflections on research methodology

In Chapter 2, I suggested that the theoretical commitments of the cultural approach urge multi-method investigations of essay production. These commitments see authentic activity as embedded in rich ecologies of context, and encourage analysis at multiple levels.

In the present section, I will argue that the three studies that comprise this thesis form a highly complementary set. First, I will suggest that they complement each other by each emphasising context, but focusing upon different aspects of it. Second, I will suggest that they complement each other by emphasising different 'levels' of activity.
Cultural psychology suggests that activity is mediated by technological, social and institutional contexts. Grounded in materialism, it also emphasises the material as well as semiotic, nature of these contexts. Each study emphasised different aspects of context.

The diary-based study investigated essay production in authentic mediating contexts. In contrast to stripping it out for the purpose of investigation, context was preserved. While the diaries themselves focused upon document mediation (and, to a lesser extent, mediation by people and places) the interviews allowed other aspects of context to emerge more fully and it was possible, to some extent, to chart the richness of this mediating ecology.

While the diary-based study tantalisingly suggested the importance of material properties of documents in shaping activity, the 'materiality at the desktop' study investigated this aspect of context more deeply and systematically. The specially contrived task allowed direct observation and controlled comparison. Controlled comparison allowed richer insights into the relevance of document materiality than might have otherwise been achieved. It was crucial in establishing the credibility of these insights.

With the previous studies having quite thoroughly addressed material and technological contexts of essay production, it remained for the 'contexts of participation' study to elaborate on social and institutional contexts. The diary-based study had provided a tantalising glimpse of the role of social contact in essay production. The dictaphone proved to be an appropriate device for charting informal, fleeting instances of interpersonal contact. Because participants made recordings throughout their daily lives, this study was capable of revealing how institutional arrangements and artefacts (such as buildings) mediated this contact.

The three studies may also be seen as complementing each other by examining each of three levels of activity. Leont'ev (1981a) claimed that activity is hierarchically structured in three levels. For Leont'ev, temporally extended activities are realised by shorter-term actions, which, in turn, are realised by fleeting operations. Because of the constitutive relations between levels, each level is more fully understood in its relation to the others. Although I am reluctant to wholeheartedly embrace a view of activity as hierarchically structured, the suggestion that behaviour must be accounted for at various levels of
granularity is compelling. The three studies comprising this thesis are pitched at different complementary granularities. Each echoes a different level of Leont'ev's framework.

The diary-based study furnished what might be called a middle level description of authentic essay production. It described whole instances of essay production (without the moment-by-moment detail or careful examination of its place in more encompassing activities, such as getting a degree or living as a student). Consistent with emphasising the ‘action’ level of Leont'ev's framework, my interviews examined the conscious goals of participants, which is what, for Leont'ev, ‘actions' are directed towards.

The 'materiality at the desktop' study complemented the diary-based investigation through more temporally fine-grained investigation. This level corresponds to the lowest, 'operations' level of Leont'ev's framework. For Leont'ev, operations are oriented to material conditions and are unconscious. Consistent with both of these points, the study focused upon materiality, and drew mainly upon direct observations rather than self-report data.

The 'contexts of participation' study complemented the others by raising concerns at a higher, more encompassing level. It was sensitive to broader contexts and activities that may motivate essay writing and that essay production helps to realise. I charted the textures of students' ordinary lives and their work-related interactions. This showed how the more encompassing activity(ies) of living a student life give(s) shape to academic (including essay-producing) actions. For Leont'ev, 'activities' are (typically) collective. Although this study did not focus upon collective activities, the theme of collective activity was echoed in my consideration of the extent to which the participants took part in student communities of practice.

