Geography teachers' subject knowledge:

an ethnographic study of three secondary school geography departments

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Abstract

This thesis explores geography teachers' subject knowledge, contributing a detailed empirical study to the geography education research knowledge debate. School geography has been criticised for holding an out-dated, objectivist view of knowledge, which is widely attributed to its disconnection from academic geography. Conceptualising school geography using Bernstein's (2000) pedagogic device, this thesis applies a distinction between the ORF (official recontextualising field) and the PRF (pedagogic recontextualising field), or between curriculum as *intention* and *reality* (Stenhouse, 1975). Existing critiques are reframed, and teachers' role as recontextualisers of knowledge is examined through an ethnographic study of three secondary school geography departments.

A model of *degrees of recontextualisation* is presented, describing how teachers transform knowledge into the content of school geography lessons. Existing accounts of teachers' conceptions of geography are developed through analysis of knowledge structures, knower structures, and the legitimation of knowledge claims. The role of perception, deductive reason, and testimony in the legitimation of knowledge claims is considered. I argue that these teachers describe geography as primarily based on empirical evidence: knowledge legitimated through perception ('actually seeing'). Deductive reason is used frequently by teachers, and tensions between deductive reason and perception are explored. Testimony was found to rarely be acknowledged as a source of knowledge, however, data generated in these departments suggest that it plays an significant role. Problematic aspects of testimonial knowledge are critically explored, and particular attention is given to the multiple, powerful roles played by chief examiners in the construction of school geography. I suggest that existing arrangements between examination boards and school subjects, and the importance given to accreditation may limit the extent to which students are given access to powerful knowledge.

Differences found between departments make similarities striking, including: a common, high use of Google searches; uses of Virtual Shared Areas (VSAs); and differentiation between control of the curriculum at different Key Stages (KS), with the PRF dominant at KS3 (most departments are argued to largely ignore the National Curriculum, or reduce it to an auditing role), and the ORF dominant at KS4/5 (through the heavily regulative function of examination boards). An argument is made for developing more *geographical* research on geography education, through a model of teachers participating in such geographical research in order to develop their disciplined judgement.

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All errors remain mine.

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List of Abbreviations

AfL	-	Assessment for Learning
AQA	-	Assessment and Qualifications Alliance
BA	-	Beach Academy
BBC	-	British Broadcasting Corporation
BTEC	-	Business and Technology Education Council
CA	-	City Academy
CPD	-	Continuing Professional Development
CUREC	-	Central University Research Ethics Committee
DARTs	-	Directed Activities Related to Texts
ELL	-	English Language Learners
EPA	-	Environmental Protection Agency (US)
EU	-	European Union
GA	-	Geographical Association
GCSE	-	General Certification of Secondary Education
HoD	-	Head of Department
IBG	-	Institute of British Geographers
IMYC	-	International Middle Years Curriculum
JTB	-	Justified True Belief
KS	-	Key Stage
LEDC	-	Less Economically Developed Country
LSD	-	Longshore Drift
MA	-	Master of Arts
MEDC	-	More Economically Developed Country
MFL	-	Modern Foreign Languages
NC	-	National Curriculum
NCKC	-	National Curriculum Key Concepts
NGO	-	Non-Governmental Organisation
NoS	-	Nature of Science
NQT	-	Newly Qualified Teacher
ORF	-	Official Recontextualising Field
OUP	-	Oxford University Press
PC	-	Personal Computer
PCK	-	Pedagogical Content Knowledge
PEE	-	Point Evidence Explanation
PGCE	-	Post-Graduate Certificate in Education
PPT	-	PowerPoint
PRF	-	Professional or Pedagogic Recontextualising Field
QCA	-	Qualifications and Curriculum Authority
RAE	-	Research Assessment Exercise
RE	-	Religious Education

RGS	-	Royal Geographical Society
RQ	-	Research Question
SCK	-	Subject Content Knowledge
SK	-	Student Knowledge
SLN	-	Staffordshire Learning Net
SLT	-	Senior Leadership Team
SoW	-	Scheme of Work
STEAM	-	Science, Technology, English, and Maths
TC	-	Town Comprehensive
TES	-	Times Educational Supplement
TK	-	Teacher Knowledge
UK	-	United Kingdom
US	-	United States
VHS	-	Video Home System
VSA	-	Virtual Shared Area
WHO	-	World Health Organisation

1: **Introduction**

Holding half-drunk cups of coffee, Claire and Richard start walking in opposite directions out of City Academy's geography office, still discussing what to do with the boy who stole things from Claire's desk during a cover lesson and made moustaches from her post-it notes. The bell has rung, and the corridor is filling up with students bustling towards their next lesson. Footballs are mostly put away in bags, and lunchtime is over. Some queue quietly, gazing out the window; others push, and start play-fighting. Going to their separate classrooms, Richard and Claire are greeted with cries of 'Alright Sir', and 'Alright Miss'. 'Go in and sit down' they both call; Richard to his GCSE class, and Claire to her year sevens. The office doors close behind them, students file into classrooms and find seats; quiet reigns. Paul breathes a sigh of relief; free period! 'Right, what was I meant to be doing? Oh yeah, year nine tomorrow morning...' Claire and Richard are both in front of their classes, standing before them as geography teachers, and about to teach them. What knowledge are they seeking to teach to these students, in this school, this afternoon? Where did it come from? What is the nature and scope of this knowledge? Do Richard and Claire's choices relate to one another? And to Paul's; what will he teach to his year nine class?

This thesis reports an ethnographic study of three secondary school geography departments in Town Comprehensive, Beach Academy, and City Academy. It is primarily concerned with questions about subject knowledge. My interest in this area began during my time as a geography teacher and Head of Department in a comprehensive secondary school in Oxfordshire; making, multiple times every day, decisions about what to teach to these students, in this school, at this time.

Pragmatically, such questions may be easy to answer: teach what is on the syllabus, or the NC (National Curriculum). Teach what is on the department's scheme of work. Teach what you were taught at school. However, considered in light of more fundamental questions, such as those raised by Pring et al. (2009), the issues are more problematic. They ask 'what counts as an educated 19 year old in this day and age?' (p.8). I faced this question during part-time study for an MA, through which I tried to explore students' beliefs about the purposes of education. The doctoral research reported here represents a refocusing on geography teachers' subject knowledge, conceptualising the subject and its relations with other fields through Bernstein's (2000) pedagogic device. Pring et al.'s question has been important in foregrounding fundamental issues about the purposes of education; a question to which Young and other social realists (Cf. Maton, 2014), introduced to me through Firth's (2011b; 2011a) engagements with them, respond that it is primarily about knowledge. In particular, Young (2013; 2008) argues that giving students access to disciplinary – or powerful – knowledge is the distinctive purpose of schools.

In geography education research, Firth (2013; 2011b), Lambert (2011), Morgan (2011), and Roberts (2014), in particular, have engaged with social realism, arguing it offers a useful theoretical lens through which to develop on-going debates about knowledge in school geography. For example, knowledge structures raise questions about the features of a 'multi-paradigmatic discipline', leading to asking 'how exactly do the knowledge claims made within the discipline differ?' (Firth 2011b, p.302). Firth goes on to argue that social realism brings into view 'the way that knowledge claims are made and legitimated', which is important because 'an understanding of how knowledge

claims come to be made in particular traditions/approaches within geography would be a vital resource for informing curriculum and pedagogic strategies' (p.302).

In this thesis I hope to contribute to this literature by offering a detailed analysis of teachers' knowledge work.

1.1: Academic / school geography relationship

Concerns that have been expressed about knowledge in school geography are often based on beliefs about its relationship with academic geography. School geography's disconnection from the academic discipline is suggested to have led to the school subject becoming 'traditional and outdated' (Winter 2006, p.352). The literature often frames this as a recent problem. However, it is an older story. For example, *Settlement Patterns* (Everson & Fitzgerald 1969) begins by arguing that changes to academic geography have not been 'passed on' (p.vii) to schools. The language of 'passing on' is important and relates to one particular, and dominant, way of understanding the relationship between the fields. Academic geography is described as 'providing leadership…in schools' (Kirby 2014, p.13), which involves being in front and passing things back to school geography. Metaphors of racing and dancing are used, with school geography being criticised for not keeping up. For example, in a Singaporean context, Chang (2014, p.6) suggests that 'the relationship could be best described by academic geography taking a lead in this waltz with school geography trailing behind'. Marsden (1997) deploys a cooking metaphor, which assumes a similar configuration of the relationship between the fields: one (academic geography) is 'freshly-cooked', which the other (school geography) ought to consume 'straight from the oven' (p.250).

The evidence used to support the notion of a disconnect between school and academic geography includes analyses of official representations of school geography, such as the NC (Rawding 2015; Rawling 2001; Winter 2014; 2012; 2007b; 2006), textbooks (Knight 2007; Winter 2006; Rawling 2003), and membership of subject associations (Jeffrey 2003; Goudie 1993). The evidence offered in this literature strongly supports a contention that academic geographers rarely engage in activities that directly influence official representations of school geography.

The broader context in which a disconnection between school and academic geography is suggested to have occurred is also compelling. Factors such as the Research Assessment Exercise (RAE) in universities, and increased accountability through examination grades in schools are both cited as reasons why academic geographers and school geography teachers spend little time communicating (Brown and Smith, 2000).

However, teachers' relationships with academic geography, and their role at the interface between school and academic geography are currently underexplored by research. As people with experience of (normally) at least undergraduate geography, and who may choose to teach geography in order to continue their relationship with the discipline (Brooks 2006a), teachers' role at the academic/school interface is potentially significant. Without evidence about teachers, arguments about a disconnection between the fields are only sufficient for conclusions about the relationship between academic geography and official representations of school geography.

In the discussion to this point the terms 'school geography' and 'academic geography' have been used, with academic geography referring to the university-based discipline.

However, it is acknowledged that lively debates about the plurality and heterogeneity of geography have strongly questioned the validity of speaking about *the* discipline of geography (Harvey 2001; Livingstone 1992). Part of this argument is based on comparing the different epistemological positions of different areas of academic geography. These 'different areas' include both current areas of inquiry, such as the contrasting epistemologies of, for example, current geomorphologists and cultural geographers (Tadaki et al. 2014; 2012), and different paradigms in the history of geography (Cf. Taylor 2009). In Clifford et al.'s (2010, p.3) terms, geography is 'a discipline that embraces a very diverse range of philosophical approaches to knowledge (from positivism to post-structuralism)'; in response, the term 'geographies' is often used. A stronger form of this argument also concludes that even the term 'geographies' is too restrictive for what are described as post-disciplinary times (Nicky 2003), in which the notion 'a' discipline is critiqued for relying on a strong essentialist position (Trowler 2014).

In contrast to the heterogeneity of the discipline of geography, in England there is one official geography NC. Having discussed one field (academic geography), and its relation to school geography, this second field – of policy, specifically the NC – is now introduced.

1.2: Geography National Curriculum

Geography has been a foundation subject in England since the inception of the NC. In 2008 a revised NC was published, which moved from a content-heavy model towards a more concept-led approach in which the amount of prescribed content was reduced

(Lambert & Morgan 2010). Partly in response to this, professional associations such as the Geographical Association (GA) increasingly used the term 'curriculum makers' to describe teachers. The reduced-content 2008 NC was seen as allowing, and requiring, a more explicit role to be played by teachers. *The Importance of Teaching: the schools white paper* (DfE 2010) and associated curriculum review are part of the debates about knowledge in geography education, and have stimulated a range of responses. Firth (2012) has argued that the terms of debate have been set by these official documents and 'inevitably, perhaps, discussion has focused on the issue of 'core' knowledge and the curriculum question 'what to teach'' (p.88). He argues that one consequence is that 'once more, the nature of knowledge itself is ignored' (p.89). For example, he criticises Standish's (2011) submission *A Geography Curriculum for England 2011* for

> ignor[ing] the epistemological nature of geographical knowledge. It seems peculiarly trapped in a 'time warp' where once again knowledge is treated as socially and historically decontextualized and presented as absolute and universal and school subjects as static. (Firth 2012, p.89)

Winter's (2014; 2011; 2007) deconstructions of the NC (writing both pre- and post-2008) suggest that the NC offers a similar view of knowledge to Firth's summary of Standish's position. Winter aims to contribute to school geography's 'revitalisation' by asking why geography is in such a poor state of health. The term 'revitalisation' is significant, relating to notions of previous curriculum development as 'enlightened' (2009, p.670), and beliefs about academic geography and its potential to improve school geography. She summarises her argument in these terms: 'school geography in England…is dominated by objectivism and scientism, and threatened by an impending relativism, and lags behind ground-breaking developments in university geography' (Winter 2007, p.352).

From a different perspective, Rawling (2003; 2001; 1996) also offers a critical analysis of the NC. She focuses on the competing ideologies that have influenced the construction of the NC, arguing that 'contestation over the detail of subject knowledge represented a power struggle for domination and for prestige by different communities and groups within the educational state' (2001, p.138). She suggests that the issue of knowledge has been underexplored in school geography, making it overly susceptible to political, and other, interests. However, she is tentative about the power the NC has. No matter what the NC does or does not contain, the relationships between policy and practice are not direct. Teachers' interpretations of the 'same notional curriculum' may result in pupils having 'very different geographical experiences' (Rawding, 2015, p.77).

Roberts' analysis of the differences between the 'practiced' curricula in three schools following the 1991 introduction of the Geography NC supports this contention; she concludes there is a 'gap between intention and practice' (p.188).

A contrasting view is offered by Winter, who believes the NC plays a far more powerful role, arguing it is 'an intensely powerful force in shaping teachers' subjectivities and has an immensely significant influence on the nature of society' (2012, p.260). This is similar to Standish's (2008) beliefs about the power of the NC:

> Today, the themes of globalization, interdependence, environmentalism and human rights have substantially altered the very meaning of the discipline, at least for many subject leaders…What is concerning is the impact that policy makers and subject leaders are having on school geography through their promotion of the New Agenda. (p.90)

Standish is as heavily critical of knowledge in the NC, but for very different reasons to those suggested by Winter. For Winter, the NC is objectivist and does not reflect the (in her view, post-modern) academic discipline, whereas Standish is concerned about particular themes promoted by a New Agenda which he associates with the left.

NC documents are produced thorough working parties and consultation periods with the public, including teachers, and subject associations. Academic geographers are rarely involved in the construction of NC documents, although consultation on the most recent A Levels suggests future changes (Cf. Gove 2014). Standish uses the phrase 'policy makers and subject leaders' and attributes a conspiratorial intentionality to the group:

> since the early 1990s, educational policy makers and subject leaders have been seeking to fundamentally change geography teaching in UK and US schools, from a subject which encourages students to explore spatial concepts, ideas and skills, to an ethics-based subject concerned with the promotion of environmentalism, cultural diversity and social justice. (Standish 2008, p.i)

The evidence offered in support of his characterisation of school geography is based on analysis of textbooks, examination specifications, and NC documents. Therefore, Standish's, and Winter's critiques of school geography ought to be qualified as critiques of official representations of school geography.

Interestingly, Standish was among those working with thinktank Civitas to produce the most recent (2014) GNC; a curriculum taking a different approach to the 2008 version by providing 'a list of content to be covered' (Rawding, 2015, p.76). In a significant policy change, the 2014 NC is only statutory for maintained schools: it is non-statutory for free schools and academies (DfE 2014a). The majority of secondary schools are either free schools or academies, and there is a clear policy for the expansion of such schools for whom the NC does not apply: 'the government believes that all schools should become free schools or academies' (DfE 2014b, p.1). The 2014 curriculum and associated policy change were introduced after my fieldwork, and so the departments and teachers discussed here should be seen in the context of the (statutory) 2008 GNC.

1.3: Geography education research 'knowledge debate'

The 'knowledge debate' (Biddulph 2011, p.89) in geography education research has been stimulated by on-going reviews of the NC in England and Wales, and by broader discussion of knowledge in social realism. Contributions to the knowledge debate in geography education research have contended, following debates in social realism (Maton 2014; Moore et al. 2010; Young & Muller 2007; Maton 2000), and other theoretical perspectives, such as pragmatism (Biesta 2014), that there is a need to 'bring knowledge back in' (Young 2008). Forceful critiques of knowledge in school geography have been made, including charges of 'objectivism', 'scientism', and 'naïve realism' (Firth 2013; 2012; 2011a; Morgan 2013, 2011; Butt & Collins 2013; Lambert 2011; Winter 2009; Winter & Firth 2007).

Critiques of school geography are also stimulated by engagements with academic geography. For example, Firth (2007) relates Heyman's (2007; 2000) and Castree's (2003) concerns – that undergraduate pedagogy does not reflect the different epistemological perspectives of the discipline – to school geography. In Heyman's (2000) terms:

> Little space has been devoted to discussing the implications of new epistemologies for classroom practice and pedagogical theory. Despite all the post-reflexivity on the research process, academic knowledge is still overwhelmingly treated instrumentally...conceived of as information that is unproblematically transmissible as a commodity. (p.299)

Here, a disconnect is suggested between the epistemological stances developed in the discipline, and the way in which the discipline is taught to undergraduates. The

contrast between 'new epistemologies' and 'information' is echoed in discussions of the relationship between school and academic geography. Similarly, Heyman's contention that 'little space has been devoted to discussing the implications of new epistemologies' has been echoed by geography education researchers. For example, Morgan and Lambert (2011) argue that 'thinking skills, learning to learn and the emotional dimensions of learning [have] assumed more immediate or urgent attention than a critical gaze on the material content of lessons' (p.281). Consequently, a narrowly defined focus on pedagogy 'has marginalised knowledge in the practical day-to-day work of making the curriculum' (p.281). In Firth's (2011b) terms, 'geographical knowledge…has been marginalised by the exigencies of everyday practice and the imperatives of policy' (p.312): 'knowledge has receded from view in geography classrooms' (Firth, 2015, p.64). Alternative contributions to the knowledge debate, while disagreeing on the purposes of geography education, nevertheless agree that knowledge has been given insufficient attention (Wright 2013; Standish 2012; 2008). A marginalisation of knowledge in initial teacher education has been argued to be problematic both in geography (Corney 2000; 1983), and more widely (Ellis 2007).

Interactions between social realism (in particular, as presented by Young), and geography education research includes the debate between Young and Roberts, with Roberts (2014) arguing that knowledge prescribed in school curricula is only 'potentially powerful' (p.18) because of the indirect relationship between what teachers teach, and what students learn. She analyses academic urban geographies against Young's criterion of powerful knowledge, summarised as being:

- Conceptual as well as based on evidence and experience;

- Reliable and in a broad sense 'testable' explanations or ways of thinking;
- Always open to challenge;
- Organised into domains with boundaries that are not arbitrary and these domains are associated with specialist communities such as subject and professional associations;
- Often but not always discipline-based

(Roberts 2014, p.3)

In her comparison between Young's definition of powerful knowledge and the discipline of geography, Roberts highlights geographers' interest in, and respect for everyday knowledge. She offers examples of university modules on everyday geographies, and cites Cloke et al.'s (2005) encouragement for undergraduates to be 'aware of the human geographies wrapped up in and represented by the food you eat, the news you read, the films you watch, the music you listen to, the television you gaze at' and to 'think about how and what you read in books or articles connects or doesn't to your everyday life and why that might be' (p.602). Cloke et al. (2013) introduce the most recent edition of their text by arguing that geography is a

> fundamentally intellectual endeavour concerned with understanding the world in which we live and upon which our lives depend...Geography is all around us, a part of our everyday lives...not confined to academic study but includes a host of more popular forms of knowledge through which we come to understand and describe our world. (p.xvi)

Here they make explicit a blurring of boundaries between 'academic study' and 'more popular forms of knowledge'. Stating that 'Geography' is 'not confined to academic study' creates a tension against dichotomous categorisations of powerful and everyday. A similar argument is made by Catling and Martin (2012) who provide a strong case for the importance of students' geographical knowledge or 'ethnogeographies' in the construction of school geography.

Young and Muller (2013) also contend that powerful knowledge is 'real', which may be tested by 'whether the world answers to knowledge claims' (p.241). Representation, construction, and 'the real' have been problematized by academic geographers (McCormack, 2012), and Roberts follows Daniels et al. (2008) in arguing that geography is not a 'direct reflection of a straightforward reality that is out there but a social construction...interpretations of the world differ from different vantage points in time and space' (p.2). Roberts (2014) concludes that Young's distinction between the powerful and the everyday 'cannot be made so clearly in relation to either school or academic geography' (p.19).

All of the academic geographers Roberts cites are human geographers, and the school topics she discusses are also human geographies. This may be significant. Geography as a whole (rather than just human geography) may be particularly interesting when considered from Bernstein's perspective of vertical and horizontal knowledge structures, because geography is often defined as a hybrid discipline (Demeritt 2005), characterised by an internal distinction between human and physical. There are structural differences between physical and human areas, including separate journals, funding bodies, and sometimes academic departments. It has also been argued that there are philosophical differences, broadly associating physical geography with a positivist stance and human with more constructivist, contingent assumptions about knowledge (Whatmore 2002). The implications of this for the school subject may be significant because school geography is a single subject and so teachers are employed as 'geography teachers', without the prefix of human or physical.

1.4: Outline of the study

Contributions to the knowledge debate in geography education research broadly agree of a need to give greater attention to knowledge in the school subject. The relationship between the academic discipline of geography and the school subject is contested, and social realism foregrounds an interest in the nature of this relationship. Within geography education research there is a consensus that academic and school geography are disconnected. However, I suggest that evidence has primarily been drawn from analysis of official representations of school geography, and so these critiques might be qualified, and restricted to what Bernstein refers to in his pedagogic device as the 'ORF' (Official Recontextualising Field). They may also be informed by analysis of teachers' knowledge work; the field termed the 'PRF' (Pedagogic Recontextualising Field) by Bernstein.

The movement – or recontextualisation – of knowledge into school subjects in Bernstein's, and selected social realists' terms, is explored in chapter two. The terms curriculum making and recontextualisation are also considered in relation to one another, defining curriculum making as a longer-term process, and recontextualisation as shorter-term. Distinctions between powerful and everyday knowledge are considered further, primarily by engaging with Bernstein's (2000) conceptualisations, and Maton's (2014) development of vertical and horizontal knowledge-knower structures. The discussion of knowledge, its recontextualisation into school subjects, and potential categories by which it might be analysed is followed by a review of the literature on geography teachers' conceptions of the subject. The research questions I

am asking (presented at the end of chapter two) seek to explore teachers' conceptions, and recontextualisation of knowledge, and their views on the relationship between academic and school geography. These questions offer potential to develop understandings about an aspect of school geography (that is, teachers, the PRF), providing a detailed, empirical contribution to the knowledge debate in geography education research.

Although there is limited research on geography teachers' conceptions of knowledge, studies have developed understandings about teachers' broader conceptions of the subject. In particular, Brooks' (2012; 2010; 2007) work suggests that, individually, teachers have strong beliefs about geography, and these beliefs are often translated into the ways in which they teach school geography. One underexplored level of analysis is the school subject department. The strength with which teachers seem to hold beliefs about the subject, combined with the differences between their views suggests that the department may be an interesting level of analysis to consider.

The ethnographic approach I developed to address the research questions is presented in chapter four. Chapters five, six, and seven then offer detailed descriptions of the three departments (Town Comprehensive, Beach Academy, and City Academy) and teachers I studied. The format of these three chapters is consistent; each begins with a summary of the space-times of the department, understanding space-times as 'constituted through the social, rather than as dimensions defining an arena within which the social takes place' (Massey 1999, p.262). That is, 'physical' descriptions of the departments are portrayed in close relation to the social constitution of these places. Non-physical departmental space-times of virtual shared areas, and interactions

between these space-times and teachers' recontextualising principles are analysed. After building up pictures of the department I then present individual teachers, with the aim of giving enough broad description to give a sense of the person, and, engaging with this description, analyse their conceptions of knowledge.

Chapters five, six, and seven provide a detailed background against which chapters eight and nine might be read. The analysis of specific situations, teachers, and concepts in chapters eight and nine is enriched by the images of these departments and teachers developed through chapters five to seven. In chapter eight I offer a model of degrees of recontextualisation, which describes the ways in which the teachers in this study work on the knowledge they teach. The model (presented – in particular for consideration by geography teachers – in Puttick, 2015a) moves from one degree, in which the original resource is presented as the teacher found it, through to five degrees, in which the knowledge presented has become a part of the teachers' embodied subject knowledge.

In chapter nine I present an analysis of the ways in which knowledge is legitimated. Testimony, deductive reason, and perception are all used by these teachers, and I offer several detailed analyses of the ways in which these different approaches are used. I then foreground the role of testimony, and the multiple locations of chief examiners (as powerful testifiers) within Bernstein's pedagogic device. I relate this analysis of accreditation to distinctions between horizontal and vertical knowledge structures. My argument (now presented in Puttick, 2015b) is that the powerful role played by chief examiners, and the importance given by these teachers (and students) to accreditation may limit the knowledge to which they have access to horizontal structures, reducing their access to powerful knowledge.

2: Knowledge recontextualisation

A recent move in geography education research has seen teachers increasingly referred to as curriculum makers (Biddulph 2013; Brooks 2013; Butt & Collins 2013; Catling 2013; Lambert 2011). In the broader context of shifting relationships between central government and teachers (Jeffrey & Troman 2012; Ozga 2009; Ball & Bowe 1992), including the existence of the NC (Winter 2014; 2012; 2006; Rawling 2001), the term curriculum makers has been used to attribute a degree of power and responsibility to teachers, with connotations of past curriculum projects (Stenhouse 1971). Its use might be understood in terms of the (hi)story told by Oancea (2014); a discursive act on behalf of teachers who otherwise have largely been silent in debates about their professional knowledge. Use of the term curriculum makers also parallels discourses in recent curriculum policy referring to teachers as agents of change (Menter & Hulme 2013; Priestley et al. 2013; Sinemma & Aitken 2013). Discussion of curriculum makers has been a component in arguments making a case for increased attention to be given to the content of school geography lessons (Lambert & Hopkin 2013; Lambert & Morgan 2010; Firth 2011b). As an area of research, geography teachers' curriculum making continues to be identified as a 'significant gap in geography education research' (Roberts, 2015, p49.). The aim of this thesis is to explore aspects of teachers' curriculum making; specifically, their recontextualising work. I do this starting from a belief that teachers' conceptions and uses of knowledge are potentially

> highly complex, and already engaged in intelligently, critically, reflectively by teachers; and the point of curriculum theory should be to help the practitioner to be more intelligent, more critical and respect this complex reality, already conceptualized in the rich and subtle language that an intelligent teacher has. (Pring 2004, p.176)

An implication of this view is that teachers' engagement with knowledge is important to consider when discussing school subjects. Agreeing with Pring's position also locates the current study in a tradition of educational research that seeks to be useful to teachers, through the presentation of detailed cases against which practice might be reflected upon and understood better (Puttick 2014).

I am using the term recontextualisation following Bernstein (2000) to refer to the work done by teachers in taking knowledge from one site and moving it to another. He uses the term broadly, describing his critics as 'recontextualisers' of his texts, who:

> …sometimes perform priestly functions of exorcism, celebration, charismatic divination, and ritual succession; sometimes warrior functions as guardians of the old and frontiersmen of the new; sometimes they function as thought police, the Farenheit corps, and sometimes they perform more humble functions, such as weeding, keeping borders neat, transplanting and exotic potting, the gardeners and garnerers of the field. (Bernstein, 1990, pp.7-8)

There is a substantial tradition of discussing the movement of knowledge into school curricula; Dewey terms this 'psychologising', Bruner 'conversion', and for Schwab it is 'translation' (Deng 2007). For Bernstein the contents of school subjects are 'constructed by the recontextualising process of the transmitter(s) which creates a specific modality of the specialised knowledge to be transmitted and acquired' (Bernstein, 2000, p.173). In following Bernstein's description of this process as recontextualisation – including his related conceptualisation of school subjects through the pedagogic device – I have also followed, to some extent, his orientation towards research. He describes holding

> ambiguity in the structure of the concepts. So long as the analysis keeps moving, I believe that I can clear up some of the conceptual mess. In fact, of course, one can rarely do this without research. Conceptual elegance is attractive, but only when it has the living quality which comes from empirical exploration. (Bernstein, 2003, p.4)

Bernstein's relationship with empirical research has sparked debate. At times he emphasises a need to, firstly, understand practical realities: 'I have always found it difficult to move towards a more general macro-analysis until I had some grip upon the local relationships at the micro-aspect' (Bernstein 2003, p.2). However, he often favours highly generalised, abstract discussion of entire systems or societies. Critiques of his work (Pring 1975; Gibson 1977; Trowler 2014) have argued that it 'fails to be about curriculum reality' (Pring 2004, p.176). The current study seeks to be about curriculum reality, an important aim being to help 'make sense of the practical reality the teacher is working in' (p.177). More recent applications and extensions of Bernstein's analytic tools (Maton 2014; 2004; Singh 2002; Atkinson 1995), are increasingly about 'practical reality', including through a growing body of work related to LCT (Legitimation Code Theory).

In the process of recontextualisation, Bernstein argues that knowledge is 'ideologically transformed…from an actual discourse, from an unmediated discourse to an imaginary discourse' (Bernstein, 2000, p.33). Recontextualising principles 'selectively appropriate, relocate, refocus and relate other discourses to constitute [their] own order' (p.33). The reference to 'other discourses' indicates that, rather than being restricted to a single, specialised area of research, what is available to recontextualisers is the 'totality of practices which is called [geography]' (p.34). Possible areas of that

which is recontextualised might extend beyond the discipline, and Bernstein anticipates that

> as part of the move to make specialised knowledges more accessible to the young, segments of horizontal discourse are recontextualised and inserted in the contents of school subjects. (Bernstein, 2000, p.169)

Horizontal discourses (discussed below) are added to Bernstein's descriptions of that which is recontextualised; he also includes practices, texts, and knowledges. I have elsewhere referred to that which is recontextualised as 'sources' of knowledge (Puttick, 2014). 'Resources' may better describe that which teachers recontextualise, although there is a danger of narrowing a concept that needs to retain a range of possibilities. Research in different traditions – such as actor network theory – employs a range of terms in attempting to describe that which teachers recontextualise. In a study of teachers' collaborative knowledge work in recontextualising AfL (Assessment for Learning) materials for use in their lessons, Hermansen (2014) refers to that which teachers recontextualise as artefacts, tools, and objects. The question about what to call that which teachers recontextualise is not resolved here, and throughout I refer to resources and sources interchangeably (for example, in the departmental focus groups I introduced the items to the teachers as 'sources' of knowledge, and I have retained the use of this term in the discussion). The aim is to investigate what it is that teachers recontextualise into the content of their lessons, where this comes from, and through what processes teachers recontextualise it.

2.1: Recontextualisation and curriculum making

Recontextualisation is a part of, but distinguishable from curriculum making. The distinction is temporal; recontextualisation might be seen as short term, whereas curriculum making is a longer term process. Operating at the level of whole schemes of work, curriculum making is focussed 'on the creation of medium-term planning' (Catling, 2013, p.17). Curriculum making has been represented visually by the GA (Geographical Association), and is presented using Catling's (2013) adaptation in Figure 1.

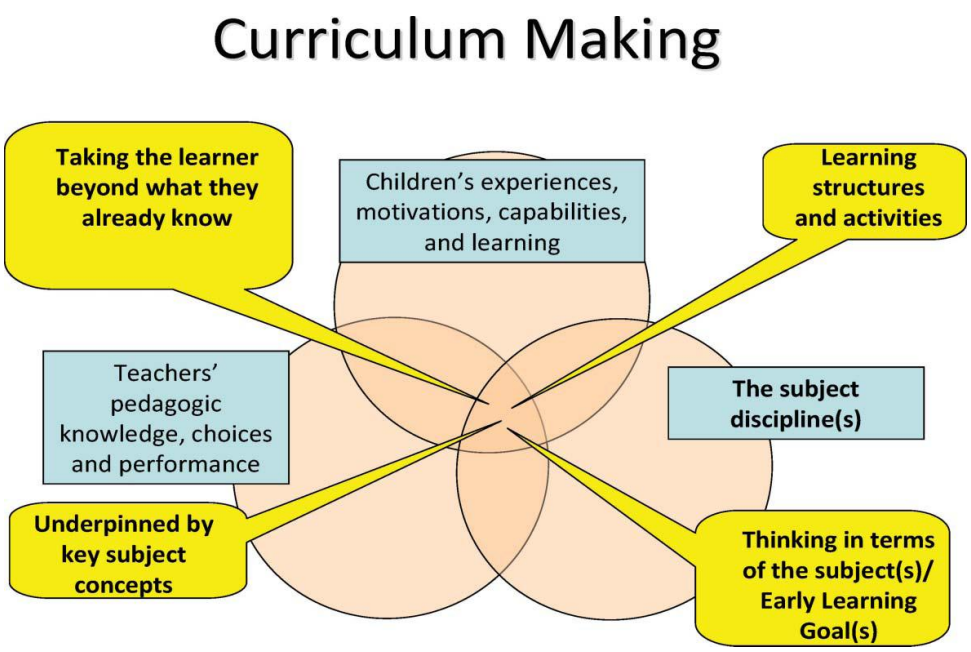


Figure 1. Curriculum Making (Catling, 2013, p.6; GA, 2012)

I described the use of the term curriculum makers as a move to assert the importance of teachers. The multiple areas teachers need to consider in the GA's curriculum making diagram illustrate the potential complexity of the process, and thus the high level of professional knowledge required of teachers. Something of this complexity might be present in each act of recontextualisation. Bernstein's pedagogic device frames micro processes (here, acts of recontextualisation) within a wider system.

2.2: The pedagogic device

Bernstein's (2000) discussion of the pedagogic device begins with – and the device is an attempt to answer – a question he poses: 'are there any general principles underlying the transformation of knowledge into pedagogic communication, whether knowledge is intellectual, practical, expressive, or official knowledge or local knowledge?' (p.25). Distinctions are made between the fields, actors, and sites involved in the production and transformation of knowledge into the content of school lessons. The pedagogic device is presented in an adapted form in Table 1.

Rules (principles)	**Fields**	**Actors**	**Typical sites**
Distributive	**Production of discourse** *academic geography*	**Producers** *academic geographers*	*Research papers, conferences, laboratories*
	Recontextualising *of knowledge for school geography (ORF/PRF)*	**Recontextualisers** *divided into ORF and PRF*	
Recontextualising	*ORF (Official Recontextualising Field)*	*ORF: the state and its selected actors and ministries*	*Geography National Curriculum*
(geography teachers' recontextualising principles)	*PRF (Pedagogic Recontextualising Field)*	*PRF: (including school geography teachers)*	*(Schemes of work, teaching resources)*
Evaluative	**Reproduction**	**Acquirers** *school geography students*	*Classrooms, examinations*

Table 1. Summary of Bernstein's pedagogic device, adapted from Bernstein (2000, p.37), and Maton and Muller (2007, p.18). The grey shaded area shows the focus of the current study.

It is adapted from Bernstein's summary by making explicit his distinction between the ORF (Official Recontextualising Field) and PRF (Pedagogic Recontextualising Field),

providing examples of actors, and, following Maton and Muller (2007), typical sites. Bernstein distinguishes between three areas of rules which he also refers to as principles and discourses; distributive, recontextualising, and evaluative. These rules are presented as hierarchically interrelated; each set is associated with different actors, who have different functions, and operate in different fields, across different sites.

Moving from left to right across the table, and starting at the top, the 'distributive rules translate, in sociological terms, into fields of production of knowledge with their own rules of access' (Bernstein 2000, p.33). Similarly, the recontextualising rules

> create recontextualising fields…[and] agents with recontextualising functions. The recontextualising functions then become the means whereby a specific pedagogic discourse is created. Formally, we move from a recontextualising principle to a recontextualising field with agents and practising ideologies. (p.33)

Recontextualising rules are closely linked to evaluative rules; the specific, unique realisations of the pedagogic discourse at the level of the classroom, happening at a particular time, with a particular text, in a particular space.

In terms of where knowledge is recontextualised, Bernstein makes a distinction between the ORF and the PRF, and primarily locates teachers within the PRF. A similar distinction to Bernstein's ORF/PRF is made by Stenhouse (1975), who refers to two

> different views of the curriculum. On the one hand the curriculum is seen as an intention, plan or prescription, an idea about what one would like to happen in schools. On the other it is seen as the existing state of affairs in schools, what does in fact happen. (p.2)

Although the distinction between the ORF and PRF has not been used in discussions of the relationship between academic and school geography, the literature discussed

below in relation to school geography is argued to have prioritised the ORF by assuming that the ORF dominates the PRF, and that 'school geography' is reducible to the ORF.

2.3: Knowledge structures

The types of knowledge that are moved across the pedagogic device are categorised by Bernstein as horizontal or vertical knowledge structures (Figure 2), drawing on Durkheim's (1915) dichotomy between the profane (horizontal) and the sacred (vertical): categories used to describe 'two types of knowledge that relate the material and immaterial worlds' (Singh 2002, p.574).

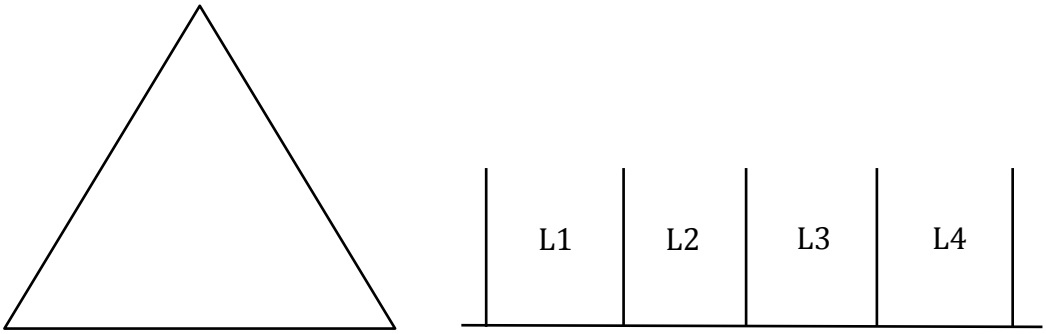


Figure 2. Vertical and horizontal knowledge structures (adapted from Maton, 2014, pp.68-70)

The tip of the triangle (vertical discourses) 'represents the number of axioms or propositions and the base represents the range of empirical phenomena covered by theories based on those axioms' (Maton 2014, p.51). Vertical discourse, which Bernstein further divides into its own horizontal (social sciences) and vertical (natural sciences) knowledge structures represents the sacred and is constructed of arbitrary conceptual relations, which contrast against local, fluctuating particulars.

Horizontal discourse is defined as being common, context-dependent, local knowledge, concerning meanings coming

> directly out of bodily encounters with the world, with other people, with reality. It is a world of flux and of particulars, and it is driven by 'crude thought' by the most practical and direct wisdom: proverbs, prudence, street lore. (Muller & Taylor 1995, p.263)

Rather than building cumulatively (towards a 'tip' – a theory of everything), horizontal discourses speak different 'languages' (represented as L1, L2, and so on): a burgeoning of terms making claims at similar levels of generalisability.

Bernstein makes a further division within vertical discourses (hierarchical and horizontal knowledge structures), again juxtaposing them:

> ...one is coherent, explicit and systematically organised; and the second form takes the form of a series of specialised languages with specialised modes of interrogation, specialised criteria for the production and circulation of texts, e.g. the Natural Sciences and the Humanities and Social Sciences. (Bernstein 2000, p.160)

Bernstein also considers there to be a 'resemblance, at a fairly abstract level, between Horizontal Knowledge Structures...and Horizontal discourse' (p.165); in both cases he suggests the contents are volatile, and characterised by multiple languages. For sociology he includes Marxism, and post-modernism as examples of these languages. Horizontal structures/discourses also involve the acquisition of tacit knowledge or 'gaze'. A 'gaze' is defined as a 'particular mode of recognising and realising what counts as an 'authentic' [geographical] reality' (p.164). The notion of gaze is further explored by Maton through his analysis of knower structures.

2.3.1: Vertical, powerful knowledge

The distinction between horizontal and vertical discourses is strongly echoed in Young's (2008) contrast between powerful knowledge (vertical) and everyday knowledge (horizontal). He argues that the aim of schooling is to introduce all students to powerful knowledge. Young and Muller (2013) use the terms powerful knowledge and specialised knowledge synonymously, characterised as knowledge that is:

1. *Systematically revisable*, primarily by disciplinary communities, who develop 'robust and generally agreed-upon way[s] to distinguish the best proposition from other likely contenders' (p.236).

2. E*mergent*, by which they mean that 'specialised knowledge is produced by social conditions and contexts but cannot be reduced to them' (p.237); they go on to consider an opposing view of the 'emergence' of knowledge, and reject the view that 'no knowledge, even natural scientific knowledge, can emerge as fully independent from its context' (p.237). The sense in which Young and Muller want to argue for a form of powerful knowledge as emergent has clear parallels with critical realist use of the term as

> the process of constituting a new entity with its own particular characteristics through the interactive combination of other, different entities that are necessary to create the new entity but that do not contain the characteristics present in the new entity...The whole is more than the sum of its parts. (Smith 2010, pp.25–26)

Social context of knowledge production is seen as important, but cannot be used to 'debunk' knowledge claims.

3. *Real*, which they define as it being 'about something other than itself about which it says something in a robustly reliable way' (Young and Muller, 2013, p.238), with the

reliability drawing on property (1). The 'test of this reality [is] whether 'the world' answers to knowledge claims' (p.238), explicitly defining the world as more than 'nature', and also including 'cultural kinds', acknowledging a debate which they see as 'not settled' in which it is argued that knowledge about cultural or social phenomena 'can only become reflexively – that is partly – distanced from it' (p.238). They assert that 'conceding that the human and social sciences are about cultural [phenomena], however, does not mean that they cannot be objective, nor that the worlds that they provide an account of are not real' (p.238).

4. *Material and social*, in the sense that it 'is produced in particular socio-epistemic formations' (p.238), normally in the forms of university-based disciplinary communities. They argue that the 'internal rules of solidarity, hierarchy, and truth norms...holds in place the criterial or disciplinary norms...constitute of specialised knowledge' (p.238).

They argue such knowledge is universal; 'for example, physics is the same everywhere' (p.232), articulating a position for the social sciences that might also meet their criterion of powerful knowledge. In making this argument they place considerable weight on the role of 'methodological rigour as policed by the relevant peer community' (p.244), particularly through peer review. They welcome a 'tightening up on the importance of ensuring anonymity in patrolling the boundaries of what is and what is not admissible as social science' (p.244). Ultimately, they argue that distinguishing between knowledge of natural and social phenomena is a 'red herring' (p.244). Instead, they suggest that 'the distinction that matters is between those disciplines that, irrespective of their received conceptual reservoirs, are robust enough to gain public trust and those that do not. This is the social heart of powerful knowledge' (p.245).

However, the history of science poses questions for this aspect of their position. Ideas which might now be regarded as powerful knowledge often initially failed to gain public trust. Calling on the public also raises questions about the relation between the importance placed on specialised, disciplinary communities, and the potential for the public (presumably using 'everyday' knowledge) to judge and legitimate powerful knowledge.

2.4: Knowledge-knower structures

A development of Bernstein's conceptualisation of knowledge structures is in the dual consideration of 'knowledge-knower structures' (Figure 3), which Maton (2007) argues can help 'shed light on the bases of intellectual fields' (p.89). His conception of knower structures is presented as complementary to Bernstein's knowledge structures. Social realism thus 'views knowledge-producing fields' through relations between concepts, methods, and actors (Maton et al. 2010, p.5).

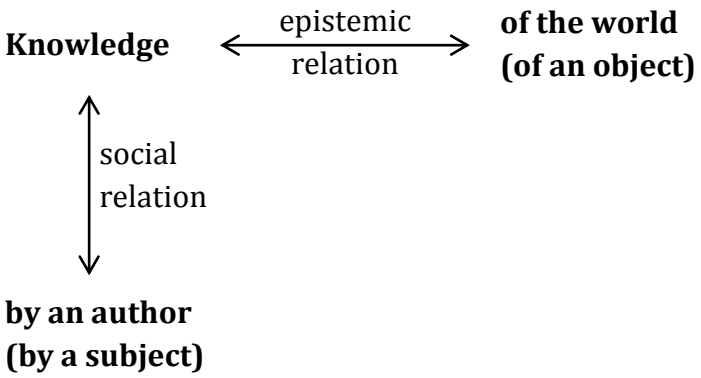


Figure 3. The epistemic relation and social relation of knowledge (Maton, 2000, p.155)

A strength of this dual focus on knowledge and knower structures is the ability to address a longstanding critique of the sociology of knowledge for reducing knowledge

to its context of production. Instead, Maton (2014) argues for analytically distinguishing between:

> epistemic relations between practices and their object of focus (that part of the world towards which they are oriented); and social relations between practices and their subject, author or actor (who is enacting the practices). For knowledge claims, these are realised as: epistemic relations between knowledge and its proclaimed objects of study; and social relations between knowledge and its authors or subjects. (p.29)

Knowledge-knower structures are illustrated through 'two cultures' (Table 2) in which a scientific culture exhibits a hierarchical (or vertical) knowledge structure; providing increasingly broad generalisations, and cumulatively building knowledge.

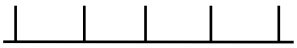
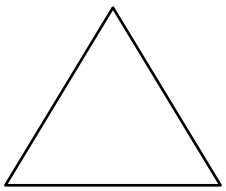
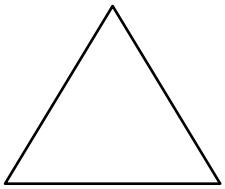
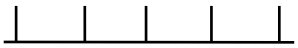
	Humanities culture	Scientific culture
Knowledge structures		
	Horizontal	hierarchical
Knower structures		
	hierarchical	Horizontal

Table 2. The 'two cultures' as knowledge and knower structures (from Maton, 2014, p.70)

The humanities culture is contrasted against this as the multiplying of languages. Knower structures are described in the same hierarchical/horizontal terms, referring to the types of knowers seen as legitimate. The hierarchical humanities culture is described as favouring knowers with a tacit 'gaze', the ideal type of which is the English

Gentleman who belongs to a particular social class and embodies certain tacit dispositions.

Scientific cultures are horizontal in that such fields are seen as meritocratic; scientific knowledge might be known by all as knowledge claims are based on evidence and reasoning rather than taste, gaze, or dispositions.

School music has been analysed through this framework (Lamont & Maton 2010), offering some explanation of the low take up rates of the subject in England. Research on knowledge-knower structures in history have 'examin[ed] the ways in which history students are apprenticed into relevant constellations of meaning' (Martin et al. 2010, p.433), including an appreciation of the importance of developing an appropriate 'gaze'.

2.4.1: Legitimation Code Theory (LCT)

Placing epistemic relations alongside social relations foregrounds questions about 'what can be legitimately described as knowledge (epistemic relations); and who can claim to be a legitimate knower (social relations)' (Maton 2014, p.29). The sites of knowledge production, recontextualisation, and reproduction presented by Bernstein's pedagogic device are slightly reconceptualised through LCT (Figure 4). Bernstein prioritises knowledge producing fields, described above as being presented in a hierarchical relationship with school subjects (the former being 'above' the latter).