In sum, the cultural psychological perspective has inspired a highly complementary and cohesive set of studies. Together, they explored a broad range of mediation: technological, interpersonal, and institutional. They also explored a comprehensive set of levels: complete episodes of essay production, fleeting 'operations' that realise them (the level below), and ongoing activities that they realise (the level above).
7.4 Implications

In this thesis, I have used a cultural psychological approach to examine essay production at a single site. In the present section, I will discuss the implications of this. In section 7.4.1, I will address some 'next steps' enabled by this thesis. In section 7.4.2, I will consider the implications of the particular approach that I have taken. I will discuss how my own approach relates to other approaches to essay production. In section 7.4.3, I will consider broader implications of this thesis for cognition and action. I will consider how the findings of this study relate to other forms of action, such as private study in general, and to work in other contexts. I will also consider the contribution of this thesis to psychological theory and therefore to understanding cognition and action in general.

7.4.1 Following on: direct implications for research and support of essay production

Each of the studies reported here had its own implications for research. Having addressed these in the relevant chapters, I will not review study-specific implications for research here. I will note however, that this thesis as a whole could be complemented by stronger data on the theme of ontogeny. In the diary-based study, participants provided self-report interview data about their histories of essay writing practice: richer data on history could be obtained through students repeating their participation over long time-scales and numerous essays. Because the 'materiality at the desktop' study involved a task that was specially constructed for research, it was stripped somewhat of 'routine' everyday context. Particularly, participants were asked to work with online documents in ways that were rather unfamiliar to them. I noted that it would be interesting to observe participants over numerous occasions. This would allow insights not only into one-off actions, but into developing practices. The 'contexts of participation' study could also be expanded to incorporate historical development. It produced weeklong snap-shots of the lives of first-year and second-year students, but did not show how individuals' everyday activities developed over long time periods. Nor did it enable strong comparisons between first-year and second-year practice communities, that could indicate how whole practice communities develop. In each case then, expansion of these studies, in particular longitudinally, could provide a richer view of the historical, developing nature of document production practices.
Each study also had its own implications for supporting essay production. I discussed these separately in each chapter. For example: the diary-based study encourage interventions that increase reflection upon private study practices; the ‘materiality at the desktop’ study has implications for the design of technologies to support essay writing, and; the 'contexts of participation' study has implications for the design of campus architecture and for other institutional arrangements. In general, the studies provide a rich description of action, such that different stakeholders in essay production (such as lecturers and students) might draw out their own implications.

Taken as a whole, this thesis provides a rich description of essay production, from which further implications may be drawn. To illustrate this, I will review one main finding from the diary-based study and one from the ‘contexts of participation’ study, and then consider the interesting implications of bringing these two findings together.

The diary-based study showed that students, somewhat unreflectively, enact idiosyncratic, 'personal genres'. I suggested that they might be somewhat shackled, unknowingly, to limited repertoires of genres. We saw that participants are not, in general, looking for, or particularly receptive to, new approaches to essay production. They were not motivated to break out of their familiar genres - which they experienced as unproblematic and did not tend to reflect upon.

The 'contexts of participation' study showed that students can be usefully oriented to work practices through contact with other students. Indeed, they may be immersed in communities of practice such that, without any intentional inquiry, they access the resources and practices of other students. The nature of this contact however, is such that they are more exposed to others' interpretations of coursework tasks and to their resolutions to work-leisure dilemmas, than to the taken-for-granted patterns of their engagements with documents.

On the one hand then, we have the existence of ‘personal genres’. These are useful resources that are quite specific to individuals, but individuals appear to have limited repertoires of them, and to reflect little upon them. On the other hand, we have seen that access to other students provides valuable orientation and sharing of resources of practice, but that this access is somewhat limited. The obvious question is, “Could
It seems that communities of practice could provide an avenue to both motivate and enable a broadening of students' repertoires of approaches to essay production. If students were brought into forms of contact that exposed them to others' personal genres (with their particular characteristics and functions), this might motivate them to reflect upon their previously taken-for-granted genres. In addition to motivating reflection, close contact would, of course, provide access to alternative practices. Hence personal taken-for-granted genres could become more carefully considered, shared, resources.

Alternative ways of fostering development lack some of the advantages of communities of practice. Unreflectively content with their own personal genres, many students are unlikely to go out of their way to seek out, or even to attend to, 'study skills' advice. If offered by lecturers or other non-student advisors, such advice may also be (perceived as) less useful because it does not come from a fellow practitioner, with genuinely shared dilemmas. As we have seen, more incidental forms exposure to other students' genres would not have these disadvantages. The question remains as to how rich and ongoing mutual access to others' genres might be achieved.