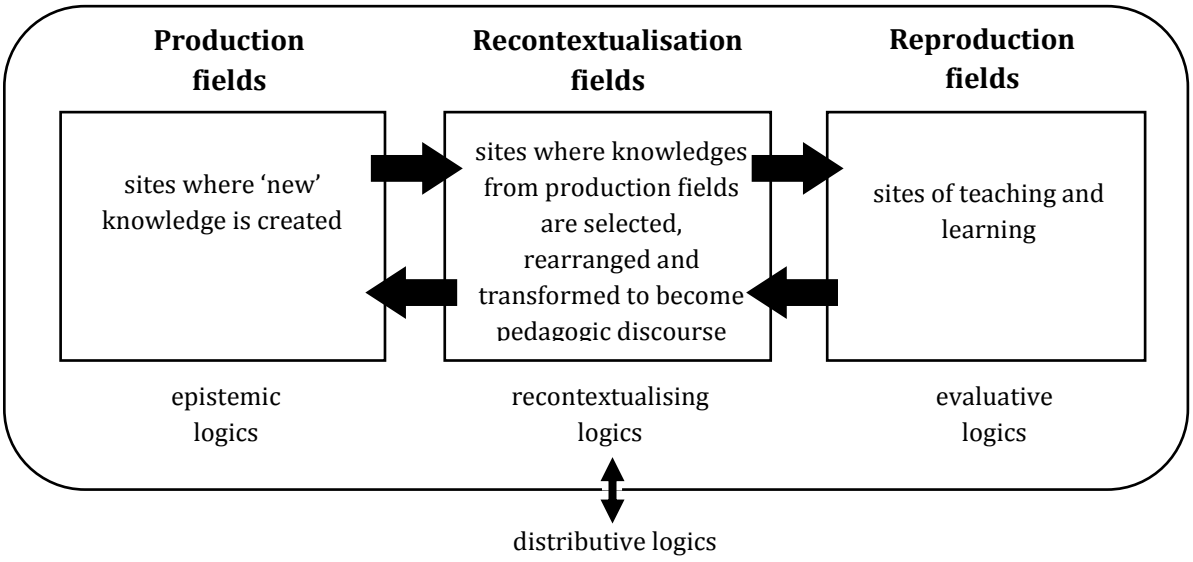


Figure 4. Arena created by the epistemic-pedagogic device. From Maton (2014), p.51

One problematic implication of this focus on disciplines is that it 'foregrounds issues that are typically secondary to pedagogic concerns in recontextualization and reproduction fields: the epistemological and ontological bases of knowledge claims' (p.49). Whereas, the legitimation of knowledge claims are of interest to all involved in the epistemic-pedagogic device (Figure 4), whether producing, recontextualising, reproducing, or evaluating knowledge.

The arrows showing movement of ideas and practices across the device are illustrative rather than exhaustive, and the device is meant to convey something of the conception as dynamic, and of the fields as interrelated. One aim of this development of the pedagogic device is to 're-emphasise the fallacy of 'reading off' the practices of one field from another, such as learning from research' (p.51). That is, the relationship between academic disciplines and school subjects is problematized, in a similar way to Stengel's

(1997) unease at the way in which the contestable curricular concepts of subjects and disciplines are used together in research (Puttick 2013, pp.354–355).

Critiques of knowledge in school geography are now discussed from the perspectives of the relationship between academic and school geography, and official representations in policy. An argument is made that teachers' subject knowledge and their relationship with academic geography has been underexplored by research. It is suggested that concerns expressed about knowledge in school geography have primarily drawn upon evidence from official representations of the subject (ORF), and so may be refined and challenged by evidence about teachers (PRF).

2.5: Research questions

The current study was stimulated by an engagement with the on-going 'knowledge debate' in geography education research, and the strong critiques that have been made of knowledge in school geography. Bernstein's distinction between the ORF and PRF was argued above to be an important one for debates in geography education. I suggested the distinction qualifies some existing critiques of school geography as, primarily, referring to official representations of the subject, suggesting the need for further research into the PRF. With the aim of offering a detailed empirical contribution to the knowledge debate in geography education research, I am asking the following research questions:

RQ1: How do teachers describe the nature and scope of geographical knowledge?

This is a broad question, seeking to develop understandings about knowledge from actors in the PRF (teachers). 'Describe' is used in an inclusive sense, including verbal and non-verbal descriptions, both to the researcher and others, such as students, and other teachers. Geographical knowledge is also understood broadly, to potentially include disciplinary, school based and other knowledges.

RQ2: What recontextualising principles do teachers enact?

a. **What do teachers recontextualise into the content of their school geography lessons?**
b. **Through what processes do teachers recontextualise knowledge?**

The concept of recontextualising principles was presented above in the context of the epistemic-pedagogic device, positioning teachers at an interface between academic disciplines (as producers of knowledge) and school subjects (in which knowledge is recontextualised). The relationships between these fields are explored further in RQ3. RQ2 offers an opportunity to explore teachers' subject knowledge from a very practical perspective, asking where teachers go to for the knowledge they teach, and what these teachers do with this knowledge. RQ2.a is important to ask in order that the configuration of school subjects in relation to academic disciplines assumed by Bernstein's pedagogic device (a position also held normatively in the geography education literature) might be further interrogated.

RQ3: How do teachers describe the relationship between school and academic geography?

Existing critiques of knowledge in school geography were argued above to be premised on beliefs about the nature of the relationship between academic and school geography. The school subject is criticised because it does not reflect – or keep up with – developments in the discipline. I suggested a qualifying of these critiques by applying Bernstein's distinction between the ORF and PRF. The relationship between school and disciplinary fields is foregrounded in social realism, and evidence about teachers' views may offer an important contribution.

2.6: Conclusion to chapter two

This chapter has introduced the recent geography education research 'knowledge debate'. The broad field of social realism was introduced, and interactions between social realism and geography education research were outlined. The epistemic-pedagogic device was presented as one way of conceptualising the fields and actors involved in school geography, including the relations between academic disciplines and school subjects. Applying a distinction between the PRF and ORF to critiques of school geography it was suggested that existing critiques of knowledge in school geography primarily draw on evidence from the ORF, and, therefore, may be informed by evidence about the PRF; research on teachers and departments.

3: Teachers and departments

The pedagogic device is concerned with the movement of knowledge into school subjects, and in conceptualising this movement the device asks what actors are involved. Teachers are located within the PRF and have been under explored in critiques of school geography. Social realist extensions of Bernstein's pedagogic device draw attention to different types of knower codes that place questions about epistemology and social context alongside one another. Conceptualising a more complex relationship between knowledge and knowers seems to be a part of the change to Young's position in relation to disciplinary knowledge; first seen as knowledge of the powerful (1971) and later as a source of powerful knowledge (2008). Sociological interest in knowledge emphasises the importance of who produces, and who has access to knowledge. It is not the individual knower with whom Bernstein or social realists are primarily concerned, but with knowers; knowledge is seen as 'inescapably social', being 'produced and judged by socially situated actors' (Maton, 2014, p.11). School subject departments are teachers' most immediate social context, and teachers' subject knowledge – as understood by social realists – ought to involve consideration of this context. There is little research into geography teachers' recontextualising principles, or the ways in which they conceptualise knowledge. However, studies have explored teachers' broad conceptions of geography. This literature, reviewed below, is also relevant to the current study because in other areas such as the Nature of Science (NoS) research provides arguments that understandings of teachers' subject knowledge may inform discussions of these broader subject conceptions (Lunn 2002; Abd-El-Khalick & Akerson 2004; Khishfe & Abd-El-Khalick 2002).

3.1: School geography teachers

Research has explored the ways in which school geography teachers conceptualise the subject, primarily through large scale surveys or questionnaires. It is argued in this literature that teachers hold strong views about what the subject is, but with disagreement between teachers. Walford's (1996) research on teachers' conceptions of geography has been influential (Catling 2013; Morley 2012; Martin 2000). Over a five year period Walford asked 105 of his PGCE (Post Graduate Certificate in Education) geography students one open question: what is geography? He suggests the responses may be grouped into four main conceptions of geography: interactionist; synthesising; spatialist; and placeist. He argues that, individually, PGCE students articulate clear ideas about what geography is, but with considerable differences between them. This view of individuals holding strong ideas about what geography is supported by Barrett Hacking (1996), who refers to these views as geographical persuasions. However, she argues that trainee teachers 'suspend' their geographical persuasions when teaching school geography lessons: being aware they held individual assumptions about what geography is, they felt the need to aspire to a 'neutral' position, possibly feeling the perspective to be adopted ought to be derived more directly from the ORF.

A different model of influences on teachers' conceptions of school geography is offered by Lambert (2002), who suggests that teachers' geographical persuasions may exert a stronger influence at the start of their career: over time, teachers are socialised into an acceptance of the ORF. This view finds support in a study of four trainee teachers, exploring beliefs about and teaching of Education for Sustainable Development (ESD). Although changes to their views over time were not the focus of the study, one of the

trainee teachers offers a stark example. The trainee teacher is presented as, at the start of her PGCE, conceiving of knowledge as 'socially constructed, 'perspectival' and contested' (Winter & Firth 2007, p.352). This is contrasted with her later position on knowledge as 'objective fact' (p.352). Specific aspects of the school identified by Winter and Firth include 'the performativity culture', and the 'framework of objectivist knowledge content prescribed by the A2 examination specification' (p.352). They argue that 'in response to this situation, [the teacher] made a pragmatic shift in her focus from a view of knowledge as socially constructed, towards a view of knowledge as objective fact' (p.353). They also include the beginning teacher's more experienced mentor in their description of this shift, for emphasising the need to 'ensure that [the pupils] all had the information and notes they would need to be successful in the exam' (p.353). I located teachers above within the PRF, and described Lambert's (2002) suggestion that teachers are socialised into acceptance of the ORF over time. In the case described by Winter and Firth (2007), the distinction between the ORF and the PRF appears to break down: the mentor (PRF) might be seen as a part of the trainee teacher's socialisation into an acceptance of the ORF. It is a 'breaking down' in this particular case because of the distinction emphasised between the trainee teacher's beliefs as articulated in their first interview, and their latter descriptions of knowledge.

Studies in Portugal and Turkey also suggest that 'the school' is a complex notion that exerts a significant influence on teachers' conceptions of school geography. Alexandre (2009) extends what 'the school' is to include teachers' own experiences of school as students. He argues that neither recent education policy nor understandings of academic geography as experienced during undergraduate study are able to displace

prior conceptions of school geography. This presents a challenge to the assumptions about the power of the ORF (particularly the NC) discussed above. His study is based in Portugal, where there have been policy level efforts to create a closer relationship between school and academic geography: school geography has been explicitly 'designed to reflect the evolution of geography at academic level' (p.253). He portrays the developments of academic geography as being associated with changes in beliefs about the nature of knowledge; movements towards more situated, contingent epistemologies, which he contrasts against teachers' conceptions of geography as 'encyclopaedic', providing a list of places, facts and statistical data (p.254). A similar conclusion is drawn by Alkis (2009), on the basis of a survey that he coded using Catling's (2004) categories. Again, the trainee teachers' conceptions of geography (this time, trainee teachers in Turkey) seemed to be strongly based on their own prior experiences of school geography as students. Alkis argues that the trainee teachers in his sample developed 'traditional' views of school geography whilst they were school students, and these ideas were not significantly altered by experiences of academic geography as undergraduates: their conceptions of school geography 'survived any pluralist tendencies of their university courses' (p.132).

Both Alexandre (2009) and Alkis (2009) argue that the findings from their large scale questionnaires are limited by their methodology; their survey approach did not allow them to explore teachers' conceptions in the detail they believe is necessary. Therefore, they both strongly suggest that future research should adopt smaller scale, in-depth approaches. Brooks' (2010; 2007) research with experienced teachers provides an important example of a more in-depth approach.

3.1.1: Experienced teachers

Brooks' (2007) doctoral thesis reports her study of six individual, expert geography teachers. She argues that each individual held very distinctive beliefs about school geography (also referring to these beliefs as 'subject expertise' and 'subject knowledge'). Her findings suggest that school geography departments are an important level for further research. One reason is that her individual teachers are presented as having conflicting beliefs about school geography, raising questions about the ways in which different recontextualising principles might co-exist and be negotiated within departments.

Brooks' main research question is 'how can subject knowledge influence 'expert' geography teachers' practice?' (Brooks 2007, p.69), explored through lesson observations, documentary analysis, and interviews. She suggests that five cultures of influence affect the nature of teachers' subject knowledge: understandings of geography; beliefs about geography education; responses to educational policies; school culture; and personal culture (p.58). Brooks defines culture following Becher and Trowler (2001) as 'sets of taken-for-granted values, attitudes and ways of behaving, which are articulated through and reinforced by recurrent practices among a group of people in a given context' (p.23). The department is suggested by her to be an important aspect of school and geography education cultures.

Brooks celebrates many aspects of her expert teachers' practice. However, she also argues that her data suggest that 'knowledge contents' have been given insufficient attention, being highly critical that her

> case teachers are not aware of the different philosophical and epistemological approaches to geography…[and] did not situate themselves within a broader discussion of approaches to geography. (p.293)

Referring to this finding as surprising and worrying, Brooks argues that its significance is hard to overemphasise: 'Being aware of different ideological traditions and the philosophical roots of geographical knowledge is surely essential for a specialist geography teacher?' (p.293). This is based on what the teachers did not say; similar to Firth's (2011) observation that the teachers did not talk about issues related to knowledge. Her research provides a strong argument that geography teachers' subject knowledge is an important, contested, and under-researched issue. She concludes that, in school geography, knowledge has been treated in an objectivist way which has restricted critical debate about it. Others have made similar criticisms of the field, suggesting that researchers and teachers have prioritised practical concerns about 'what works' (Cf. Rawling 2003).

Brooks also developed this argument through other research (Brooks 2006b). Summarising her observation of trainee teachers in this separate study, Brooks contends that 'in all cases, sufficient attention was not given to the subject knowledge that underpinned the lesson objectives, and importantly, how this was represented to students' (p.82). She cites Marsden's (1997) argument that 'the geography' is often missing from geography lessons, and Lambert and Morgan's (2005) contention that subject knowledge has been given less attention than the pedagogic adventure. Brooks

also argues that finding out more about the context in which the teacher works is important for developing understandings of their subject knowledge.

Within geography education research, the current study might be considered most closely related to Brooks' (2010; 2007) research, and is argued to build on her work by offering an alternative analysis of knowledge (that is, through an engagement with Bernstein and social realists), and giving further consideration to the social context – school geography departments – in which teachers work. This is a similar progression to Hopwood's (2006) rationale for extending understandings of students' conceptions of the subject through ethnography.

3.2: School subject departments

Teachers were described above as being 'geography teachers', rather than, for example, human or physical geography teachers. However, the literature on school geography teachers also indicates that teachers have strong preferences for particular aspects of the subject (Brooks 2012; 2010; 2007); preferences influenced, in Brooks' terms, by five cultures of influence. 'Departmental ethos' is included as a sub-section of geography education culture (2007, p.62). Another culture is 'the school', within which the department might also have been located. In locating departments as a sub-section, it is not used as a unit of analysis, following the dominant approach of the literature on teacher culture, which 'focuses principally on cultures at whole school level rather than within the smaller unit of secondary school subject departments' (Childs et al. 2013, p.38). Moves to situate Initial Teacher Education (ITE) increasingly within schools (DfE

2010) provides a further reason for better understanding teachers' most immediate social and subject context; the department.

3.2.1: Summary of research on school subject departments

Subject departments seem to be receiving increasing attention from research. Previously, arguments were made that the department had been largely 'invisible' to educational research (Siskin 1994; Ball & Lacey 1984). Research in school effectiveness has since argued for the importance of departments (Sammons et al. 1997), and smaller scale studies have also suggested that the department plays an important role in teachers' subject knowledge (John & Baggott La Velle 2004), which includes the types and sources of knowledge that are accepted. Studies of physical education (Sirna et al. 2008) and science departments (Childs et al. 2013; Burn et al. 2007; Melville & Wallace 2007) also support these suggestions, as do the experiences of PGCE English students that Ellis (2009) describes.

Subject knowledge is argued by Siskin (1994) to be a fundamental part of what defines a department. She presents departments as not merely organisational units, or particular areas of a school, but as entities which are predicated on subject specialisms with their distinctive approaches towards knowledge. Burn et al.'s (2007) analysis illustrates the potentially multiple, rich opportunities departments may offer for teachers' (particularly PGCE interns') developing subject knowledge:

> it was not simply the provision of the physical space that afforded our teachers rich opportunities for learning. As long-standing partners in Internship, both departments had a real commitment to working with and supporting beginning teachers. Further, within both departments there appeared to be an ethos

> characterized by trust, care and mutual respect, where doubts are shared without fear of feeling like a failure. Thus, in terms of seeking help with knowledge for teaching science, there was an openness to request and offer support. Indeed all members, including student teachers, were seen as legitimate sources of different kinds of knowledge and there was a recognition that this knowledge, held by members with widely different levels of experience, ought to be distributed, shared and debated. (p.434)

More recently, and building on this study, Childs et al. (2013; McNicholl et al. 2013) have explored how the 'cultures of the subject departments influence the learning of SCK and PCK' (Childs et al., 2013, p.36) in four school subject departments (two science, one history, and one geography). Including a geography department makes their study a rare example of research on school geography at this unit of analysis. There are differences between Childs et al.'s research, and the current study in sampling criteria and focus: they included departments with 'shared spaces and team rooms in order to focus in-depth on their cultures and, more importantly, on the key factors which appear to influence them, making them more or less effective sites for teachers' learning of SCK and PCK' (p.37).

Research into school subject departments is often highly evaluative. For example, larger scale studies such as those by Sammons et al. (1997) are concerned with judging effectiveness. In-depth studies also make frequent normative judgements on departmental cultures, for example, as supportive, caring, and friendly, or as exclusive, toxic, and highly gendered. Childs et al. (2013) highlight several potentially problematic aspects of teachers' reliance on unsystematic, unplanned encounters for their developing subject knowledge, although their departments are largely presented as friendly, congenial environments. In contrast, Melville and Wallace (2007) foreground

what they see as a lack of distribution, sharing, or debating of knowledge in the school science departments they study. Their research is located in the context of a shortage of science teachers, and (Australian) government policy of recruiting older, non-specialist teachers from other professions. These new teachers have no (or at least no recent) academic experience of science, but may have been working in related areas, such as the manufacturing industry. Collecting data over ten weeks by observing meetings, lessons, and informal conversations between staff, they are particularly interested in the ways in which new non-specialist teachers are socialised into a department. They provide examples of hidden assumptions the department shares that are hard for new members, particularly non-specialists to engage with: certain knowers are seen as being legitimate whereas others are not, and Melville and Wallace criticise the department for not making explicit the basis on which one is included or excluded. This is similar to the distinction between veteran- and novice- orientated departments made by Childs et al. (2013, p.37).

In their study of Physical Education (PE) departments, Sirna et al. (2008) focus on the ways in which trainee teachers experienced and interacted in the departmental office during their practicum. Their methodology involves an email survey, and interviews with beginning teachers. It is not based on observations of departmental spaces, or on the views of other teachers in the department. They found a set of highly nuanced social dynamics at play and highlight the significance of space in the enactment of department subcultures, describing the cultures of some PE offices as highly gendered and 'toxic'. They describe student teachers being socialised into acceptance of problematic attitudes including sexist jokes and a 'laid-back' approach towards teaching, for

example, by acting as if no one actually planned lessons. Asking questions about subject knowledge was overly keen and/or exposed oneself as having weak subject knowledge. They 'sacrificed asking questions…because they feared that it might make them seem incompetent or otherwise negatively affect their evaluation' (p.296). How one responds to the norms of a department are particularly important for a trainee teacher. For those in Sirna et al.'s study, the level they were awarded for their practicum was decided almost exclusively by the head of department. Gaining an 'excellent' judgement meant being accepted by the department. What constituted acceptance was contingent on the specific department and involved the problematic task of being 'seen and yet not seen' (p.295). The student teachers 'acknowledged the stress of trying to pick up signals and engage in various tasks to fit with the office community, particularly given the pressure of the suitability rating they would receive at the conclusion of the practicum' (p.295).

Different responses to departmental cultures are presented by Sirna et al. Most student teachers complied, either passively by nodding/laughing/not challenging, or actively, for example, by contributing their own highly gendered, sexist jokes. Over time 'normalising' processes happen, and 'certain practices, which were once disturbing, come to seem reasonable or 'natural'' (p.297). Sport was a major topic of conversation in the offices which may provide an example of subject knowledge overtly influencing the culture. To be in that space meant taking part in this discourse about sport and the legitimacy of ones place in the space was heavily influenced by ones involvement in sport. This was judged to have negative effects on the trainee teachers who felt unable to ask questions about teaching or other aspects of subject knowledge:

> In addition to seeming out of sync with the group, asking questions might lead to perceptions of incompetence or being over conscientious. Thus, it was deemed necessary to be cognizant of social and cultural dynamics in the office. (p.294)

Trainees' abilities to read these dynamics were particularly important because of the ways in which the other teachers might contribute towards the assessments of their ITE course. Power imbalances between teachers continue beyond ITE, as heads of department are involved in performance management appraisals. These dynamics may be complicated by roles held outside of the department, such as the deputy head also teaching geography classes.

Sirna et al. conclude that current ITE prioritises the development of pedagogy and assumes that students will naturally enter and become a part of the subject department. Suggesting this to be a naïve, simplistic position, they argue for further research to develop understandings of departments, and for these understandings to inform ITE.

3.2.2: Department organisational types

An important difference between departments is their organisational type, and the related differential access to resources, spaces, staffing, and autonomy. For example, while Childs et al. (2013) chose to only observe departments with a shared departmental office – concluding that these spaces can be very important – many departments do not have such spaces. A typology of department organisational types, developed by Busher and Harris (1999), is shown below. Geography departments are found in three of the configurations (federate, unitary and impacted).

1. Federate (several subjects which may work closely together, as their subjects are sometimes seen as having similar approaches towards knowledge. For example, a humanities department including history, geography and religious education).

2. Confederate (several subjects grouped together with shared management and possibly space, but with little in common between the subjects. For example, a department including citizenship, business studies, and music).

3. Unitary (a single subject department with its own HoD and space, neither affiliated to nor managed by a larger faculty).

4. Impacted (the same as 'unitary', but smaller. Busher and Harris include geography departments in this group, having only two or three designated rooms, with two or three full time teachers).

5. Diffuse (one subject area, with a designated HoD but without an identifiable base. For example, Personal, Social and Health Education (PSHE) may be taught across the school by teachers for whom PSHE is not part of their job title/description and only constitutes a minor part of their timetable).

Different organisational structures present different challenges and opportunities for teachers (Fenwick et al. 2013; Gunter 2001; Brown et al. 2000; Hannay & Ross 1999; Siskin 1994). There is greater potential for internal conversations between geography teachers about subject knowledge in unitary departments, and more potential for external conversations, between geography teachers and others, in federate departments.

3.3: Conclusion to chapter three

The geography education research 'knowledge debate' has critiqued a perceived lack of attention towards knowledge, and in particular a dislocation between school and

academic geography. I have argued that these analyses are primarily based on evidence from the ORF, and so may be developed by understanding the ways in which official representations are translated, clarified, and reconstructed by the PRF. The PRF is primarily made up of teachers and their departments. Research on secondary school geography teachers has developed understandings of teachers' conceptions of the subject, and there seem to be interesting differences between teachers. Evidence of teachers' socialisation into particular views of the subject also raises questions about the ways in which potentially contrasting conceptions of geography might co-exist within school subject departments. Locating this thesis in relation to Brooks' work, I have argued for the developments that might be offered through more in-depth ethnographic research with a more explicit focus on the department alongside individual teachers as the units of analysis.

4: Methodology

Sitting on a surprisingly low chair in City Academy's reception, having listened to the school's short promotional video for the third time, I was relieved to see Richard, the HoD, burst through the door. 'Hi Steve! To be completely honest, I'd forgotten you were coming today'. I was starting the first block of fieldwork in City Academy, having already spent several weeks in Town Comprehensive, and Beach Academy. This visit to City Academy was the last of the first round of fieldwork blocks; following this I would spend some time analysing data and reflecting on emerging findings before returning to Town Comprehensive.

In the description of the methodology that follows, attention is given to the sampling, methods of data collection and analysis, and ethical considerations. There is a danger, however, that this presentation makes the study appear more linear than it actually was (and certainly than it felt). In particular, that it was directed by a researcher more in control of the study (for example, in directing the exact timings of visits, and so on) than was the case. So, I want to begin this discussion by emphasising that all of the plans, observations, interviews, and so on – all of which depend on these departments and teachers, and my relationships with them – were conducted in the context of teachers' busy lives in which an ethnographer visiting was not a significant event; *I'd forgotten you were coming today.* The project began in a particularly open way because of the theoretical positions I had engaged with, and the literature surrounding the geography education research knowledge debate. The emerging nature of these discussions led to development of an ethnographic study offering the potential to develop an exploratory, descriptive account.

4.1: Ethnography

The ethnographic approach I have developed is most similar to that of the British sociology of education tradition (Jeffrey & Troman 2012; Ball 1981), and I have also sought to draw on academic geographers' engagements with ethnography (Paterson 2009; Crang & Cook 2007; Lees 2003), in particular, through their attention to the socially constituted nature of space-times. The methodology was iteratively developed for and through the study, and in this process I have been engaged in a kind of apprenticeship (Lave 2011). The specific methods were not fully-formed or, in some cases, even anticipated at the start of the fieldwork. Instead, they developed during the fieldwork in response to initial findings and emerging areas of interest. At least one month was spent in each department, split over two visits between November 2012 and June 2013. Planning gaps of time between fieldwork visits to the departments was important in designing space for reflection on emerging findings, and allowing these findings to inform subsequent fieldwork.

An early research question, later replaced, but which informed the development of the study was 'how might geography teachers' subject knowledge be conceptualised?' This question, drawn from Ellis' (2009) research on English teachers' subject knowledge was useful because of its breadth: the tentative, exploratory nature of 'might', combined with the ambiguity over who is doing the conceptualising, allowed the current study to be shaped, at least in part, by the teachers and departments being studied. For example, early in Town Comprehensive teachers described the significance of their virtual shared area (VSA), and so I developed a method of analysing them.

I am using the term 'ethnographic approach' to refer to a general disposition that seeks to be alert to, and engaged with everyday practices. The iterative design is an important part of this ethnographic approach, following Mills and Morton's (2013) argument that ethnography involves studies whose 'design can and should change over the course of a project, a constant weaving back and forth between a conceptual framing and the intellectual problem at issue' (p.43). I also want to argue that the current study is ethnographic because of the value placed on my embodied presence in the departments; my 'hanging-out', observing, participating – being – with these teachers. That is, I want to argue, firstly, that the responsive, developing combination of discrete methods are in a sense ethnographic because of their iterative, reflexive development from within the contexts they seek to generate data about, and secondly, that the study is ethnographic because I am used as an important source of data generation. I treated the sights, sounds, feelings and so on that I saw/heard/felt in these departments as significant, which I hope is reflected in this written account.

What counts as ethnography is highly contested (Cf. Mills & Morton 2013; Paterson 2009). A summary such as that provided by Hammersley and Atkinson (2007) is often used to show areas of agreement. They suggest ethnography involves

> the researcher participating, overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting documents and artefacts - in fact, gathering whatever data are available to throw light on the issues that are the emerging focus of enquiry. Generally speaking ethnographers draw on a range of sources of data… (p.3)

One notable exception to the broad agreement around this summary is Forsey's (2010) argument for an uncoupling of ethnography and participant observation. He argues

they are not cognate terms, and seeks to place '*engaged listening* on a similar footing to participant observation in our conceptualization of ethnographic practices' (p.560, italics his). Forsey's argument about the place of engaged listening, and the interview as offering 'truly ethnographic moments' (p.558) provide one rationale for the fairly substantial use of interview data throughout the current thesis. Practicing engaged listening for me meant that I tried to: be particularly attentive at all times; actively relate what I was hearing to other situations; be a part of that which I was hearing, engaging empathetically towards it. The extended time I spent in departments, and my sharing in tasks carried out by the teachers enabled me to listen to them – and so to hear them – in ways which may not otherwise have been possible for a study that may have looked superficially similar (such as an observation and interview methodology). It seems reasonable to assume the teachers would say different things to someone not sharing, at least in some senses, in their practice. By saying I tried to be attentive at all times, I do not mean that I experienced no boredom, or that I was never tired or 'switched off'. Instead, I mean that I tried to listen to everything (including literal sounds and words, and also 'listening' to all data generated) under the assumption that important insights might be found anywhere, and not just from formal times of observation or interview.

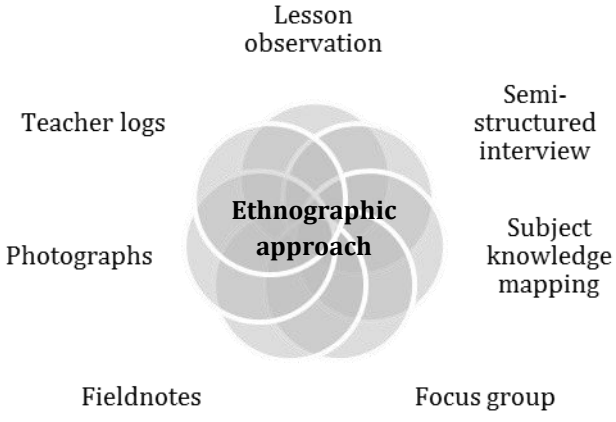


Figure 5. Summary of methods

A further point of persistent contention surrounding ethnography is whether it may simply include some of the methods outlined by Hammersley and Atkinson, or whether it makes a bigger claim on research: ethnography as a list of data collection methods (Acker 1990), or a complete way of being and seeing (Mills & Morton 2013; Law 2004). Describing the current study as most similar to the British sociological tradition, but with desires to be informed by cultural geographers is an indication of my answer to this question; ethnography that looks quite like the former, but has intentions of being more like the latter. The ethnographic approach is represented in Figure 5, showing specific methods (represented by grey circles) interrelating with one another. These methods are presented below, following a discussion of fieldwork duration, timings, and sampling.

4.2: Length of fieldwork and timings

Ethnographers often argue that extended periods of investigation are vital, although what counts as extended, and for whom, is contested. Classic ethnographies of education (in the British sociological tradition) established one year or more as an accepted length (Walford 1986; Ball 1981; Willis 1977; Hargreaves 1967), a pattern followed by more recent educational ethnographies (Fournier 2012; Fong 2011; Benei 2008; Abu El-Haj 2006). However, Hammersley (2006) suggests that 'months rather than years' (p.5) are now most common, and arguments have been made for spending anything from just two to three days on ethnographic fieldwork (Brockmann 2011; Jeffrey & Troman 2004). Fieldwork time is explored by Murchison (2010) in three senses:

1. Total length of time spent in the field (that is, the total number of days/weeks/years the researcher is present in the field – I spent seventy four days present in the field);
2. Breadth of time spent in the field (the length of time between first and last visits made to the field, regardless of the duration of visits between the first and last – in this study, seven months); and
3. Number of visits to the field (total number of separate visits made to the field during the fieldwork – in the current study, this is the same as one; that is, seventy four visits).

In all three respects he argues that more is better; studies ought to be as long, broad, and big as possible. His position is based on the premise that 'in almost all cases, the more time you spend doing participant-observation, the more quality information you are going to be able to collect' (p.88). He also argues that accessing a 'full cycle of events' (p.89) is also important. The first day of school in September, and the last day before the summer holidays are very different. Each might be expected to have its own particular tone, expectations, and challenges. Each may affect, and be affected by the recontextualising principles constructed by the teacher at that time; similar to McCormack and Schwanen's (2011) argument. For example, in his study of 'first encounters', Wragg (2005) comments on a period of time referred to as 'early September at the beginning of the school year, when rules and relationships are established' (p.9). In Wragg's context of a study of classroom rules and their establishment it was necessary to observe this early September phase. Other periods during the school year, such as trips, fieldwork, and coursework deadlines, all place demands on teachers' time, which may have implications for recontextualising

principles adopted. Revision periods leading up to examinations are one example of a period of time that may lead to a distinctive approach being taken (Puttick 2013a).

Having made the decision to study multiple departments, the study was then designed in such a way that different times of the school year might be experienced, and that time might be preserved between visits. Rather than spending a continuous block of time in each department, the departments were each studied for two blocks of two weeks so that I might experience them at different times of the year, from November to June. Jeffrey and Troman (2004) describe this as 'recurrent time mode ethnography' (p.542). Beyond these general principles, the HoD in each school told me when I could come in, and so the final dates shown in Table 3 were decided through a combination of the methodological considerations, and opportunity.

Dates (inclusive)	**Department (activity)**
12th Nov 2012 to 30th Nov 2012	Town Comprehensive (visit 1)
3rd Dec 2012 to 13th Dec 2013	Town Comprehensive (supply teaching)
14th to 25th Jan 2013	Beach Academy (visit 1)
18th Feb to 1st March 2013	City Academy (visit 1)
15th to 26rd April 2013	Town Comprehensive (visit 2)
20th to 24th May and 3rd to 7th June 2013	City Academy (visit 2)
10th to 21st June 2013	Beach Academy (visit 2)

Table 3. Timings of fieldwork

4.3: Departments and teachers

Organisational structures of school subject departments (3.2.2) were used as the main sampling criteria. One of each type of organisational structure of geography departments (that is, federate, impacted, and unitary) was included (Table 4).

Name	**Organisational type**
Town Comprehensive (TC)	Federate
Beach Academy (BA)	Impacted
City Academy (CA)	Unitary

Table 4. Department organisational type

The teachers in these departments had a range of length of teaching experience. Conflicting arguments have been made in the literature about the effect that length of time spent teaching in school has on teachers' views about knowledge. Some suggest that the academic discipline has a greater impact on teachers at the start of their career (Winter & Firth 2007; Lambert 2002). Others argue that the longer a teacher's career, the more time there is to reflect upon and engage with the academic discipline, which will, therefore, increase in influence over time (Brooks 2006a). The pilot study to the current research (Puttick 2012, 2011) studied one department, and the teachers in that department had a relatively limited range of career length (between two, and seven years). The current study was designed to build on this, and further explore factors related to length of service. Teachers in the current study have a range of teaching experience between zero, and thirty one years.

During the periods of fieldwork there were a total of fourteen teachers working in the three departments, summarised in Table 5.

The teachers included four PGCE students and one teacher on a temporary maternity-cover contract. All were interviewed, and observed (during lessons, and informally around the department).

No.	Pseudonym	Dept.	Formal role(s)	Length of service (yrs, inc. current year, ex. training yr)
1	Ruth	TC	Geography teacher. Head of Year Nine	31
2	Steve	TC	Geography teacher. HoD	10
3	Gemma	TC	Geography teacher. Head of Year Eight	9
4	Jess	TC	Geography teacher (temporary; maternity cover); NQT	1
5	Hugh	BA	Geography teacher. Informally, HoD	10
6	Tim	BA	Geography (0.5) and History (0.5) teacher; NQT	1
7	Pam	BA	PGCE Geography student teacher	0
8	George	BA	PGCE Geography student teacher	0
9	Richard	CA	Geography teacher. HoD	15
10	Sophie	CA	Geography teacher. Assistant head teacher	8
11	Paul	CA	Geography teacher	7
12	Claire	CA	Geography teacher. Assistant HoD	4
13	Laura	CA	PGCE Geography student teacher	0
14	Tanya	CA	PGCE Geography student teacher	0

Table 5. Summary of teacher participants

Apart from one full time teacher who was on maternity leave during visit one, all full time teachers were in school during the fieldwork visits for most of the time, although in all of the schools one or more the full-time teachers were away at some point during the

fieldwork, either because of illness, or fieldtrips with their students. At the end of visit one in Town Comprehensive Ruth was off school and I was asked to teach her lessons the following week. I agreed to this, and also to cover the HoD's lessons for a further three days.

4.5: Gaining access to departments

Invitation letters were sent via email to nineteen heads of geography departments in Oxfordshire secondary schools. The intention was to select from this sample departments of different organisational structures, each with teachers of a wide range of career lengths. I received five negative, and four positive responses from the initial email and follow-up emails. The negative responses mentioned either a lack of time, or space, or recent changes to staffing as reasons why they would not participate. Discussions with gatekeepers prior to fieldwork contributed towards developing understandings of the context in which teachers work, use their subject knowledge, and construct recontextualising principles. Three of the positive responses were from heads of department previously known to the researcher, and the fourth had also been passed the invitation through a mutual friend. Personal connections seemed to be extremely helpful in negotiating access, which seems to be common in ethnography (Walford 2008). Of the four positive responses, after further discussions two agreed to take part, and two were unable to take part. The two participating schools were organisationally different; federate (Town Comprehensive) and impacted (Beach Academy). A unitary department was then purposively selected, also using a personal connection through a

head teacher I previously worked for (although not in the same school as I previously worked in).

4.6: Fieldwork

A range of data collection methods were used to develop an understanding of teachers' subject knowledge and recontextualising principles in the space-times of departments (Figure 5). Fieldnotes (both 'head notes' and 'hand notes'; defined below [4.6.1]) were regularly made while immersed in the departments to record, explore, and begin to analyse experiences. Fieldnotes tangibly evidenced the ethnographic approach applied to (and generating) all other methods, putting into words findings from the engaged listening I tried to practice.

4.6.1: Fieldnotes

I am using the term field notes to refer primarily to the writing I did whilst in the departments, although these notes were also added to and annotated at later dates. The notes include description, diagrams, 'scratch notes' (Sanjek 1990, p.95), and references to other data generated (such as photographs taken, or interviews recorded). They acted as chronological record, and early analysis. I often wrote when I felt I had seen or learnt something important that I did not want to forget. I found this use of fieldnotes offered a similar benefit to Mills and Morton's (2013) description of fieldnotes which 'allow the researcher a powerful way of 'being' in one's research, documenting sensory experiences, and recording one's changing understanding' (p.78). What I counted as important shifted throughout the study. During the early fieldwork I wrote as full and

descriptive an account as possible, and this writing played a role in refining the study and focusing on, in particular, recontextualising principles and the sources and justifications of knowledge.

In the analysis of data, in which fieldnotes played a role, I also recognise the part played by 'headnotes', defined by Ottenberg (1990) as knowledge gained through field work which is often tacit and hard to communicate. Ottenberg argues for the primacy of headnotes in the writing and analysis of ethnography, and, although these headnotes may be the 'driving force' (p.147) of a study, fieldnotes were invaluable for me in prompting memories, correcting misconceptions, and adding detail. I made fieldnotes using paper and pen, and an iPad.

Field note books were prepared using a lined A4 pad, taking double pages for the notes, and creating three columns by dividing the right hand page vertically in two (following Childs, per. comm). Left hand pages were headed 'What's going on?' Notes were made on the left hand page in response to this question. The time of the day was also noted on this side of the pad, which normally involved writing the 'period' of the day as it was defined by the school: P.1, P.2, P.3, lunch time, and so on. A new double page was started for each new day in school. Times, dates and locations of other data collection methods were also recorded in the field note books, and were noted in the far left margin using different symbols. Figure 6 shows the symbols I used for an electronic file, and a photograph:

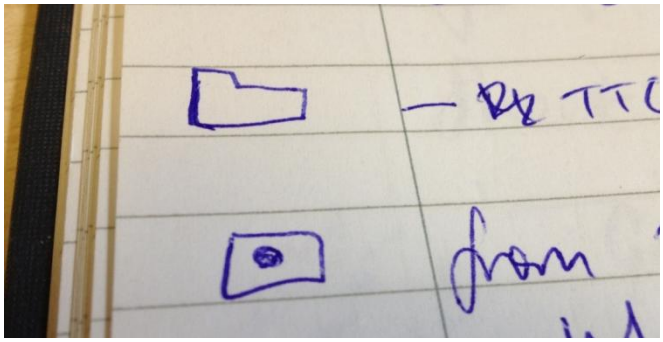


Figure 6. Example of symbols used in field note books to cross-reference other data

The two columns on the right hand side of the field note books were used for analytic memos, and follow-up. Analytic memos included terms or concepts that seemed to be significant. For example, from the second visit in Town Comprehensive there is a note about the Humanities office, detailing what I was doing (reading the school's most recent Ofsted report, from an inspection that took place between my first and second visits), and what I was noticing and thinking about ('White board [in Humanities office] has the same stuff on it [as it had during my first visit], whereas the boards in classrooms have probably been changed, wiped, and changed again hundreds, if not thousands, of times'). Next to this note I have drawn a symbol representing a camera, as a reminder that I took a photograph at this time of the board I had described. On the right hand page, in the 'analytic memos' column is written 'Space: uses / ownership'. Analytic memos such as these were written with the aim of noting initial reflections on the descriptions, and began processes of analysis.

The 'follow –up' column was used in two main ways. Firstly, to record when there was a need for further exploration of a concept, issue, or individual, often as a direct result of the description and analytic memos on the same row. Secondly, as a general research 'to do' list. For example, in the follow up column next to the example mentioned above

about the white board, there is an unrelated note saying 'prep sorting activity'. The follow up column was the least used of the three. However, it was useful to have, and its presence encouraged me to think in terms of the next steps of the research. After writing a note, and possibly a memo, there was always the prompt to reflect on what had been written, and ask what do I need to do about this now? How might this shape and refine the study? Questions about the future direction of a study are particularly significant where the design is intentionally open to encourage refinement and focus to develop in response to emerging findings from the data (Srivastava & Hopwood 2009). The field note books were constantly on my desk after the fieldwork, and I referred to them throughout the research process.

A tablet computer (iPad) was used in addition to the field note books to take photographs, back up audio recording of interviews, make notes, and read articles. Its calendar was useful in setting reminders of appointments throughout the research, and email was used to communicate with the teachers. For example, about interventions with year 11 students I was involved in, resources for a lesson, or social five-a-side football. During the second round of visits the iPad was used as the primary method of making notes during lessons.

4.6.2: Logs of sources of knowledge

Before the first round of fieldwork visits the teachers were asked to log the sources of knowledge they draw on to create the content of their lessons over two weeks. It was

made available electronically and on paper (appendix one). These logs were intended to provide a general overview of some of the different sources that are being recontextualised by these teachers for their school geography lessons. It was also hoped that the process of writing down the different sources of knowledge used would foreground issues about knowledge for the teachers. The logs were piloted with one geography department before being used with the three departments in the current study.

In practice, the logs were the only aspect of the study teachers did not readily engage with. Only four of the fourteen teachers completed these logs. This included all of Town Academy, one from Beach Academy, and none from City Academy. However, the teachers who did not complete them still had copies of them, discussed what they may have included, and so arguably this was still a useful stimulus to have provided teachers with before the fieldwork began. In particular, the term 'source', and the examples provided stimulated interesting conversations with teachers.

4.6.3: Semi-structured interviews

One semi-structured individual interview was carried out with each teacher during each block of fieldwork, to a total of twenty two interviews with fourteen teachers over the duration of the study. For those teachers present during both periods of fieldwork, two different interviews were conducted (appendix two and three). Both interviews were initially developed on the basis of protocols developed during a pilot study (Puttick 2011). Semi-structured interviews were used because of the opportunity they provide to help the researcher 'understand the world from the subjects' point of view, to unfold the meaning of their experiences' (Kvale & Brinkmann 2009, p.1). Interviews are

widely used in ethnographic research, although arguments have been made against their use. For example, Briggs (1986) and Devine (1996) suggest that in many situations the interview ought not to be used because they create less authentic representations than might be observed in ordinary conversation. While I did have multiple conversations with teachers every day, setting time aside for these particular conversations created space for more intentionally focused discussions. The use of data gained through 'engaged listening' (Forsey 2010, p.560) in this thesis follows Forsey's (potentially contentious) argument that interviews have the potential to offer 'truly ethnographic moments' (p.558). Several of the teachers were explicit about their knowledge of interviews, having used the method during undergraduate, PGCE, or Masters courses, which sometimes led to reflective discussion about the interview situation:

> yeah, cos it's actually not your interpretation of things – it's what people definitely think, yeah, that's hard…it is, er, not restrictive, but just makes you think slightly differently. (HoD, Town Comprehensive, interview 2:2-8)

The teachers chose the times and locations of the interviews, which included classrooms, departmental offices, resource cupboards, and offices. The interview was an interesting opportunity to be taken into 'their' space, which may have been useful in the distribution of power for the interview situation. While I was conducting the interviews as a researcher, I was aware of a sense in which I was also seen as a geography teacher, and so with the teachers as 'one of us'. Adriansen and Madsen (2009) discuss the notion of insider interviews, and in some senses I fit their definition of an insider, as the teachers all knew I had been until recently the head of a school geography department. In carrying out interviews as insiders, Adriansen and Madsen discuss the use of 'you know' as a rhetorical device, suggesting that

> Such a comment does not 'invite' the interviewer to ask for an elaboration – because we were supposed to know what the respondent talked about…asking the simplest question in an insider situation can present a great challenge because thee (sic) respondents expect that you know already. The expression 'you know' may cause problems – how does one know whether one actually knows what the respondents mean when they are not explicit? (p.149)

Nearly all of the teachers said 'you know' or 'y'know' to me during interviews. I felt the assumption of shared understandings was useful, as being aware of it I was able to probe when relevant, and use it to build rapport at other times. For Adriansen and Madsen this may have been an issue because they wanted to know if the interviewee *knew* certain concepts, however, I have emphasised that the purpose of the study is not to 'judge' teachers' subject knowledge (the widespread assumption among the teachers I spoke with was that research into subject knowledge must be about judging or measuring it). For example, in the following excerpt from an interview with Ruth (Town Comprehensive), I am not interested in whether or not she 'really knows' Rostow's (1959) model of economic development. I am more interested that she chose to name it, associated it with a category of 'standard things' that have 'stood the test of time', and now accesses the diagram by 'go[ing] online', rather using one of the textbooks on the shelf behind her desk:

> y'know, you would use [the old textbooks] but now all I've got to do is go online and I can find that diagram, um in an electronic form, and I just copy it straight onto a page, and I don't have to do what I used to do in the past, which is have to photocopy the page, cut out the bit that I want, actually glue that onto a page, and then, then, y'know, so, some of the, the, y'know, your Rostow's model, and your - standard things that have seen the test of time - it's just where I get the model or the diagram from now. (Ruth Interview 1:132)

The first interview with teachers (lasting between 30 minutes and one hour) was intended to develop an understanding of background, including teachers' experiences of

the school subject, and the academic discipline (relating to RQ3: How do teachers describe the relationship between school and academic geography?). During this interview a subject knowledge mapping exercise was also completed (relating to RQ1: How do teachers describe the nature and scope of geographical knowledge?) as a form of graphic elicitation (Bagnoli 2009), based on the method developed by Ellis (2009). Teachers were asked to draw the areas of geography subject knowledge, and show how they might be related. The images teachers produced provide a source of data in and of themselves, and also offered a resource on which to base further communication between teachers and interviewer (Crilly et al. 2006). An example map is shown in Figure 7.