Data produced in this thesis point to certain institutional conditions that might be altered to better support this form of contact between students. Interview data showed for example, that fears of plagiarism and competitive assessment practices encourage students to work alone. Although institutional practices are often highly resistant to change, alternatives are possible. A modest attempt to foster the desired mutual access might be the setting of co-authored essay assignments. Following the living-learning community model (Gabelnick et al. 1990), universities might consider allocating places in halls of residence to bring course mates into everyday contact outside of class. On a more ambitious scale, it is possible for large educational establishments to operate without awarding grades (Hegener and Hegener, 1992). These interventions might enable much richer contact between students and could provide interesting opportunities for further research.
7.4.2 Implications of applying a cultural psychological approach to essay production

The cultural psychological approach allows us to pay attention to aspects of essay production that other approaches tend to neglect. Using the cultural approach, I have described essay production, in a cultural context and as historic at microgenetic and ontogenetic levels.

First, I explored the rich ecology of resources that mediate essay production. We have seen that other approaches (such as traditional cognitive perspectives), tend to neglect context generally and those that do emphasise context (e.g. social practice approaches) tend to neglect its specifically material aspects.

Second, my methods also recorded, and allowed reflection upon, the progression of action through time - microgenesis. I argued in Chapter 3, that some approaches to literacy (e.g. the 'social practice' tradition) neglect issues of process - focusing more upon functions of literate action than upon the processes that realise them. I also argued that cognitive psychology's approach to process tends to conflate it with internal cognitive structures (Clancey, 1997).

Third, studying authentic action in everyday contexts also preserved historical context. I asked participants about their prior experiences, allowing me to reflect upon the roles of personal practice histories in the recorded action, and upon ontogenetic trajectories. As I argued in Chapters 2 and 3, historical context is frequently neglected by cognitive and related approaches.

In sum, the cultural psychological approach has allowed me to characterise essay production in a somewhat novel way, emphasising contextual and historical aspects that have been glossed over or neglected by other approaches. Part of the strength of this approach then, is 'making the familiar strange' - bringing to attention taken-for-granted contextual and historic aspects of essay production, and making them available for critical reflection.

My findings suggest that issues emphasised by cultural psychology are of fundamental importance. We saw that essay production is embedded in technological, social and institutional contexts. We saw the crucial importance of historical contexts in shaping
participants' essay production. We observed essay production as unfolding in time through improvised engagements with the resources of the situation. This view suggests that accounts of essay production as an in-the-head phenomenon, comprised by atomised context-independent processes, are fundamentally flawed.

This leads me to address the relationship between the cultural approach to essay production and other approaches. I suggest that all approaches contribute methods and findings that may enrich our understandings. They are somewhat complementary also in emphasising different aspects. For example, whereas cognitive approaches helpfully raise the issue of knowledge transformation in essay production, social practice based accounts foreground institutional and social contexts, and functions of literacy.

Theoretical flaws in approaches need not prevent them yielding robust empirical findings. My view is that cultural psychology should be seen as both surrounding and penetrating other approaches and findings. By addressing wider contexts of essay production, cultural psychology allows us to see findings from narrower research agendas in proper context. In addition, its fundamental theoretical insights must penetrate all other approaches, demanding that they acknowledge the embodied, context-embedded and historical nature of essay production.

In contrasting the cultural psychological approach with other theoretical perspectives, we must appreciate that my own use of cultural psychology reflects my particular concerns and I do not therefore offer a definitive application of cultural psychology. For example, I have chosen to emphasise material mediation. In doing this, I have paid less attention to private, not directly observable and less obviously embodied aspects of cognition. This does not imply that cultural psychology cannot address these. For example, Wersch (1991), among others in the cultural psychological tradition, has heavily emphasised the semiotic mediation of mental life by language. My own focus upon material mediation reflects that semiotic mediation is already a familiar theme in writing research (e.g. Halliday, 1978; Baynham, 1995).