Figure 7. Map of areas of subject knowledge in geography: Hugh, Beach Academy, visit one

In asking teachers to draw maps of areas of subject knowledge, there was not the expectation that the maps might show what they *really* think. Neither are they used to assess the teachers' subject knowledge (for example, by equating more complex maps with more developed subject knowledge). Instead, they are used as a means of expressing and co-constructing with the interviewer ideas about geographical knowledge through drawn rather than spoken communication.

The second individual semi-structured interview was designed as a discussion of a source of knowledge that the teachers chose. This interview schedule was refined on the basis of emerging findings during the research. Basing the discussion around something concrete was in part inspired by findings of previous studies, for example, Furlong and Maynard (1995), who argue that 'it was when talking about specific activities that the richness of [teachers'] thinking was most apparent' (p.134).

The subject knowledge maps and sources of knowledge were kept by the researcher. The interviews were audio recorded and transcribed by the researcher for all but one of the teachers. The experience of one participant denying audio recording was instructive in the sense described by Mountz et al. (2003): 'the fear and mistrust that we negotiated with potential project participants was not a barrier to overcome, but rather an instructive part of the research process' (p.39). Being denied permission to audio record revealed the primacy I implicitly gave to transcribed interview data. The discussion below (4.7) considers integration of findings to ensure all data are 'heard', rather than giving transcribed interview data a privileged position.

4.6.4: Department focus groups

During the second visits to each department a focus group (lasting approximately 30 minutes) was conducted with all teachers (appendix four). The focus group was designed around one activity to encourage a discussion about the sources of knowledge the teachers draw on. Sources of knowledge recorded in the logs and mentioned during the interviews were written down on cards to act as stimuli about which teachers might 'think aloud' (McCormack & Schwanen 2011; Wineburg 1991). The departments were asked to discuss these sources, and I provided prompts as examples of the kinds of areas they might discuss (appendix five). After discussing the sources teachers were asked to either rank them, or group them into different categories of sources, and to explain these categories or rankings. Posing the alternatives of ranking or grouping sources of knowledge involves a development of the type of joint interview carried out in the pilot study (Puttick, 2011; 2012). In the pilot study the teachers were asked to rank the different sources of knowledge, which they did. However, the second phase of the pilot study involved repeating the activity with two geography education researchers. They refused to rank them, arguing that the different sources inhabit different textual worlds. Instead, they categorised the sources under headings they gave to these different textual worlds (for example; popular geographies / canonical geographies). The discussion leading to this decision and the subsequent activity of grouping them provided a rich source of data.

The focus groups were audio recorded and transcribed, and photographs were taken of the final positions of the sources of knowledge. Audio recordings from individual interviews and focus groups were transcribed by the researcher in a similar way; all

words were transcribed, and other distinctive sounds (for example; laughter, a door opening, an email alert) were also noted. Ellipses were used for pauses…and square brackets were used when the current speaker was doing something, such as [drawing]. An additional code was used in the transcribing of focus group recordings to represent the dynamic of multiple, overlapping voices (appendix six).

4.6.5: Photographs

Across the three departments almost 1,000 photographs were taken. A type of visual research method (Margolis & Pauwels 2011), photographs were mainly taken on a smart phone. Photographs were taken of spaces and objects, rather than people. Figures 4-8 are examples of photographs taken for different purposes, summarised in Table 6.



Figure 8. Geography office: Beach Academy, visit one.

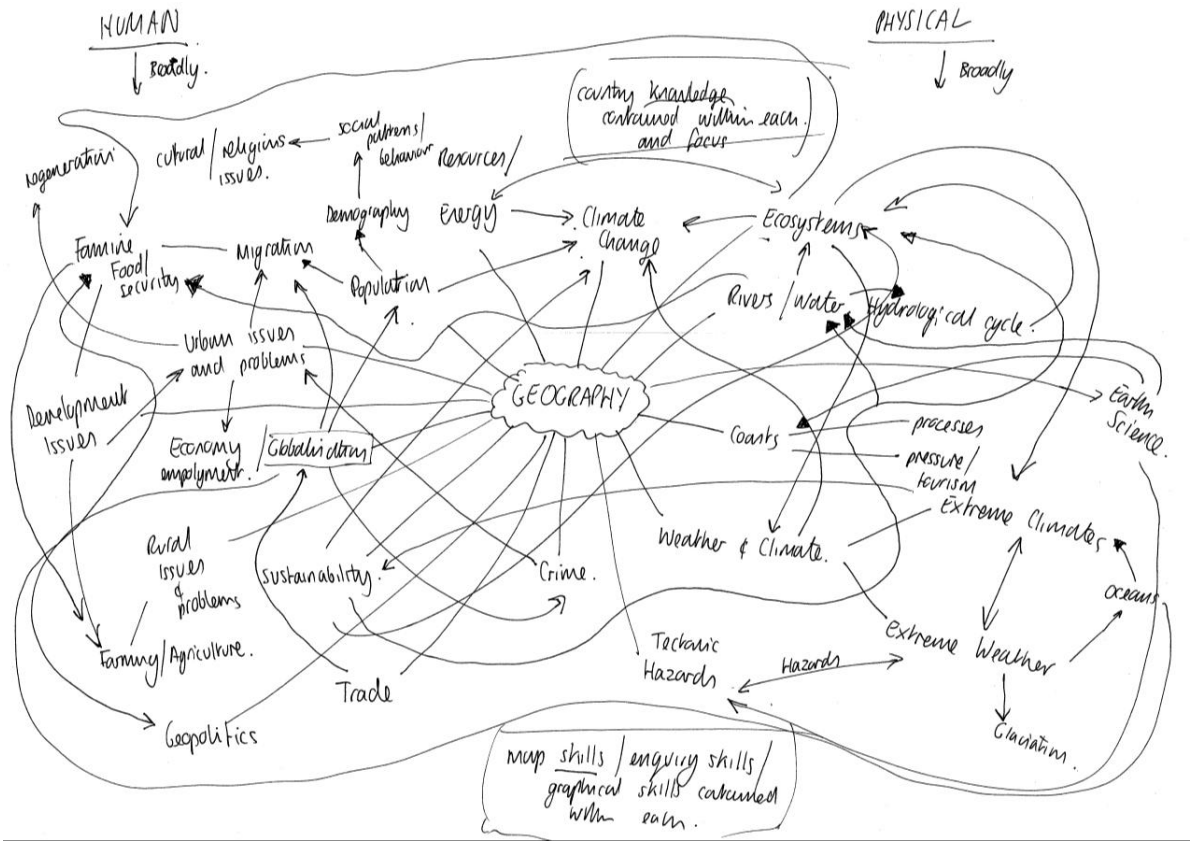


Figure 9. Steve's map of areas of subject knowledge in geography (Town Comprehensive, visit one)

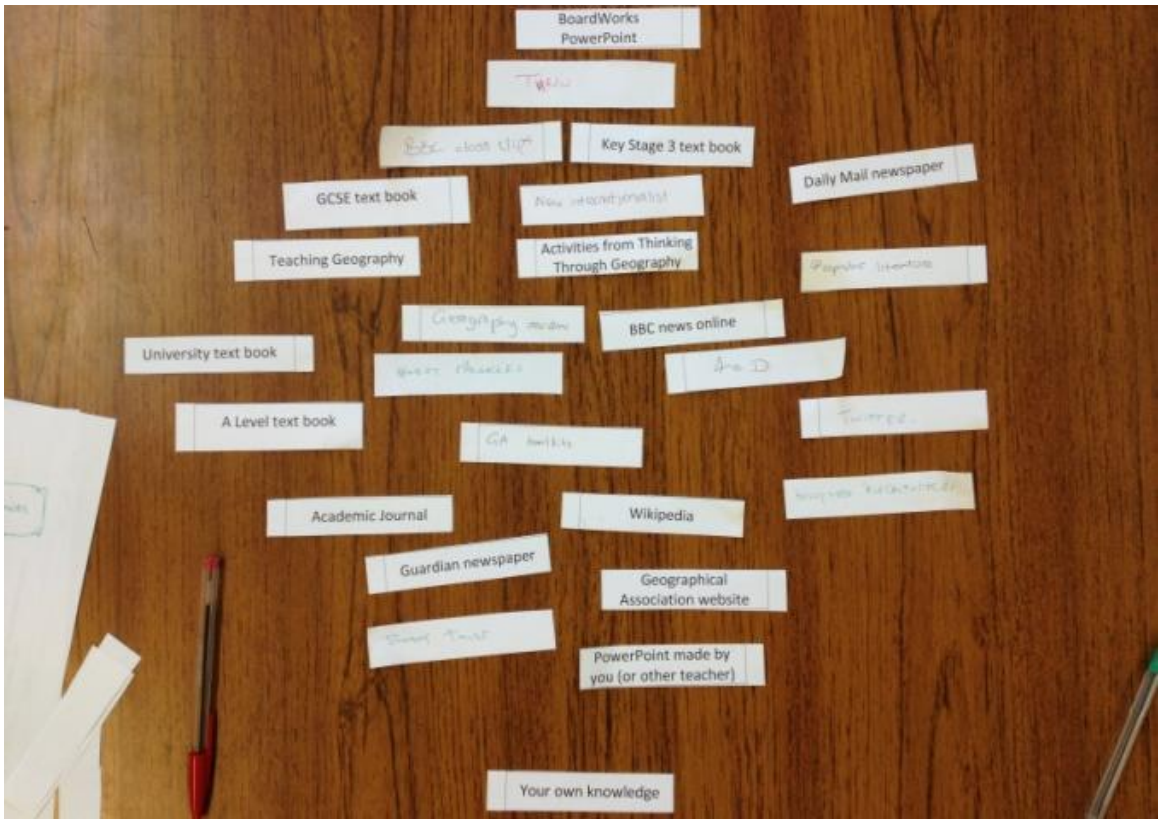


Figure 10. Final positions of sources of knowledge: Beach Academy, visit two

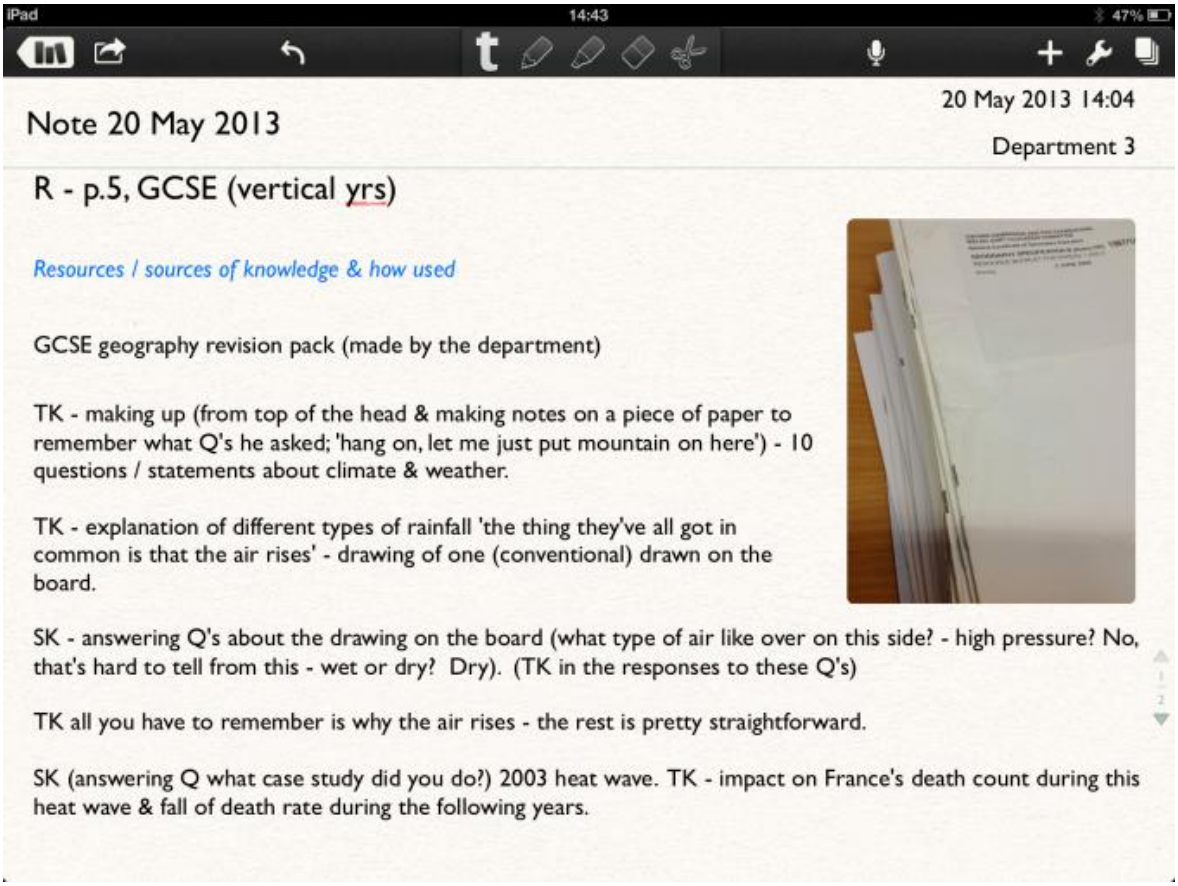


Figure 11. Screen shot from notability app: City Academy, lesson observation 20/05/13

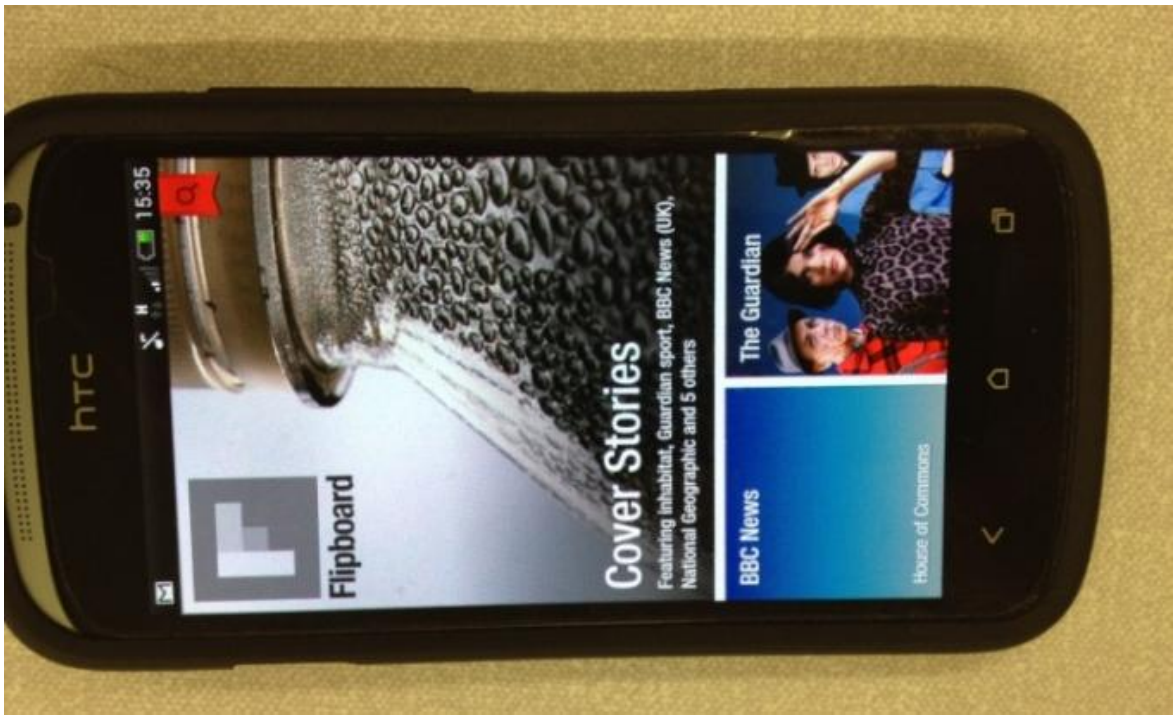


Figure 12. Town Comprehensive, visit one, 26/11/12, after school. Steve's phone.

Purpose	Example image	Notes
To accompany field notes, illustrating the writing.	Figure 8. Geography office: Beach Academy, visit one.	When these kinds of images were taken a reference was often made in the field notes to enable the image to be cross-referenced. In the example shown, the 'panorama' feature was used to capture a larger space on a single image.
As a backup of other data; for example, photographing maps of areas of subject knowledge.	Figure 9. Steve's map of areas of subject knowledge in geography (Town Comprehensive, visit one)	In the example of the subject knowledge maps, the maps were later scanned to provide higher resolution images to be used in the thesis.
Working alongside other data collection methods. For example, final card positions in the group sorting exercise.	Figure 10. Final positions of sources of knowledge: Beach Academy, visit	These images were cross referenced with the audio recording of the interviews, and used in subsequent analysis.
In lessons photographs were taken within the 'notability' app, primarily to record resources used.	Figure 11. Screen shot from notability app: City Academy, lesson observation 20/05/13	Used in lesson observations during the second round of visits. Being able to take photographs and place them next to text made relating images and observation notes faster and more reliable.
As reminders of objects teachers showed me.	Figure 12. Town Comprehensive, visit one, 26/11/12, after school. Steve's phone.	Closely related to the first purpose in the current table. Speaking with Steve about the research, he showed me his 'Flipboard' app. Before school, in the evenings, and at weekends he reads news stories on the app, sending relevant articles to his school email.

Table 6. Purposes of taking photographs in the current study

4.6.6: Lesson observations

The ethnographic desire to be immersed in the life of the department was communicated to the HoD before the fieldwork began: I asked that they use my time in

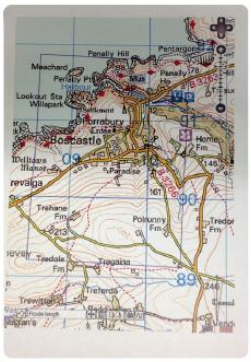
whatever ways might be useful. The departments responded to this offer in various ways, but all asked me to spend time in lessons. I was given different levels of guidance from teachers about my role in their lessons, from a vague smile as I walked through their classroom door, to a briefing before the lesson where resources were given to me, along with a list of students I would work with. In addition to any explicit requests from teachers, I offered students assistance (similar to the role played by Teaching Assistants), handed out teaching resources, textbooks, and equipment.

Before the second fieldwork visits I reflected on the data I had gathered through the lessons observed. I felt that while they had been an important aspect of the study, there was a need to add some consistency, and increase the focus of the observations. In response, I developed an open structure with two questions: What source(s) of knowledge are being used? What information is given about them? I asked these questions of what I observed throughout the lesson, noting every time a different source of knowledge was introduced. As mentioned above (4.6.5: Photographs), the main advantage of making notes on the iPad was the way I was able to take photographs of the physical resources the teacher used, and immediately associate them with the written notes by using a 'Notability' app (Figure 13).

P.3 Gemma's year 10 class

Sources of knowledge & info given about them:

- Boardworks PPT; reading through Boscastle
- Different PPT (from this department's SoW) with map of Boscastle ('just do a couple of places that might help you to locate it; e..g Newquay, Penzance. You don't have to do all of them, just a couple that will help you to understand where. It is. / to help you locate it.
- TK/ Experience miss, have you ever been to Cornwall? Yes, many times... I went to University here (Plymouth).
- YouTube video (from a random) 'just. Gives you an idea of how steep the sides are...They're clearly loving just taking some, er, sweeping shots' S: miss, they might have just been testing out a new camera.
- Video (geog film?) dramatic music - edited from other clips T: 'it's sort of cut and pasted together...they've taken it from one of those 999 type programmes, but they've taken the personal stories out.'
- O.S. Map (on PPT) - how would you know it's a steep valley? TK inferring; describing shape of land using the contours on the map.
- Statements: causes and explanations of the causes to match up. 'The top ones are the causes, and they match certain places on the map. The bottom ones explain it'. (Written by the teacher;? 'building on the flood plain; not sure why I wrote that on there')


Boscastle
Penally Hill
Meachard
Penally
Lookout Sta
Willapark
Forrabury
Castle
Trewarmett
Trefreock
Trewethett
Tresparrett
Tregatta
Tredole
Fm

in which on-going analysis informed and refined subsequent study, asking 'What are the data telling me? What is it I want to know?' (Srivastava & Hopwood 2009, p.78). Formal data analysis took place in three main phases (Figure 14), although on a more informal level analysis began before fieldwork, forming and clarifying the research problems (Hammersley & Atkinson 2007). The three formal phases each included an additional level of Dey's (1993) analytical processes (data annotation, category creation, assignment of data to categories, and refinement of categories), reducing data and moving from a primarily descriptive account to a more analytical one. The development of understanding and categorisations is understood here as 'open, creative interpretation' (Thomas & James 2006, p.770).

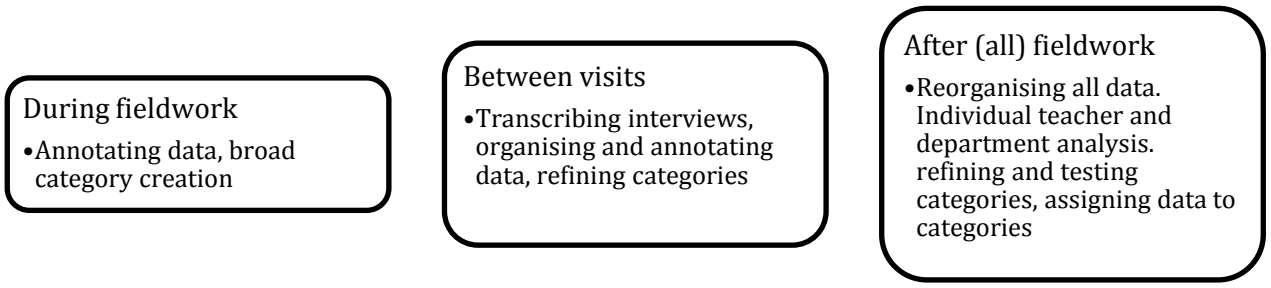


Figure 14. Phases of data analysis

During fieldwork, fieldnotes were annotated, and broad categories introduced. Examples of early categories include space, time, sources, exam specifications, hierarchy, and access (to spaces and resources). Between visits interviews were transcribed, and data generated during the most recent visit were organised. Organising data involved creating new (electronic and physical) folders and systematically arranging all electronic data so that it might be readily accessible and easily searchable. Annotating data between visits primarily involved annotating fieldnotes, adding and refining categories. For example, the category of space was later refined by a notion of *journeys* that teachers seemed to be describing and making for

knowledge. After all fieldwork was completed the most sustained period of analysis happened, during which categories were refined and elaborated, and data was assigned to categories in a more systematic manner. Analysis in this phase involved two main approaches: individual (teachers and departments), and thematic. The individual approach was used to write the analysis of teachers and departments presented in chapters five to seven, and involved collating and reviewing all data related to each teacher, and through these, each department: re-listening to interviews, re-reading fieldnotes and cross-referencing photographs and other data. Three organising questions aided analysis of data for teacher profiles:

1. How does this teacher conceive of knowledge in school geography? (RQ 1)

2. What is distinctive about this teacher/department that makes sense of their recontextualising principles? (RQ2)

3. What are this teacher's views of the relationship between school and academic geography? (RQ3)

Through the construction of teacher and department profiles broader themes were refined. These categories were then further refined and tested against the data, both by assigning data to them, and by trying to create counter-arguments against the categories from the data. Refining categories and assigning data to them included generating new sub-categories. Initially a computer was used to record categorisations following Hahn (2008), but this was replaced by a 'manual' approach which gave greater flexibility. An example of the way categories developed is shown in Figure 15:

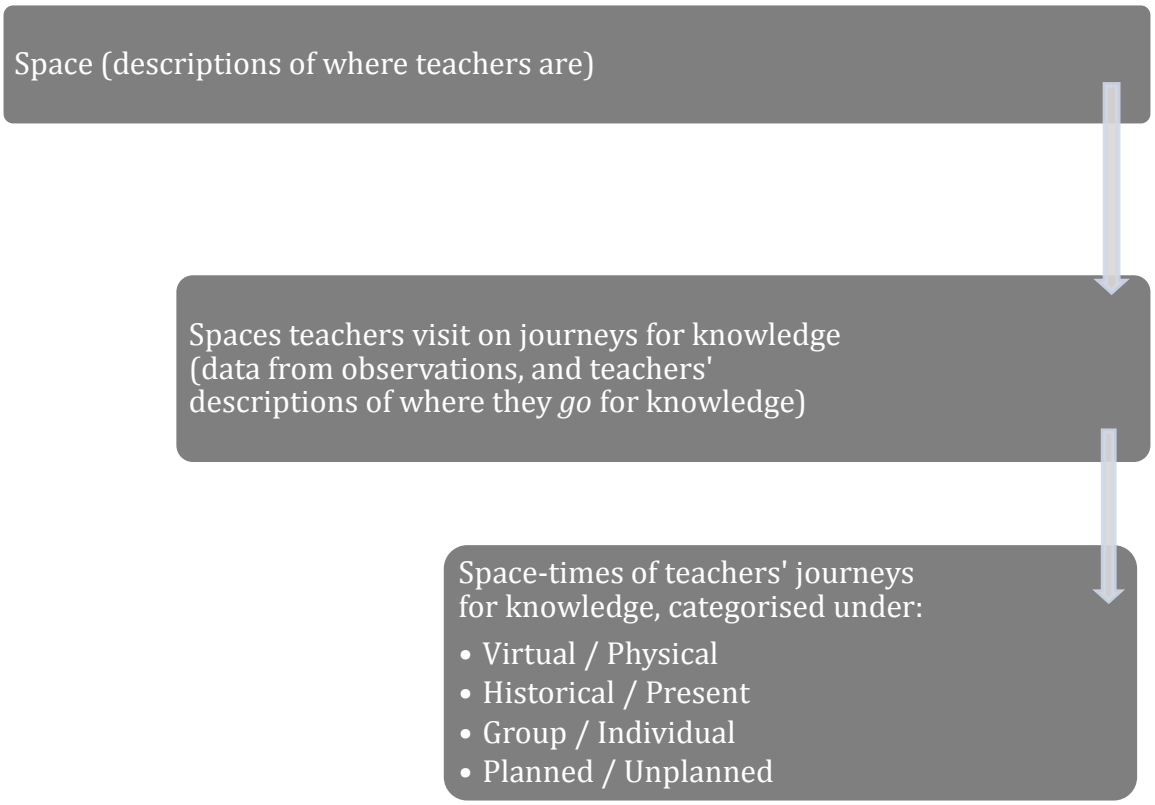


Figure 15. Example of category development

In the use of categories to make sense of the data attempts were made to draw from the wide range of data generated (primarily to avoid prioritising interview data). As new areas of particular interest emerged, I made efforts to revisit all data generated. Throughout the analysis and writing (which were intrinsically linked) I regularly re-viewed photographs taken during the field work, which were often helpful in re-situating, reminding, and prompting additional ideas (Figure 16).

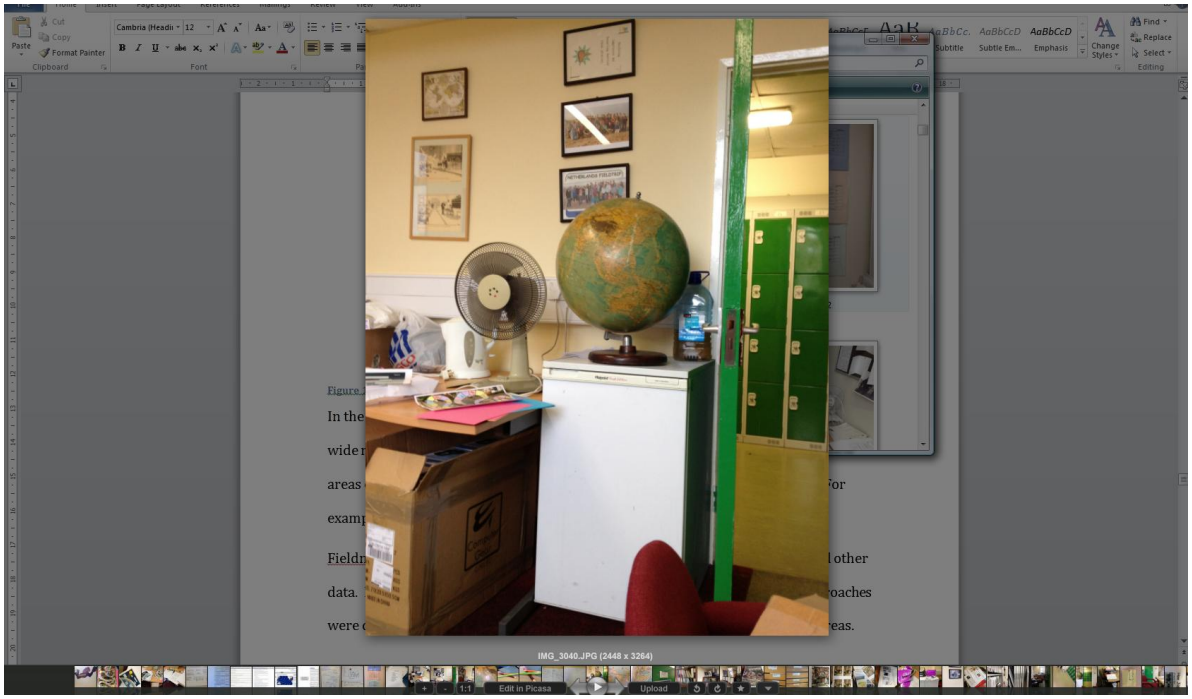


Figure 16. Re-viewing fieldwork photographs during analysis and writing

Practically, I explored new significant categories in the later stages of analysis by making notes on A3 sheets, linking and associating additional evidence. By later stages, I mean following all fieldwork, and after the initial analyses and construction of individual and department profiles; I had conducted a reasonable amount of analysis by this point, and was fairly familiar with the data. An example of this analysis (which in this case led to the model of degrees of recontextualisation presented in chapter eight) is shown in Figure 17. This sheet was developed to explore an emerging interest in teachers' processes of recontextualisation, and to test the ways in which the quite different recontextualising of sources I observed might be represented/categorised. There is some indication on this sheet of categories gaining importance; being circled ('Summarising'), underlined ('Cosmetic adjustments'), and otherwise emphasised, with other data then being associated.

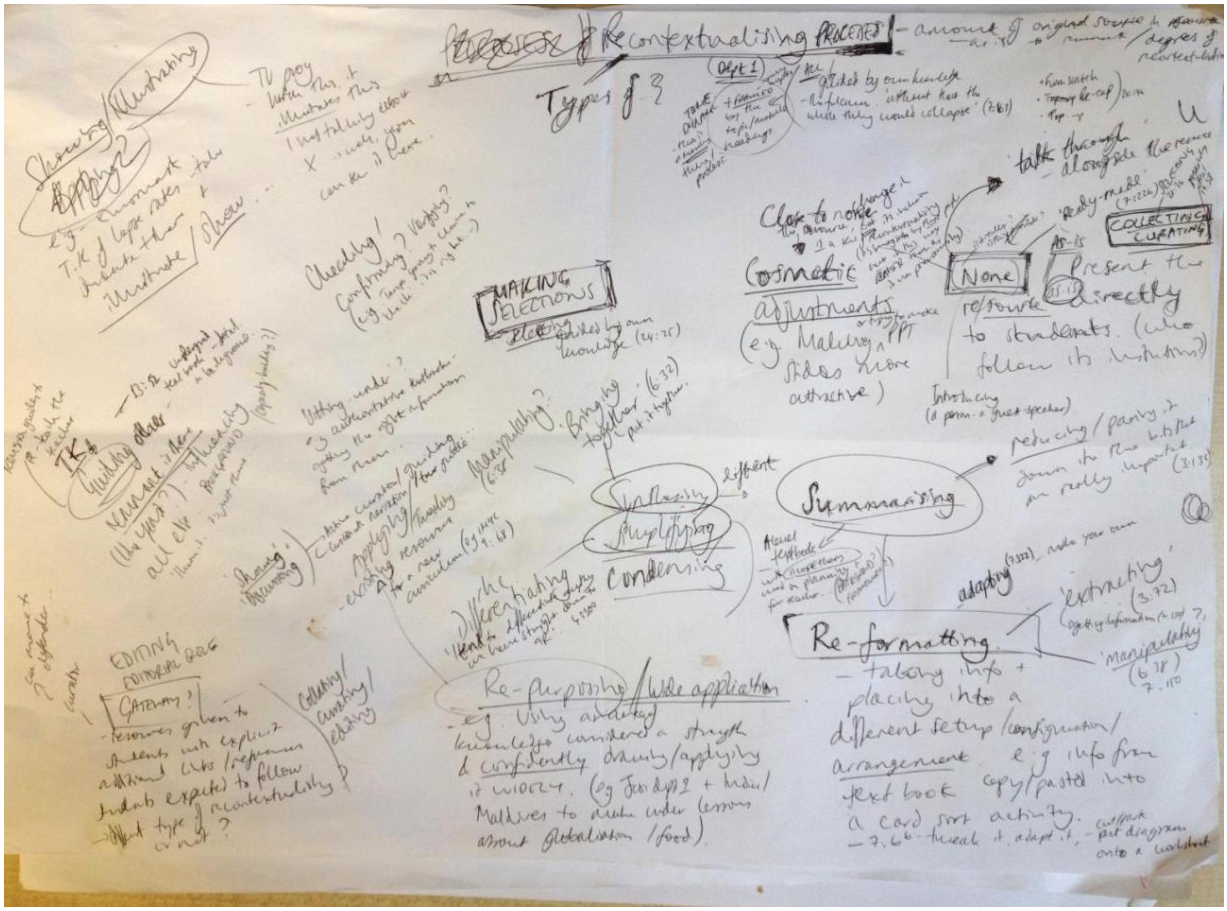


Figure 17. Emerging data analysis

After a range of organising categories had been developed I then more intentionally went back again to the data, asking more focused questions. This is one example of moving, in Srivastava and Hopwood's terms, to asking what is it I want to know? Individual A3 sheets were then used for each of the sub-categories, and I systematically went through fieldnotes (and often, from references in fieldnotes, directly to other types of data), photographs, lesson observations, and interview transcripts (including areas of subject knowledge maps, although these were also analysed in a particular way). Of each type of data I looked specifically for data that might be associated with these categories, adding anything relevant. During the course of this analysis the notion of levels or degrees of recontextualisation emerged, and the sheets were arranged along a continuum. Being able to physically move the sheets was useful for this (a benefit of a

'manual' approach). Counter examples to these degrees of recontextualisation were also noted, and data not fitting into the degrees as they were developed to this point led to their refinement (in this case, reducing from six to five degrees, and developing sub-sections within degrees, that subsequently formed the structure to 8.2). The description of this process also illustrates some of the ways in which the legitimation of knowledge claims (chapter ten) were developed from the data.

In addition to the use and refinement of categories in analysis, specific approaches were developed for the analysis of subject knowledge maps, and virtual shared areas. Chronologically, these analyses happened during and after fieldwork visits, and before the types of analysis discussed through example using A3 sheets discussed above.

4.7.1: Analysis of subject knowledge maps

The subject knowledge mapping exercise, carried out during the first semi-structured individual interview, was analysed using an approach similar to Ellis' (2009, pp.66–67), drawing on Mavers et al. (2002) and Pearson et al. (2003). The analysis includes numerical descriptions, and qualitative analysis. Numerical descriptions involved counting:

1. Nodes: the total number of elements or objects.

2. Links: the number of links (lines) between each node, calculated by adding the number of links connecting to each node.

3. Linear connectivity: dividing (1) by (2), to give a sense of the representation of relationships. Similar to Ellis (2009), I did not assume that reduced connectivity meant a less sophisticated understanding.

4. Areas of Subject Knowledge (ASK): the number of different areas of subject knowledge. Repeated areas were only counted once.

5. National Curriculum Key Concepts (NCKC): taken from the most recent KS3 Geography programme of study (published in 2007, and dis-applied in September 2013, shortly after the current study's fieldwork); place, space, scale, interdependence, physical and human processes, environmental interaction and sustainable development, cultural understanding and diversity (DfEE 2007). Again, I did not double-count areas participants mentioned multiple times, but I did count partial references. For example, where participants wrote 'sustainable development' this was included against 'environmental interaction and sustainable development'. The total possible for this count was seven.

The qualitative analysis includes consideration of the levels of conceptualisation (for example, some areas might be used to zoom in on certain issues), and discussion of the organisational type of the map, drawing on the typology suggested by Mavers et al. (2002) and developed by Ellis (2009), which includes the following descriptive categories of map types:

- Unconnected: objects or elements ('nodes') with no links;
- Linear: nodes linked to other nodes in sequential fashion;
- One-centred: 'with a clearly discernible central node from which links to other nodes radiate outward' (Mavers et al. 2002, p.192);

- Several-centred: 'two or more nodes acting as centres of interest' (p.192);
- Spaghetti: 'highly complex and multi-lined' (p.192);
- Bounded: the images or elements of the images are within a drawn boundary that may or may not include inter-linking lines;
- Un-bounded: the image is not enclosed by a drawn boundary but again there may or may not include inter-linking lines.

Using these qualitative and quantitative methods of analysis allowed for the maps to be more systematically described and compared than might have been possible with otherwise unaided description.

4.7.2: Departmental virtual shared areas

The virtual shared areas (VSAs) were analysed using basic statistical descriptions, which were then fed into the analysis of the other data, such as, prompting questions to be asked of teachers, and highlighting areas that observations might consider. For example, the high percentage of PowerPoint resources shown in VSAs led to particular attention being given to their use, and to teachers' descriptions of them. Taking the scheme of work as the basis for the description, items in the shared areas were counted according to different criteria. I asked the following questions (drawn from the overall research questions) of each resource: What year group is it for? What topic is it used in? Who made it / where was it produced? What format is it in? (For example, PowerPoint, worksheet, textbook, video). What is included? (For example, numerical data, images, sounds, propositions). When was it created, or last edited?

The responses to these questions were recorded in Excel. My field note books were also open during these times to record any thoughts. Totals were calculated for each aspect of the resources, and the number of resources per lesson, as the mean, and standard deviation. This was useful for developing a feel for the quantity of information the departments handled, and the volume of resources they produced. It also provided an overview of sources of knowledge similar to that which the teachers' log was intended to offer.

4.8: Ethical issues

Undertaking ethnographic research presents a number of ethical issues. In general, the study design and data collection methods were informed by a concern not to make excessive demands on participants, and to preserve participants' anonymity (ESRC 2012; BERA 2011; Geographers 2009). The approved CUREC form is included in appendix seven. However, consent and anonymity were problematic. Issues surrounding consent and anonymity are presented below. The discussion then moves to consider data analysis and representation. Following these relatively general discussions, one specific ethical dilemma I faced during the fieldwork is presented.

4.8.1: Consent and anonymity

Voluntary, informed consent was sought through invitation letters (appendix eight), and participants were reminded of their right to withdraw at any time. One instance of an aspect of consent being withdrawn was discussed above. Only departments in which all

teachers were prepared to take part were used in the study. However, neither the HoD nor the individual teachers were told that their department's inclusion depended on the consent of all teachers. This was to ensure that consent of each individual was voluntary, rather than as a result of feeling pressured by the expectations of the rest of the department. Pseudonyms for the teachers are used throughout. Following Hopwood (2006) I gave the teachers the opportunity to choose their own pseudonyms, which two teachers (both from Town Comprehensive) did. I assigned the others, along with those used for the schools. Attempts have been made to maintain confidentiality of teachers by anonymising sources of knowledge logs, transcripts of interviews, field notes, and focus groups, and data has been stored securely. People were normally not included in photographs, and in instances where clearly identifiable features were captured (for example, school logos), these were cropped. No verbatim citations from Ofsted reports, or other extended text uniquely referring to the schools have been included. However, in discussing the steps taken to ensure anonymity of sites and teachers, it is acknowledged that anonymity, while a standard requirement of social science frameworks for research ethics (ESRC 2012; BERA 2011), is not unproblematic. Walford (2008) argues that it may 'actually be impossible to offer confidentiality and anonymity' (p.32), because; firstly, teachers may not want to remain anonymous; they may be proud of the descriptions of themselves and their practice, and feel it would be right (ethical) to be given recognition by the wider subject community for this. For example, the teachers, their roles, and the school they work in are all identified in Hopwood, Courtley-Green and Chambers' (2005) co-authored paper. Secondly, compromising the specific details given about a school or individual (that would make them identifiable) may 'seduce' the reader, 'such that the significance of particular pieces of research expands to fill our general understanding of the issues' (Walford,

2008, p. 35). Without specific, identifiable detail, the individuals or departments may be presented as generalised claims, whereas there remains an important level at which they are unique, highly situated examples.

During the writing of the current study efforts have been made to preserve teachers' anonymity as far as possible, while also retaining a degree of the very specific, rich detail about the individual teachers and departments studied. The preservation of anonymity is, therefore, limited. Those taking part in the study will be able to identify themselves, as will others in their department and school. However, others outside of the school who are not already familiar with the participants would be very unlikely to be able to identify them. The fact that participants will be able to identify themselves raises ethical issues in the way in which they are represented.

4.8.2: Data analysis and representation

This section now briefly considers the issues raised by participants' ability to identify the representations of themselves. The main question representation raised was 'who am I writing this for?' Particularly during the construction of teacher profiles, what to include and exclude raised ethical questions. I developed good relationships with the teachers, and remain in contact with several of them. So, an inevitable question as I construct representations of them in text is how will they react when they read this? This question is helpful insofar as it is a part of knowing the subject 'well' and 'responsibly', and leads me to 'honour the relationship' (Doucet & Mauthner 2012,

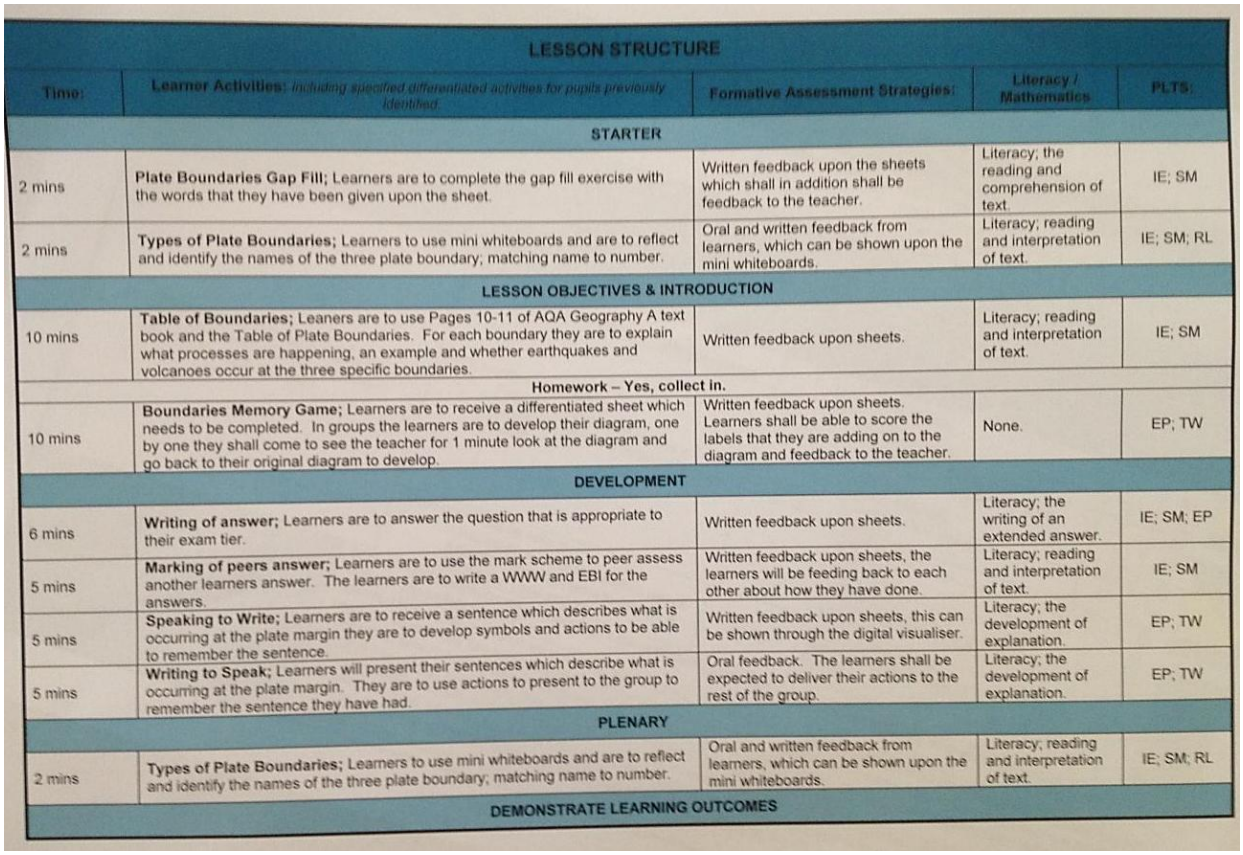
p.126). However, there is an obvious danger of writing *for* the participants, and so suppressing negative aspects.

Negotiating issues about representation involved decisions about the amount of verbatim text to include. Hargreaves (1967) defends his extensive use of first-hand quotes by arguing that 'such evidence is more direct, vivid and self-evident in its implications than the narration of observed incidents' (p.xi). However, the quantity of field notes and interview transcripts (over 124,000 words) and other data, means that a considerable level of filtering, selection, and summarising is unavoidable. Bernstein (2000), agreeing with Moore and Muller (1999), also argues that presenting extensive quotations as 'evidence' so that participants can 'speak for themselves' is theoretically unsatisfactory. The structure of this thesis, although fairly standard, is designed partly in response to a negotiation of these issues. Chapters four, five and six are more descriptive, and include a higher proportion of verbatim quotations. Chapters eight and nine are more theoretical, and include a lower proportion of verbatim quotations.

4.8.3: One ethical dilemma

During the course of fieldwork innumerable decisions were made about when, how, and in what ways to be involved in situations. One ethical dilemma is now presented to illustrate the approaches I took during fieldwork. The dilemma is discussed in terms of intervention as an ethnographer, drawing on Dennis' (2009) modes of intervening.

Tim (an NQT in Beach Academy) had spent the weekend planning for an observed lesson. One page of his three page plan is shown in Figure 18.