My own appropriation of cultural psychology has particularly emphasised processes over products. This tendency is apparent in each of the three empirical studies. Each study described rich varieties of patterned engagements with the resources of a situation. They did not describe so clearly the products of these actions. The finished texts from the diary-based study and from the 'materiality at the desktop' study could have been
subjected to more rigorous analysis - for example using functional-linguistics (e.g. Prosser and Webb, 1994), or measures of learning outcomes (e.g. Biggs and Collis, 1982). Similarly, no attempt was made to relate the action investigated in the 'contexts of participation' study to any measures of academic outcomes. Although such outcome measures would have a welcome place in any investigation inspired by cultural psychology, it is also a perspective that invites us to see these 'outcomes' as of less primary importance.

By throwing into sharp relief, processes of engagements with cultural resources, cultural psychology emphasises that there is more to essay production than the final product. Pedagogues and students risk forgetting this and taking cultural practices for granted. Lecturers (for these essays at least) had little access to the study practices of their students. The finished essays were virtually all that was visible to them of their students' practices (this is particularly ironic for a module dedicated to developing students' 'communication and study skills'). Pedagogic practice is such that the finished essay is the main boundary object around which lecturers and students mutually orientate. Accordingly, for these essays at least, students appeared somewhat fixated on achieving grades, which were awarded only through examining the finished document. Study practices were out of sight of lecturers, and students were not accountable for them. They had become invisible.

Even if we take a traditional 'disciplinary content' view of knowledge, then how students work might be more relevant to what they learn, than might the quality of their finished essays. The process of producing a document may result in a much richer 'epistemic object' than the document itself (Medway, 1996). The present research emphasises the diversity of ways in which essays are produced, some of which appear to involve far more engagement with disciplinary concepts than others. We must be conscious that the quality of an essay can be a poor measure of the quality of what is learned in practice.

Under the more progressive, relational view of knowing adopted in this thesis, practices of the kind investigated here have their own clear value. The unfolding patterns of action described here are also unfolding patterns of cognition. Arguably, it is these that pedagogy should address. Essay production practices are ways of thinking. They may be seen as important resources that students can draw upon from one essay to the next. They might also be drawn upon in related academic pursuits and in students subsequent
careers, whether inside or outside of academia. In these important respects, they are not only a means for producing essays, but should be pedagogic ends in themselves. An important implication of the cultural psychological approach then, is to illuminate, and to value, such practices.

7.4.3 Beyond essay production: broader implications for cognition and action

Having described instances of essay production in specific contexts, and insisted upon their context-embedded nature, generalisation becomes a matter of recognising similarities and differences between described contexts and new ones. In this way, we may consider the applicability of the present findings to other instances of undergraduate essay production (e.g. at various stages of the university careers of these or other students; and in other disciplines, departments and universities) and to other forms of action. As we saw in Chapter 6, essay production exemplifies a broader range of study activities with which it shares common characteristics. Doing revision or producing some other types of coursework tends also to involve working independently, and somewhat privately, in one's own time, on an intellectually demanding task that is open to interpretation and with an institutionally imposed deadline. Often such tasks will also be heavily mediated by source texts and self-created texts. They are also shaped by common social and institutional contexts.

The present study invites us to consider, and perhaps to investigate, similarities and differences between these instances of essay production and forms of action beyond academia. For example - like the students I have described - the photocopy repair technicians studied by Orr (1996) and the insurance claims processors studied by Wenger (1998), work predominantly 'alone' and on broadly the same work as their colleagues. As was the case for undergraduate students, their social and institutional contexts set up interesting tensions between working mainly 'alone' and sharing resources of practice. We might consider, for example, what aspects of individuals' actions are accessible and available for reflection by other community members. We might also look for the phenomenon of individual-specific 'operationalized' practices, or 'personal genres' and explore how social and institutional conditions give shape to these.