LESSON STRUCTURE

Time:	Learner Activities: *including specified differentiated activities for pupils previously identified*	Formative Assessment Strategies:	Literacy / Mathematics	PLTS:
	STARTER			
2 mins	**Plate Boundaries Gap Fill;** Learners are to complete the gap fill exercise with the words that they have been given upon the sheet.	Written feedback upon the sheets which shall in addition shall be feedback to the teacher.	Literacy; the reading and comprehension of text.	IE; SM
2 mins	**Types of Plate Boundaries;** Learners to use mini whiteboards and are to reflect and identify the names of the three plate boundary; matching name to number.	Oral and written feedback from learners, which can be shown upon the mini whiteboards.	Literacy; reading and interpretation of text.	IE; SM; RL
	LESSON OBJECTIVES & INTRODUCTION			
10 mins	**Table of Boundaries;** Leaners are to use Pages 10-11 of AQA Geography A text book and the Table of Plate Boundaries. For each boundary they are to explain what processes are happening, an example and whether earthquakes and volcanoes occur at the three specific boundaries.	Written feedback upon sheets.	Literacy; reading and interpretation of text.	IE; SM
	Homework – Yes, collect in.			
10 mins	**Boundaries Memory Game;** Learners are to receive a differentiated sheet which needs to be completed. In groups the learners are to develop their diagram, one by one they shall come to see the teacher for 1 minute look at the diagram and go back to their original diagram to develop.	Written feedback upon sheets. Learners shall be able to score the labels that they are adding on to the diagram and feedback to the teacher.	None.	EP; TW
	DEVELOPMENT			
6 mins	**Writing of answer;** Learners are to answer the question that is appropriate to their exam tier.	Written feedback upon sheets.	Literacy; the writing of an extended answer.	IE; SM; EP
5 mins	**Marking of peers answer;** Learners are to use the mark scheme to peer assess another learners answer. The learners are to write a WWW and EBI for the answers.	Written feedback upon sheets, the learners will be feeding back to each other about how they have done.	Literacy; reading and interpretation of text.	IE; SM
5 mins	**Speaking to Write;** Learners are to receive a sentence which describes what is occurring at the plate margin they are to develop symbols and actions to be able to remember the sentence.	Written feedback upon sheets, this can be shown through the digital visualiser.	Literacy; the development of explanation.	EP; TW
5 mins	**Writing to Speak;** Learners will present their sentences which describe what is occurring at the plate margin. They are to use actions to present to the group to remember the sentence they have had.	Oral feedback. The learners shall be expected to deliver their actions to the rest of the group.	Literacy; the development of explanation.	EP; TW
	PLENARY			
2 mins	**Types of Plate Boundaries;** Learners to use mini whiteboards and are to reflect and identify the names of the three plate boundary; matching name to number.	Oral and written feedback from learners, which can be shown upon the mini whiteboards.	Literacy; reading and interpretation of text.	IE; SM; RL
	DEMONSTRATE LEARNING OUTCOMES			

Figure 18. One page from Tim's three page lesson plan (right hand column 'PLTS' defined in appendix nine)

He was worried the lesson didn't 'hang together'; a vague, elusive sense of the coherency and consistency of a successful performance. The pressure of observed lessons is considerable, and the stakes were particularly high for Tim. Although he had received an 'Outstanding' judgement on one lesson, and a 'Good' on another, he described facing problems during his NQT year, and was at risk of not passing. His NQT mentor previously expressed concern that Tim's lessons do not have enough 'pace', seen in the school as one of three essential factors necessary for students to make progress (Figure 19).



Figure 19. PDF poster in Beach Academy

I observed the lesson, and Tim asked me to act as a teaching assistant. Afterwards, Hugh (informally, HoD in Beach Academy) asked me how it had gone. I told him it went really well; it was a great lesson. However, after receiving feedback Tim looked upset. His lesson was judged as 'Requires Improvement'. The written feedback stated that the activity that Hugh and I said should be allowed to take 30 minutes (and which Tim had given 10 minutes to) ought to have only been given two minutes as it had ruined the pace. After telling us this, Tim left the office again, and George (PGCE intern) came in. He had seen Tim walk into the office looking upset, and asked 'Where's Tim? Is he alright? I half expected to see him hanging from the light when I came back', while pulling up his own tie to illustrate someone hanging themselves (Beach Academy, visit two, fieldnotes 19/06/13).

Four things seemed to present a dilemma:

1. Tim was upset by the judgement on his lesson.

2. The judgement was authoritative and final. It would be recorded on Tim's file and would prevent him from passing his NQT year.

3. I believed the judgement on the lesson was wrong.

4. My role in the school was as a researcher, and I had explicitly stated that I was not going to be judging subject knowledge (as good, or otherwise). I was not in the school as a critic of other lesson observations.

I felt that knowing these four points might be described as 'guilty knowledge'. McNamee (2001) argues that conflicts in the 'thicket of human relations threaten to compromise [the educational researcher's] integrity' (p.423), and he suggests such conflicts are commonplace in educational ethnography. He defines 'guilty knowledge' as 'the feeling of guilt that arises when one both comes to know of certain harms or wrongdoings and is torn between courses of action to remove the sense of guilt that attaches to the knowledge' (p.424). The ways in which I acted are now discussed, drawing on the modes of intervention suggested by Dennis (2009).

Dennis (2009) presents four modes of intervention: interpersonal, administrative, enactment and modelling:

1. Interpersonal; speaking with participants to challenge beliefs, or ways of speaking and acting, that are deemed to be morally questionable. Dennis separates 'inclusive'

from ‘unilateral or exclusive’ interpersonal interventions; the former being openly discussed with participants, the latter being in some degree hidden (which, she argues, means that the latter presents more ethical risks).

2. Administrative; in Dennis’ example, she uses her position in the university to intervene through the use of administrative powers. This meant speaking with the assistant principal about a teacher (‘Mr Strong’) who is being racist, and ensuring that ‘English Language Learners’ (ELL) were withdrawn from his classes. She was disappointed that nothing further happened, and argues that ‘intervening through an administrative mode was ethically risky’ (p.139).

3. Enactment; the researchers putting into practice participants’ own ideas and beliefs, in particular when they are in conflict with accepted ideas and beliefs of the organisation / social group. In Dennis’ study intervening through enactment involved speaking students’ own languages to them in hallways and corridors, and conducting some study sessions in home languages.

4. Modelling; these also involved enacting changes, but this time the changes were envisioned by the researchers, rather than the participants (Dennis uses the phrase ‘had not yet envisioned’ [p.140]). In Dennis’ example she argues that teachers were complacent towards bullying, and adopted a stance of non-action. Her ethnographer (William) intervened in a situation in front of a teacher, challenging a bully and supporting the bullied, thus modelling the intervention they wished to promote.

I responded to the dilemma outlined above by intervening interpersonally and administratively. I immediately intervened interpersonally, by speaking with Tim and telling him that I believed the judgement was wrong.

After the initial interpersonal intervention I then had a conversation with Hugh. This conversation was the beginning of the administrative intervention. Hugh seemed to also feel strongly about the judgement on Tim's lesson, and when I offered to do something he asked if, having been in the lesson, I would write down my thoughts. I wrote Hugh an email which he then passed to the Head teacher.

From this dilemma, I suggest that:

1. Moral deliberation is unavoidable in ethnographic research, partly because it is impossible not to interact (or in a broadly defined sense, 'intervene') with other persons and situations. Not saying anything to Tim would actually have been to 'say' something. In stronger terms, 'doing nothing is the most violent thing to do' (Žižek 2008, p.183).

2. Deliberation on the complexity of this dilemma calls upon certain principles, 'but can by no means be simply the application of those principles. Different principles can be evoked. But there is *judgement* required in deciding upon the overriding principle and in deciding what element in one's practice relates to what principle' (Pring 2004, p.284).

Although dilemmas remain, the discussion above has presented some of the ways in which I have approached ethical dilemmas, particularly during fieldwork, including a (possibly contradictory) combination of utilitarian justifications of my actions (the end of 'righting' Greg's judgement on Tim's lesson), consequentialist principles informing decisions (considering the possible implications of informing the head teacher of my view), and deontological rules (for example, wanting to give truthful representations of persons and events). The particular dilemma discussed above is revisited below (chapter six), with a focus on the ways in which performativity (Ball 2013; Jeffrey &

Troman 2012) interacts with teachers' subject knowledge and recontextualising principles.

4.9: Conclusion to chapter four

This chapter has presented the ethnographic approach that has been developed through the current study. The design of the study, being immersed in the life of the departments, and responsive to emerging findings, was argued to be appropriate to the aim of this exploratory study as the development of a descriptive account of geography teachers' subject knowledge in secondary school geography departments. The academic year has certain rhythms, and so fieldwork visits to the departments were spread over the year, with at least one month being spent in each department. Methods were developed before, and during fieldwork, and I have outlined some of the ways in which I sought to integrate data generated from all methods. My intention is to be alert to, and engaged with the everyday practices of these geography teachers, and a considerable amount of data has been generated, including photographs, documentary evidence, interview recordings and transcripts, field-notes and subject knowledge maps. The approaches towards data analysis included the use I have made of individual and thematic categories. The kinds of ethical deliberation I have engaged in were illustrated through one example of a lesson observation, which is revisited from a the different perspective of recontextualising principles in chapter six; one of the three detailed descriptions of the geography departments in Town Comprehensive, Beach Academy and City Academy.

5: Findings and analysis of Town Comprehensive

This chapter offers a detailed description of Town Comprehensive's geography department, beginning with summaries of the staffing, organisational structure, physical space, and VSA. After providing this overview, individual teachers are described, including summaries of teaching careers, conceptions of knowledge in school geography, and views on the relationship between school and academic geography. The chapter concludes with a discussion of three important dimensions of recontextualising principles emerging from analysis of Town Comprehensive: recontextualising principles as *personalised*, constructed in *space-times*, and *regulated*.

5.1: Town Comprehensive summary

Town Comprehensive is a mixed, comprehensive 11-19 secondary school in a town in Oxfordshire. There are several other secondary schools (some independent, some comprehensive) within the town, and the comprehensive secondary schools work together as a 'consortium' for 6th form students. The geography department is organisationally federate, being situated within a humanities faculty. The HoD's (Steve) line manager is the head of humanities. There is a humanities office (Figure 20), and budget. There are two other full-time geography teachers (Ruth and Gemma; Table 7).

No.	Pseudonym	Dept.	Formal role(s)	Length of service (yrs, inc. current year, ex. training yr)
1	Ruth	TC	Geography teacher. Head of Year Nine	31
2	Steve	TC	Geography teacher. HoD	10
3	Gemma	TC	Geography teacher. Head of Year Eight	9
4	Jess	TC	Geography teacher (temporary; maternity cover); NQT	1

Table 7. Summary of geography teachers in Town Comprehensive

During visit one Gemma was on maternity leave, and Jess was temporarily in the department on maternity cover. Other major staffing changes happened shortly after the fieldwork. The head of humanities and the head of geography were both promoted to Assistant Head Teacher positions in different schools (neither with particular responsibility for their respective subjects, and both teaching less than 50% of the classes they currently have). The department, and faculty, will be staffed very differently in the next academic year.

5.1.1: Staffing changes, subjects and promotion

When Steve moved to Town Comprehensive six years ago he brought with him a completely new Key Stage Three (KS3) curriculum from his previous school. Staffing changes provide an acute example of the dynamic nature of school subject departments. These staffing changes also illustrate the different priorities, agendas, and ambitions teachers may have (Wilson et al. 2006). Teaching a subject is only one part of the job, even if the planning, teaching, and marking of the subject comprise the majority of teachers' time (and not just during the school day). The subject was described by the

teachers in Town Comprehensive as the most significant reason for them entering teaching. For example, Jess decided to become a geography teacher after moving in with one:

> I found it so interesting sitting down and talking to her about it that I kind of, through like looking at her lessons, and this whole discussion about it, I suddenly decided…I wanted to do a geography PGCE. (Jess, interview 1:28)

The subject also defines an important part of how teachers identify themselves: teachers referred to themselves as being a *geography* teacher. None of the teachers in the current study spoke about a desire to enter teaching *in general* (for example, citing general interest in teaching young people, a passion for social justice issues, or a desire to be promoted to management roles). Instead, it was always with specific reference to geography that they pursued teaching; what Hargreaves and Macmillan (1995) refer to as 'personal identification' (p.143) with the subject. Teachers' belief in the importance of geography was a theme often present in the background of the current study, motivating action, being defended, giving teachers status, and anchoring convictions about the importance of their work. However, the subject is a part of the job which is inversely related to level of promotion. As such, it may be unsurprising that Rhodes et al. (2008) found that all groups they surveyed (Head teachers, middle leaders, and classroom teachers) ranked characteristics about the teachers' subject knowledge the lowest indicators of leadership talent. As the HoD and faculty move on to new positions they will have far less to do with their subjects. In contrast to the staffing changes, the physical space of the department will remain largely unchanged.

5.1.2: The humanities office

The department is organised around three individual classrooms, each 'owned' by a teacher, with their name on the door. The three classrooms are located on a first floor corridor which also houses two sociology / religious education classrooms, a large computing area, the humanities office, and Ruth, the head of year 9's office. There are stairs at both ends of the corridor, and a one-way system operates for students. At lunchtimes the computing area and stairs are patrolled by supervisors (sixth form students and other adults employed for this purpose), while the geography teachers hold revision sessions, catch up classes, detentions, and possibly eat their lunch. The lack of tea making facilities in the office reduces the insulation (Hargreaves & Macmillan 1995) of the department as they visit the main staff room for cups of tea, during which time they speak with teachers of other subjects.



Figure 20. Town Comprehensive Humanities office

The photograph in Figure 20 was taken from inside the humanities office. The door to the office is open. There is a box on the chair, and stationery on the desk. There is a fan, but it is not plugged in. There are empty clip frames, a garden spade, cupboards, filing cabinets, a fridge, and a globe. Out of shot are two computers, a photocopier, and a window. There are 'thank you' cards from PGCE interns pinned up, and a copy of the fortnightly geography department bulletin (appendix ten). This is not primarily a room for sitting and working. It is used for storing, copying, displaying, and encountering.

The wall spaces in the humanities office show something of the use of the room by different subject departments. The photograph in Figure 21, taken during visit one, shows a small white board displaying subject-related humour from philosophy teachers, and an outline of a geography essay answer. During the second visit (almost six months later) the white board looked exactly the same. Whiteboards in classrooms were wiped clean at the end of lessons, re-covered with titles, definitions and diagrams, and then wiped clean again. Between my two visits each classroom board would have been cleaned and filled thousands of times. The board in the office was not wiped once. In contrast to the classrooms, the office displays are more static. However, people rapidly moved in and out of the room, mainly to use the photocopier.

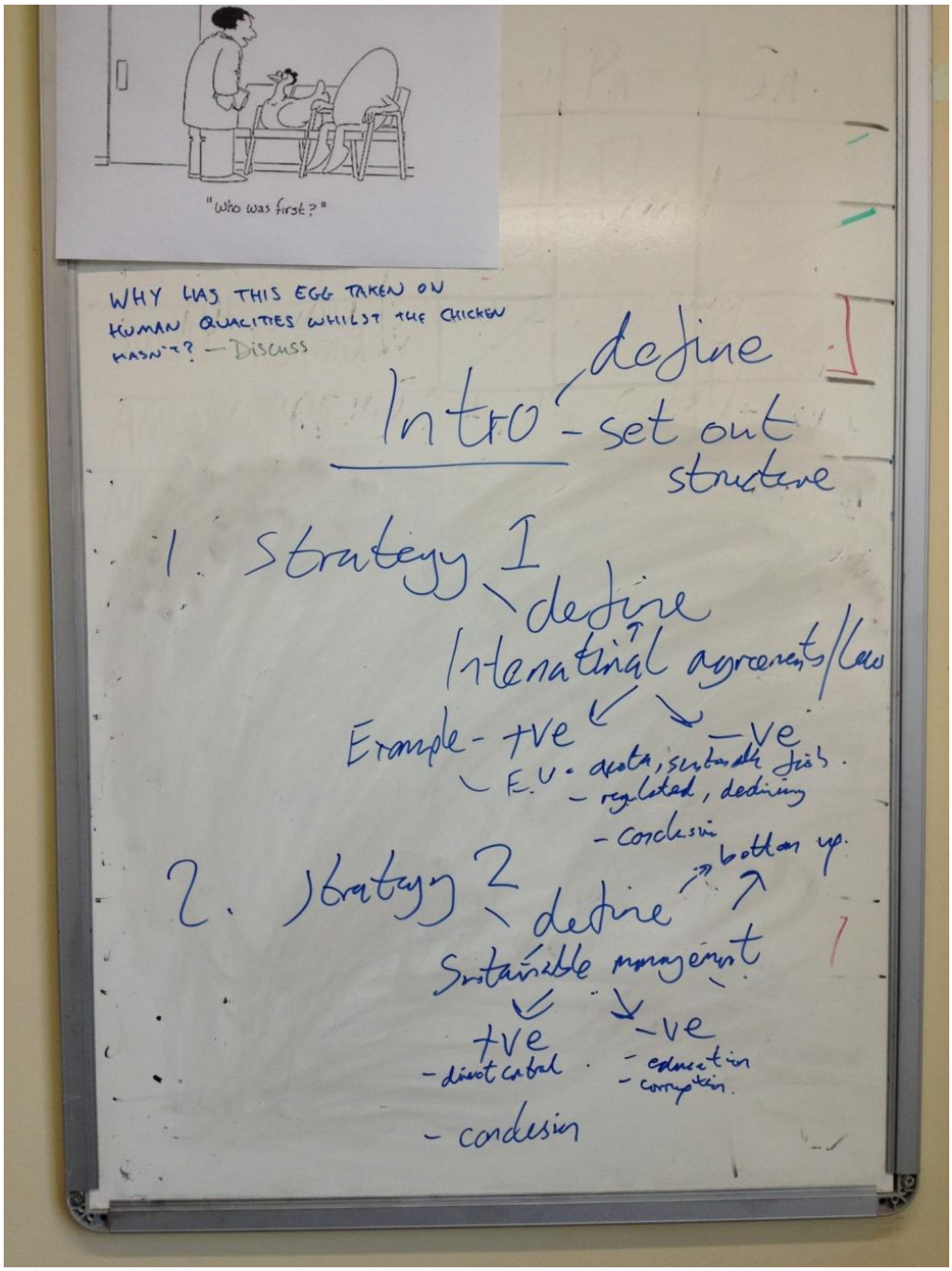


Figure 21. Board in humanities office

The photocopier was regularly used (up to 22 times per hour) by teachers from MFL (modern foreign languages), humanities, art, and drama. Teachers either used the copier directly, or remotely from computers. If the latter, students were sent into the office to collect copies. Nearly everyone walks straight into the office through the open

door. Some offices are almost exclusively back-stage (Goffman 1956; Crang 1994); a space for teachers and not students, in which teachers may 'interrupt [their] performance momentarily for brief periods of relaxation' (Goffman 1956, p.70). The humanities office space is shared; it is available to all, but owned by none. It shifts between back and front-stage, and between different senses of these, depending on who is there. Other teachers and teaching assistants would occasionally seek to use the office as a back-stage area, to have a conversations 'in private', although these attempts were normally unsuccessful and would be continued elsewhere.

When I was alone in the office students, teachers, and other adults walked in and out. If the HoD was there the rules changed; students knocked, and Teaching Assistants asked permission to work there with students. Other teachers still came in and out to use the photocopier, although there were unwritten rules about the way in which this ought to be done, and the times conversations might be initiated. Last night's TV, hangover cures, wedding plans, resources, school policies, ideologies, and social justice issues were all discussed around the photocopier, although the main topic was *how that lesson just went*. If you faced the photocopier, keeping your back to the room then people usually left you alone. If you pressed 'go' on your copying, then turned to face the room, brief conversations took place. On one occasion an MFL PGCE student broke the rules of the space, asking for help in a way the teachers described as 'cocky' and 'arrogant'. The PGCE student didn't know how to use the copier, and asked the others (who were working with their backs to the room) for their subject's code. His request was refused. He also went to use the guillotine, and was again denied this; it had been bought by the

geography department and so if he wanted to use one it should be the MFL department's guillotine. 'So rude', remarked Steve after the intern left;

> do I need to put a sign on the door? I don't just walk into the MFL faculty room and just start having a conversation…They shouldn't use the guillotine – we bought it, and offered to share, but no-one wanted to, so it's just ours. It's getting out of control the people coming in here. (Steve, fieldnotes 26/4/13)

The unwritten rules surrounding the uses of shared spaces are complex, and offer a setting for power relations to be negotiated. The rules may be hard to apprehend for the uninitiated, whereas, for those regularly constructing the space in a consistent way (we don't talk at that volume here, or use that equipment if we are from that department), violations are interpreted as aggressive moves to disrupt these norms. Students who 'messed around' in the office also received stern responses from some of the teachers, who felt their space was being violated: there was a desire for the space to be more back-stage. Exerting authority, and 'acting like a teacher' are draining things to constantly do. Recontextualising principles constructed in these busy, contested spaces may reflect something of them, which incluepdes the notion that recontextualising principles are, on various levels, constructed *in space-times*.

5.1.3: Department virtual shared area

Increased accessibility of electronic information and communication (in particular, email, social media, and news articles) has been argued to have contributed to a blurring of distinctions between home and work, or personal and professional spaces; to being *always on* (Ito et al. 2008). Teachers and students regularly contributed to a social network ('Yammer') at, and away from school.

> I think the aspect of that social media is that increasingly now it's becoming more of a two- particularly at A Level it's more of a two-way street, so not only are we saying you need to go and look at these articles, but students themselves, when they're looking at the articles that we've told them to look at online, they find other, and they'll post something and say oh I found… (Ruth, TC department interview: 215)

Personal Computers (PCs) were *ubiquitous* (Barbour 2010), and a considerable amount of teachers' time was spent in front of them. One monitor on the teachers' desk pointed towards them, and a projector mounted on the ceiling projected onto the white board. The projection surface in each classroom was adapted from a rotating chalk and white board, one section of which had been painted matt white for projections; the other sections were left as normal white board surfaces (Figure 22).

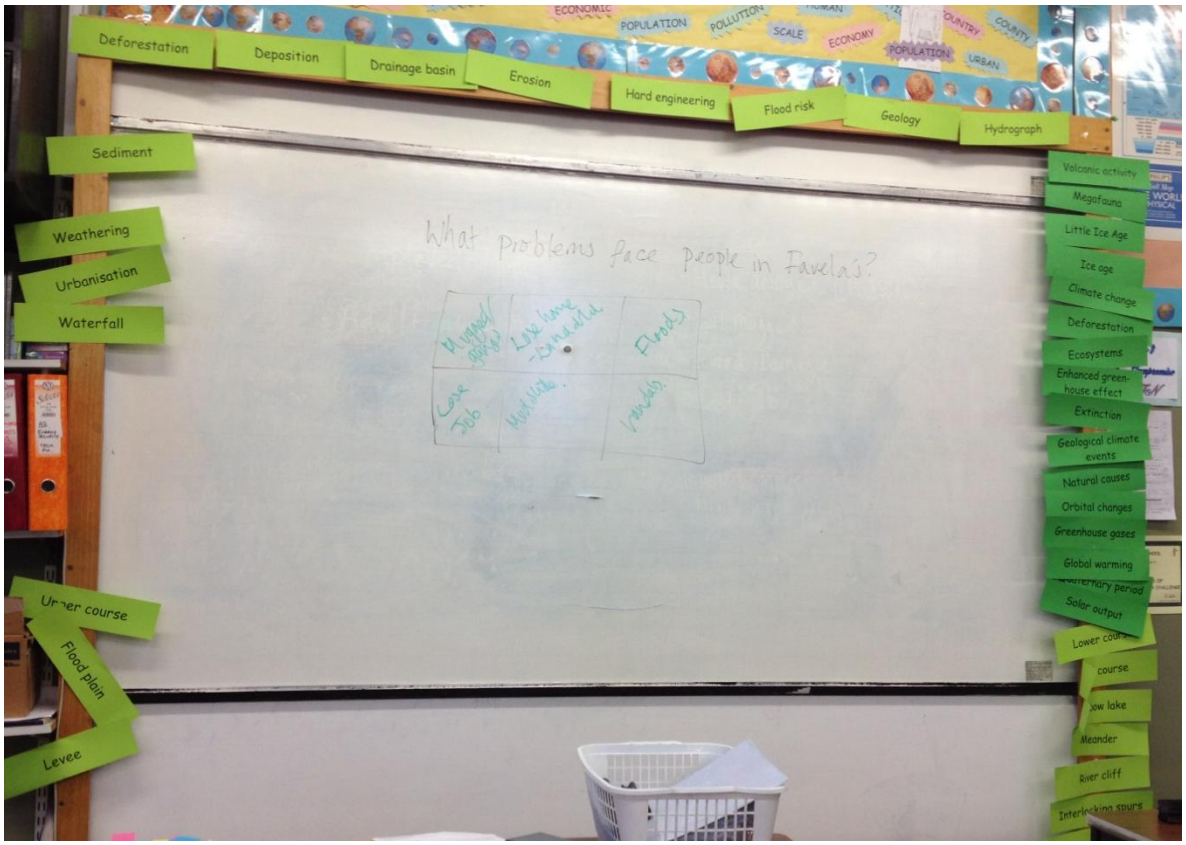


Figure 22. Rotating white boards; one section (the lowest section in this photograph) was painted in matt white for projecting on

There were also two computers in the humanities office, although teachers only used these as a last resort when their room was being used by someone else (normally

teachers from a different department, such as Physical Education, who do not have their own classrooms). Teachers' PCs had two main storage areas for their work: a personal space, and a shared area (which included a subsidiary shared area with restricted access for students). All teachers have administrative rights to access, edit, upload, and delete files on the shared area. Data collected from Town Comprehensive's VSA for KS3 are summarised in Table 8.