Perhaps most importantly, the findings of this thesis also corroborate cultural psychology as a general theory of cognition and action. As I commented in section 7.4.2, they
strongly suggest that essay production is fundamentally improvised and mediated by cultural and historical contexts. Cultural psychological theory holds that all human activity shares these characteristics. By corroborating this position for essay production, I contribute, in a small way, to the empirical evidence in support of this theory. Cultural psychology stands in sharp contrast with the more dominant, traditional cognitive perspective. I have applied to essay production a psychological perspective built upon a refusal to separate person from context, or cognition from action.
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Appendix 4.1. One day's diary entries from one participant.
[For an explanation of the diaries, see section 4.2.3]
Appendix 4.2. Participants' diary instructions - 'Diary instructions for each session'

**Diary Instructions for Each Session**

By completing the diary you let me know; what documents you worked with, where you worked, whether you worked with other people, whether you used computers, and how all of these are patterned in time.

In each session:

1. Put the date and time on a fresh diary page.
   The continuous lines across the page each represent the turn of an hour.

2. Add the new documents you encounter to the numbered document list.

3. List the documents that you "engage-with" this session.
   You do this by putting the document number in the "engage-with" section on the diary.
   Engaging with a document includes "reading" activities such as reading it, skimming through it, or just glancing at it. You are also engaging with a document upon which you are performing administrative activities such as sorting, finding in a library, and photocopying.

4. List the documents that you "write-to" this session.
   You do this by putting the document number in the "write to" section on the diary.
   "Writing-to" a document includes creating it (e.g. by drafting it), editing it, annotating it, or even highlighting sections. "Writing-to" a document is often simultaneous with "engaging with" that same document. In this case both activities should be marked on the diary.

5. Record your activity over time.
   - The diary should show activity in time units of half-an-hour at the longest. You can make the diary more detailed if you like. I suggest that you update the dairy hourly. This minimises interruptions and memory difficulties.
   - Mark all the documents you have "engaged with" and/or "written-to" within any time unit.
   - Shade the sections using two tones. Use single shading to represent light or occasional activity. Use 'cross' shading to represent heavy activity.
   - In each section you should mark at least one category. The exceptions are when you are recording 'breaks' or 'other work', or if you are using neither paper nor computers.

6. Use the "comments/descriptions" section to provide additional information.
   Use this space in any way you like. Try to convey the meaning of your activity.

7. At the end of the session, summarise it.
   After each session summarise it briefly. Try to describe the pattern of activity that today's diary represents, and what made it emerge as it did.
Appendix 4.3. Participants' diary instructions - 'Answers to some questions'.

**Answers to some questions**

**What counts as a document?**
Examples of documents include; notes from a particular lecture, a to-do list, a book, a specific chapter in a book, a journal article, a sketched essay plan, a draft of a document, a web page, a print out of a web page.

Note that:
- A document need not consist of fully formed text. It could be some notes or a sketch or diagram.
- A document can be something created by you.
- Documents exist on specific media. For example a printout of a web page is a different document than the web page itself, and if you engaged with both, then you should include both of them on your document list. Similarly, a hand-written draft of your essay, an electronic version of it, and a printout of it, would be three different documents and should appear as different documents in the diary.

**Which documents are worth listing or keeping?**
I want to know about all the documents you use - whatever kind they are, whether they are paper or electronic, and how ever you use them.

**How should I retain and record the documents?**
- If you can retain the document (or a copy of it) to show me, please mark it with its number in the document list. I will promptly return all documents to you.
- If you can't give me the document (or a copy of it), please reference it well enough for me to find it.
- Electronic documents can be printed, emailed, or given to me on disk. Give me the addresses for web pages.
- Electronic documents that you continually alter, such as drafts: If you work continuously on a computer draft, save (or print) a number of versions as you work (e.g. you could use filenames 'myessay01', 'myessay02', etc.) This enables me to see how you changed the document over time. Use your discretion over how many versions are required.

**Contacting me**
Feel free to contact me for any reason.

Phone (work): 228486
Email: R.Dymott@lboro.ac.uk
Office: L 1.13 Wavy Top (corridor adjoining the 'Meetings Room')
### Appendix A.4. Participants' diary instructions - An example diary

**PLEASE NOTE**

These fictional examples demonstrate how to use the diary. Your own work will have a different pattern.

<table>
<thead>
<tr>
<th>DATE TO 10 Jul 1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ENGAGE WITH</td>
</tr>
<tr>
<td>2. WRITE TO</td>
</tr>
<tr>
<td>3. WORK</td>
</tr>
<tr>
<td>4. OTHER</td>
</tr>
<tr>
<td>5. OTHER</td>
</tr>
<tr>
<td>6. OTHER</td>
</tr>
</tbody>
</table>

Overall, a good diary. Short section. Date lines.

Duel in computer... what do I do now? Read over what I have written. Before finishing the diary.

Duel in computer... what do I do now? Read over what I have written. Before finishing the diary.

Duel in computer... what do I do now? Read over what I have written. Before finishing the diary.
Appendix 4.5. Schedule guiding the post-diary interview (page 1).

**Interview schedule for diary study**

Thank for completing the diary

Name __________________

Age __________________

Previous essay and academic subject experience

How many essays have you written at university?

Have you read any guides, or ever been taught how to write essays?

What did you learn from teachers and others?

**Enjoyment?**

Did you enjoy or dislike the process of producing this essay?

1 dislike very much, 5 enjoy very much ______

Were there any enjoyable bits? What were the worst?

On average, do you enjoy or dislike the process of producing essays?

1 dislike very much, 5 enjoy very much ______

Are there any enjoyable bits? what are the worst?

What aspects of what you do are the same each time you write an essay?

What aspects of what you do vary each time you write an essay?

Would you say that for you essay production is generally a fixed routine process or a non-routine variable process

Routine fixed process 1, non-routine variable 5

Generally ______

Was this essay fixed and routine or variable?

This ______

**Problems**

"What were the major difficulties or problems" in this one? generally?

**Review what you did**

"Let's go through what you did so far."
Do you have a favourite place for working?

How are workspaces set up around you as you work.
For example are documents scattered around you or neatly organised...

Sometimes one document can have a variety of uses. Lets take a key document in your activity and try to identify all the uses you have made of it?

Lets review the pattern in your overall work.
What was the pattern?
Were the changes in the pattern distinct and clear or blurred?
Was there an obvious right time for the activities to change?
Lets ask the same question for patterns within the patterns [repeat]
People I have interviewed have been more or less aware of how their activity is patterned. How aware were you of these patterns before we identified them?

Lets review any experiences you have had of your work being less than perfectly efficient. Can we think of examples where:
1. You lost the will to go on with the work.
2. The things you did were not effective
3. You got stuck and stopped
4. You found that you were doing work that wasn't helpful.
How did this situation arise?
How did you recognise there was a problem?
How did you get out of the situation?
Perhaps you can think of examples from other essays?

Lets try to think of the reasons why this doesn't always happen.
Could you say how is it that your work doesn't go off course, become inefficient, or peter out?
At given points are you aware of whether your activity is appropriate and effective?
How is it that your activity stays appropriate and effective?

Do you think much about the processes that you do?
Would it be a help, a hinderance, or neither to think more (or less) about the processes that you do.

What do you think are the strengths and weaknesses in the process of this essay?
Appendix 4.5. Schedule guiding the post-diary interview (page 3).

I am also trying to understand the relationships between the process of producing this essay and your previous experiences of document production.

What were the similarities and differences between this and other essays.

Was the overall pattern of activity that occurred with this essay the same or different to previous essays?
Did you do the component activities in this essay the same or differently from previous essays?

Are there patterns in your overall activity that are different now than in the past? (Learning)
Are there differences between the way you now do component activities compared to in the past?

Social

How do you think other people produce their essays?
What do you do that is similar or different to other people?
Do you know how other people produce their essays?
Have you ever worked with anyone else on an essay?

About using the diary

Just so I know, have you missed much out?
How did you go about filling it in?
Were there relevant things that the diary wasn't suitable for recording (some said 5 min chats or thinking without documents)?
Have you found it a help, a hinderance, or neither?
Did it influence what you did?
Have you any comments/queries/suggestions about the diary (such as making it clearer or easier)?

This is a real change of tack, where we discuss what essays are

What do you think lecturers look for in an essay (what marking criteria might they use)?
Tell me about conclusions
  What is a conclusions function?
  How is it different from the main body
How should material be organised in an essay? How could you decide whether an essay is well or badly structured?

Issues raised by you
Appendix 4.6. Document usage chart for participant 'HAMA'

When the chart is correctly orientated, time passes from left to right.

The first six rows show; days until deadline, day of the week, date, time, location (L = library, IT = computer room, H = own residence) and work with other people (S = self only, C = course mate, K = family).

The first three columns show; documents, document type, and number in diary document list.

Green shading represents 'engaging with'. Grey shading represents 'writing to' a document.
Appendix 4.7. Document usage chart for participant 'WARE'.

When the chart is correctly orientated, time passes from left to right.

The first six rows represent; days until deadline, day of the week, date, time, location (L = library, IT = computer room, H = own residence) and work with other people (S = self only).

The columns first four columns show; document names, document types (second and third columns) and number in diary document list.

Green shading represents 'engaging with'. Grey shading represents 'writing to' a document.

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Appendix 5.1. Spoken instructions sheet for the 'Materiality at the Desktop' study.

Spoken instructions.

The task
Let me thank you again for participating. As you know, I am asking you to write two short essays in 44 minutes each. In this session you will write one of the essays.

Napster information.
The topic of this essay is Napster and electronic music distribution. Napster is a computer program that enables its users to share music with each other through the internet. Part of what makes Napster possible is a special format for storing music - in what are called MP3 files. In comparison to other ways of storing music on computers, MP3 files are small. This makes them convenient to store on computers and to send and receive through the internet.

Vehicle information.
This topic of this essay is alternatively powered vehicles. Most cars currently run on petrol or diesel, but there is presently some interest in powering vehicles in alternative ways. One of these alternatives is cars that run off rechargeable batteries. Another approach is to combine batteries and petrol engines in a single car - these are cars are called 'hybrids'. Another approach is to use 'fuel cells'. These use fuel to make electricity, which powers the car.

As you work I would like you to talk. The basic idea is simply thinking out loud. On some occasions, like reading fast, it will not be possible to keep pace when talking. You won't be able to say every thought you have. But you will find you can chunter away most of the time. Don't worry about what to say and what not to. I am interested in the little frustrations, joys, surprises that happen as well as the academic thought. Also there is no pressure to explain yourself...

Resources
At the start of this essay, I will show/give you a folder/envelope. It contains source documents and a very short document called "Question". "Question" contains the essay question itself and very briefly introduces the sources. You can do exactly what you want with this. You own it's contents. You don't have to worry about messing up the documents.

The sources are not all entirely up to date. I don't want you to worry about the dates of the articles. How up to date the essay is not important to me. If you're aware of relevant happenings since the articles were written you can put them in if you want but, but I am simply not concerned with how up to date your essay is.

Writing the essay
You have full access to both the computer and paper. The computer has no printer or network connection. Paper and computer documents are both available for you to write. You can submit the essay handwritten or on computer. Likewise, you can use the computer, paper or both to make notes, plans, etc. Notice the stationary provided. (Any special requests)

Your essay will be judged for overall quality. Because of the conditions of this experiment, less attention will be paid to surface details like spelling and grammar. It is more important how you 'deal with the issues'.

Here's some advice: I expect that you will not have time to read all the text you have been given in detail, and still write the essay.

The time begins when I show/give you the folder/envelope.
Appendix 5.2. Example document usage chart from 'Materiality at the Desktop' study.

Each column represents a document used or created by the participant. Markings in the chart show use of documents in each minute. Diagonal lines indicate 'engaging with' a document. Vertical lines indicate 'writing to' a document. Around the chart are notes made during analysis of the video tapes. These include: comments made by the participant during the study, details of navigation within documents and observations on the use of the physical space of the desktop.
Dictaphone study: Instructions for participants.

What is this research for?

This research focuses on the informal learning that occurs when people share spaces and activities. It will record a few days of your life at university. During this time you will come into contact with a number of people. Some of them may be students, others not. You may work with them, socialise with them, or simply observe them. Each form of contact may re-orientate you to your work at university:

- when you work in groups you make progress in your work, and are exposed to other people’s approaches to work;
- when you socialise you may discuss the content of your course, how much work you do, or let off steam about work related hassles;
- you may observe the working habits of others incidentally, such as noticing more people in the library near exam time, or noticing that another student’s lecture-notes are different from your own.

Situations like these often orientate you to your work. They establish or change your relationship to the work you do. Whenever this happens I am calling it a "learning event". Whenever you get some work done (such as understanding a tricky idea, or completing a project) - that is a learning event. If something changes or stabilises your approach to work (such as reassuring you of your progress, or making available a new method of note-taking) that is also a learning event.

I want to capture these learning-events, and identify the activities, the people, and the places that enable their occurrence. This will allow me to know:

- What sorts of learning-events occur. E.g. coursework or revision is accomplished, an idea is clarified, your motivation changes, you discover an alternative way of working, etc.
- What sorts of activities enable learning events. E.g. Phone calls, formal meetings, meals, evenings out, etc.
- What sorts of people enable learning events. E.g. coursemates, other students, people living outside loughborough, family, etc.
- What sorts of places enable learning events. E.g. Corridors, libraries, bars, coffee rooms, your flat or house, etc.
Appendix 6.1. Instruction pack for 'Contexts of Participation' study (page 2).

What should I record?
Here is a full list of things I would like to know. It should give you an idea of what to say. Don’t worry about following it precisely.

WHERE you go:
• Name the place.
• Where is it (on/off campus, hard/easy for you to get to?)
• Describe it: how public or private; how good for talking; who goes there?

PEOPLE:
• Who are you with? (by yourself, classmates, students, ‘townies’, family…)
• Is anyone else around? (classmates, students, ‘townies’, family…)

ACTIVITY:
• What are you doing? (phone-call, sleeping, working, socialising, TV…)

LEARNING:
• Did you do any work? What was it and how did it go?
• Did anything happen that related to an aspect of work, eg: topic knowledge, approaches or techniques of work, sense of urgency, feelings about?
• Did you have an opportunity for learning events?
• Do similar situations often cause learning events?

TIMES:
• Give approximate starting and stopping times for ‘activities’ and ‘places’.
• Indicate the time of the recording (if you don’t have a Panasonic recorder).

When should I make recordings?

Try make a recording whenever you are changing locations. You might find that moving reminds you to make a recording.
If you can, also make one when you change activities.
The more recordings you make the better. This research aims to record all people, places, activities, and learning that makes up your day.
Diagram used to illustrate diversity of relations between participants and their academic endeavour.
Appendix 6.2. Schedule guiding the 'Contexts of Participation' interview.

**Dictaphone interview questions**

**Person specific**
Review dictaphone together seek elaborations and clarifications.

**Let's talk about**
People
Activities
Places

... in your week. How do they help or hinder you in being a psychology student?

**This particular week**
Was your week as you expected?

How typical a week was this? ... work wise? socially?

**What you are like**
Are, on the one hand, doing work, and on the other, the other things you spend your time on complementary or conflicting?
V Conf, conflicting, F Conf, Neutral, F Comp, Complementary, V comp?
And why?

Do you often have dilemmas between work and other activities, and how do you manage them?

If you had to describe yourself as a student at Loughborough, studying psy/ergs, what would you say? ... what words would you use?

How do you compare with other students, and others with the rest of your course?

**On using the dictaphone**
How did you find using the Dictaphone?

In what way, if any, did it influence how you spent your time this week?

In what ways, if any, did it change the relationship between you and your work?

**Virtual university**
Would you consider one?

How valuable, or not, is the experience of being around students?