What is included?	Propositions (more than just labels)	350
	Sounds (inc. spoken work, music and effects)	46
	Images (inc. photographs and diagrams)	327
	Numbers (inc. grid references)	130
What format is it in?	PowerPoint	136
	Website	41
	Textbook	39
	Worksheet	197
	Photograph	4
	Video	36
	Book	1
	Newspaper	1
	Card sort	24
Who made it / where was it produced?	This department	288
	A teacher from elsewhere	14
	General published material	37
	University / Academic	1
	NGO	9
	Commercial school geography resources	120
	News organisation	12
Year groups		7-9
Dates of creation (most recent modification)		2005 – 10/2012 (analysed 10/2012)
Total number of resources		472
Total number of lessons		136
Mean number of resources per lesson		3.47 (S.D: 1.97)

Table 8. Summary of Town Comprehensive's VSA (for KS3)

Files were organised under the age of the students, as expressed in key stages (3, 4, or 5), and then according to their year groups, topics, lessons, and activities. A breadcrumb of file location normally looked like this:

Key Stage > Year Group > Topic > Lesson > Activity

The shared area made the department's schemes of work, lesson plans and resources accessible to the teachers, who all taught similar lessons in a similar sequence. As I moved between lessons I regularly saw the same resources being used in the same activities. Ruth expressed the uniformity of topics taught across the department in these terms:

> we know what we're doing, we're not all doing our own separate thing, but although we're all together in terms of what we're delivering, it still, um, allows for us to be ourselves in our classroom, and do our own little bits of creating. (Ruth, interview 1:175)

'Being ourselves' and doing 'little bits of creating' hints at aspects of teachers' recontextualising principles that are personalised. There also seems to be a tension between teachers as autonomous, and departments as internally consistent. Teachers personalised resources primarily through cosmetic alterations, rather than changing content. Steve often laughed about the 'snazzy' designs of his PowerPoints, a joke shared by others:

> Say for example, y'know, Steve's done a PowerPoint and it's, it's just white with black writing on [laughs] – hence I took the mickey out of him the other day with his year 11s…I would probably then take that and go, right, erm, and turn it into something different. (Gemma, interview 1:96-98)

Adding resources to the shared area meant adding them to the department's canon. Questions raised about the issues surrounding the legitimacy resources assumed, and the trust placed in them by teachers, are explored further below (5.4: Jess).

Powerpoints were used in almost every lesson I observed in Town Comprehensive. Titles, lesson objectives, diagrams and definitions were normally included. Almost every lesson in the shared area was accompanied by a PowerPoint, and multiple worksheets (Figure 23).

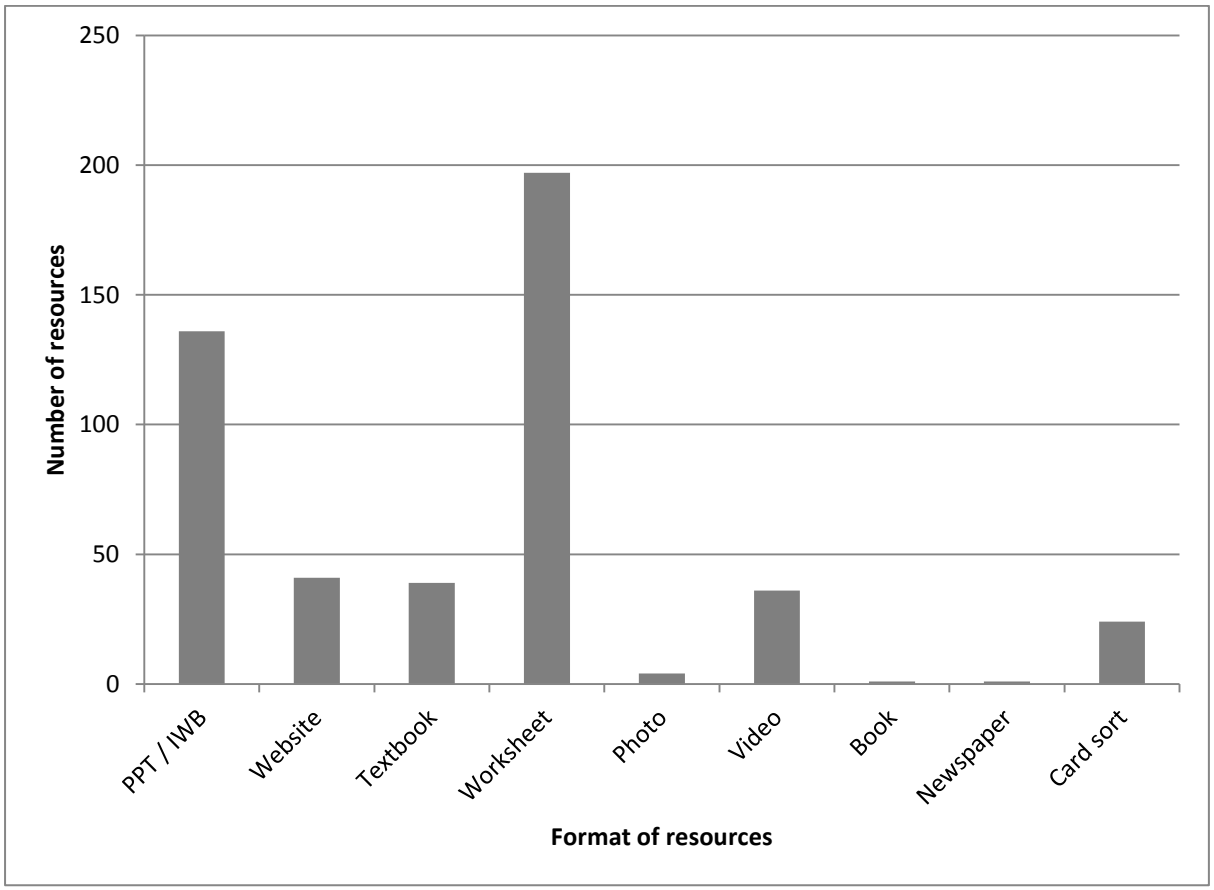


Figure 23. Totals of different formats of resources in Town Comprehensive's VSA for KS3

Formats of resources were identified according to file extensions. For example, PowerPoints also contained photographs and videos (327 of the 472 resources included images), but when being classified according to 'format' they were included only as PowerPoints. Card sorts were counted when they were labelled as such, although some worksheets also included sections which may be cut up into cards. The majority of the resources at KS3 were created by the department (Figure 24).

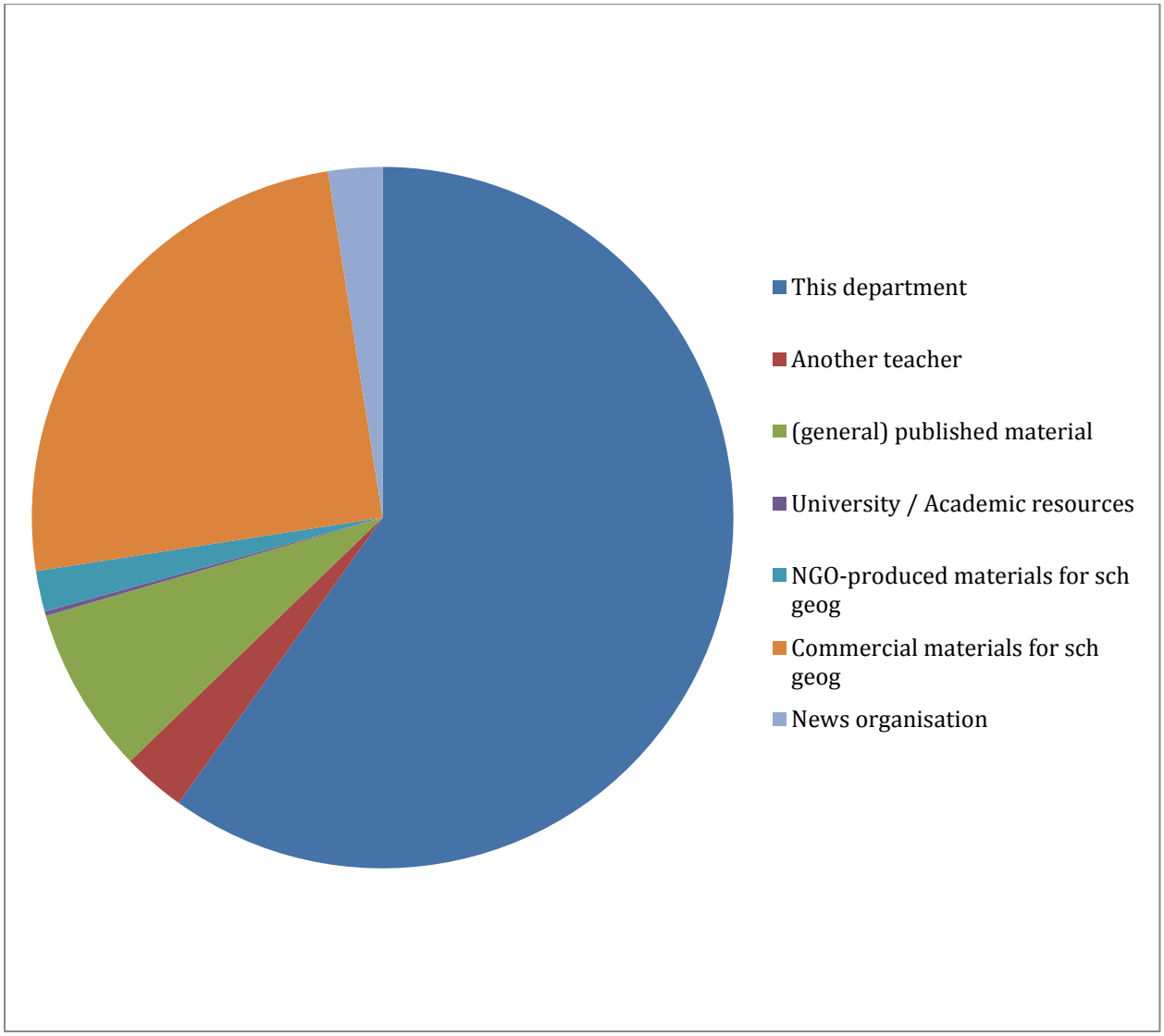


Figure 24. Authorship of Town Comprehensive's VSA resources

The quantity of resources (472) – and these are only for KS3 – and the authorship of these resources (the majority are made by this department), suggests that teachers play a significant role in recontextualising knowledge for school geography. Further, teachers have chosen all of the resources included in the shared area, and so even those not authored by them are dependent on the teachers' choice. The second most frequent authorship is the category of commercial materials, which includes PowerPoints (mainly 'Boardworks'), worksheets, and textbooks (Town Comprehensive primarily

used Oxford University Press' Geog.1, 2 and 3 series). There was one resource directly taken from academic geography; an audio file about Space by Doreen Massey.

The earliest date of resources held on or referenced in the virtual shared area were the department's textbooks (published in 2005). Most resources were created, or last edited (the most recent was recorded) within the last five years. Editing or creating of the resources related to each topic happen at approximately the same period of time each year. For example, the topic on 'Crime' has files last edited in January 2008, December 2010, and January 2012. Similarly, the files related to the topic of 'global warming' were all last edited (with the exception of one worksheet) between June and July in 2008, 2009 and 2010. Files related to 'Tectonic Hazards' were all last edited between September and November in 2008, 2009, 2010, 2011, and 2012.

The clustering of the dates for the editing of the resources for each topic suggests that teachers work on particular topics (only) at particular times of the year. Steve produced a fortnightly geography department bulletin which included the topics teachers should be teaching with each year group (appendix ten). His organisation of the curriculum meant that students were broadly taught the same content, and assessed using the same assessments, at the same times of the year, regardless of the teacher they had. The dates also suggest that the structure and order of the topics studied in Town Comprehensive has remained relatively constant over the past five years. The ordering of topics across the year structures teachers' engagement with geographical knowledge, and is presented below as one dimension of recontextualising principles being constructed *in space-times*.

5.2: Steve

Steve was in his tenth year of teaching. After four years as head of KS3 in his previous school Steve moved to be HoD at Town Comprehensive six years ago. Steve's parents were both teachers, and he described, as a child, hearing his parents talking about 'all the fuss' involved with previous national curriculum changes. He recounted his own experiences of school geography in his parents' terms: 'I remember doing planets as part of what was the national curriculum, and it was Ken Baker and it was "you have to do this learnt curriculum"' (Steve, interview 1:48).

Despite working 60 to 70 hours per week in a school in which he felt over-worked and under-resourced, Steve often described the enjoyment geographical knowledge gave him. Maybe it was not 'despite' the wider context of the school, but because of these pressures that the inspiration and enjoyment he got from geography was important. He cited a 'really inspiring teacher' who sparked his interest in development issues, and human geography in general, which he then studied at undergraduate level, writing a dissertation on counter-urbanisation and impacts on rural communities. One of the main reasons he gave for feeling negatively about physical geography was in terms of a lack of enjoyment, which he linked directly to experiences of pedagogy he disliked. He also attributed these negative experiences to the same otherwise enthusiastic teacher:

> I remember my geography teacher obviously didn't like [glaciation] because all his other lessons were really engaging...then glaciation and stuff came out, and out came the textbooks. So I don't really remember learning that stuff because it was textbook work, whereas I remember all the other stuff that he was really enthusiastic about. (Steve, interview 1:48)

Experiences of physical geography at undergraduate level were described in similar terms, contrasting enjoyment against boredom, and facts against interpretation. Negatives were applied to physical, and positives to human geography.

> I very much steered clear of physical geography. I didn't really enjoy it that much in - not really - not enjoy it - I found, I think I found the lectures quite boring - seemed to be quite factual and less interpretive - that's not necessarily the case with all physical geography but that's what I found… I quite enjoyed the big ideas stuff, more the political stuff - but then I did do some nice environmental science type ones, which I quite enjoyed and did well at…I really enjoy teaching [development] and I feel quite confident about that as well (Steve, interview 1:56-58)

Steve transferred his notion of enjoyment to other teachers, making a link between strengths and enjoyment: 'I think staff make it clear as well; which ones they enjoy, so, um, Ruth's strength is physical geography and she enjoys physical geography' (Steve, interview 1:87). 'Strength' is an interesting adjective to describe subject knowledge; the opposite is 'weakness', and the terms are associated with power. Relations between knowledge and power have received attention (Ball 1990; Young 2008; 1971), with Young (2008) now using the term powerful knowledge to describe that which disciplines produce.

5.2.1: Conceptions of knowledge in geography

For Steve, physical and human are fundamental categories into which geographical knowledge is divided. Figure 25 shows Steve's map of areas of subject knowledge in geography; human and physical categories are identified on the top left and top right.

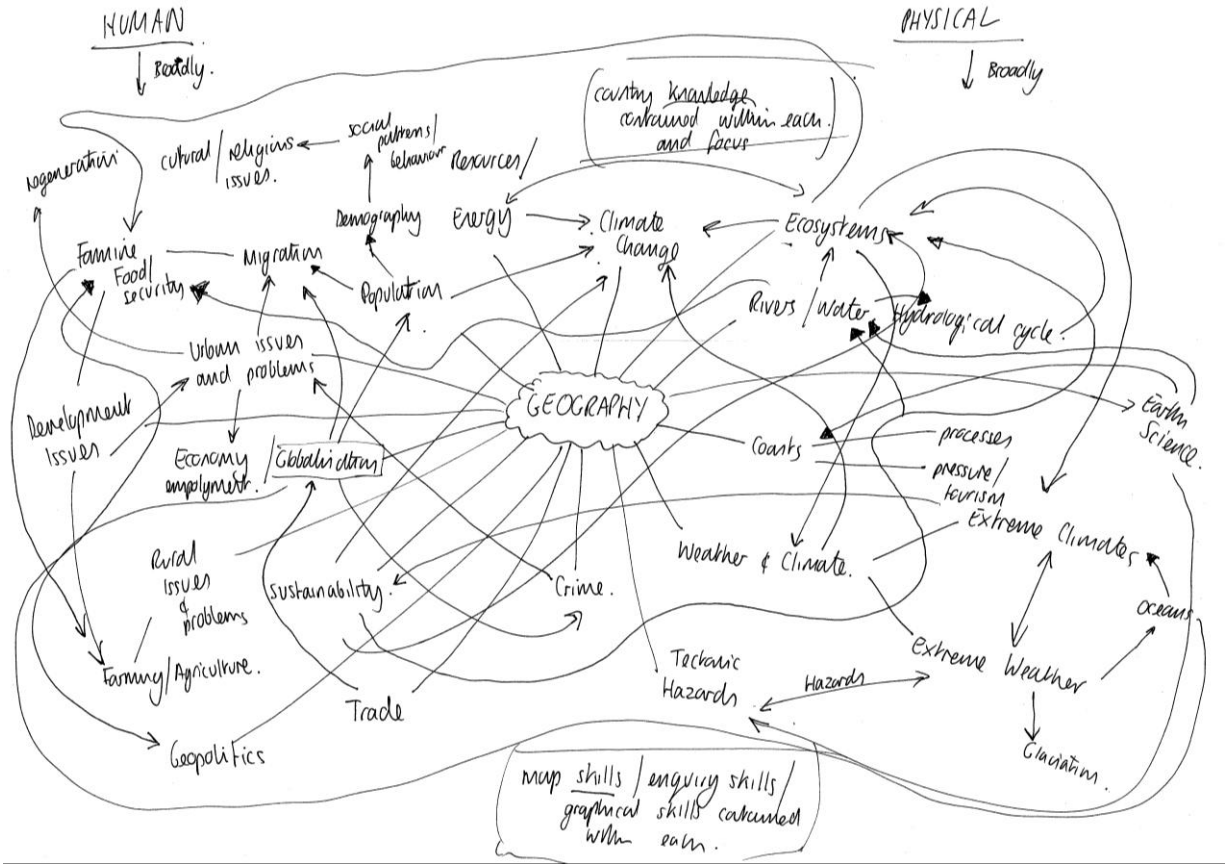


Figure 25. Steve's map of areas of subject knowledge

Steve's map is unbounded, although multiple links between areas of knowledge surround most of the map. Steve described the task of drawing areas of subject knowledge in geography as 'nigh on impossible to do in the time you're giving me! I genuinely think, because there are so many different dimensions, and so many interconnections, that I think it's a nightmare!' (Steve, interview 1:138). Steve's map was one-centred. Beginning with 'GEOGRAPHY', drawn in a bubble in a style unique to the centre, he linked all of the main categories directly to it. Although human and

physical are defining categories, there is a unity to geography, reflected in this single centre. Steve argued that both physical and human geographers find out knowledge using the same methodologies through a shared 'enquiry approach':

> one of the things that's great about geography is that there is that enquiry approach - so yeah you might need to learn the methods, and you might need to look at the approach of understanding an issue, or getting to grips with an issue, getting some data to support your ideas, analysing it, coming to a conclusion, then saying how you're going to deal or manage the problem - and the implications of that - and then redefine it - they're the fundamentals of geography, and that's the way that we all teach it. And obviously people specialise in different areas, but they go in with that base of skills that we're trying to teach them all the way through. (Steve, interview 1:313)

Physical and Human geographies were at times described as being epistemologically different (the former being more factual and objectivist, the latter more subjective), and at other times (such as that cited above) as having the same processes of knowledge creation and justification. Steve described his own geographical knowledge as something that he 'built up...through having to research and plan lessons' (Steve, interview 1:70). This knowledge is propositional, and might be 'built up', often by reading books from the examination board's recommended reading list. He was sure that he had 'missed out lots of stuff' from his map, a map he described as heavily informed by the department's schemes of work:

> I'm almost writing out for you a map of our schemes of work, which isn't very good – but I'm trying to – because that's where my focus is...National Curriculum or Schemes of Work – for A Level and GCSE, [exam] syllabuses – and that dictates what we teach to students. (Steve, interview 1:189-193)

Knowledge in physical geography was described as 'quite factual and less interpretive', which he contrasted against human geography, although he argued this also has a base of factual knowledge, and from this interpretations might be made. Reflecting on his suggested dichotomy between human and physical geographies he suggested that this

view of physical geography was shaped by the way in which it had been taught to him. For Steve, human and physical areas are also substantially interrelated (the linear connectivity of 3.05 [Table 9] is second highest in the current study).

	Steve's Map
Nodes	40
Links	122
Linear connectivity	3.05
ASK	37
NCKC	2

Table 9. Numerical description of Steve's map

Two of the seven NCKCs were explicitly included in Steve's map. Before drawing his map Steve described an 'audit' of KS3, following which he added modules about the EU. It was interesting that he did not then include the EU as an area of subject knowledge on his map. He described the audit in these terms:

> I audited it - so a few years ago there was an audit that came out, and we were, the curriculum was changed, as it constantly is, and there was a really good sheet - which, I went to a, um, a CPD thing...it went through the curriculum, all the things we should do, and it was basically like an audit of when you do it, so what I did was I audited everything we do in our subjects, or our year 7, 8 and 9, and I sort of went - where are the gaps?...we put in new units which meant - like there was a big focus on knowing about the European Union, and I, we didn't really teach that so what we did is we put in a thing about European Union and migration, and then that became a unit in year 9 and then we felt we were covering all of the curriculum that's there. (Steve, interview 1: 116)

The exclusion of the EU from Steve's map, and the language used to describe the audit may hint at the nature of audit, and the kind of curriculum that is conducive to auditing. An audit 'came out' (that is, it was an external prescription to be used for self-governance); the curriculum, which 'constantly' changes, tells us 'all the things we should do'. Audits are about looking for 'gaps', in response to which 'we put in a thing', so that 'we were covering all of the curriculum'. There is a sense in which Steve's description of the audit process offers a conceptualisation of knowledge in school

geography as a static, prescribed given. Yet the omission of the EU from his map is intriguing and may hint at 'duplicitous discourses' (Edwards et al. 2002; Ellis 2009) associated with performativity, of which auditing is an important part. KS4 and 5 were also described by Steve as a struggle between prescribed content and what might be 'brilliant geography':

> as much as we're teaching them about geography, unfortunately the increasing pressure at Key Stage 4 and Key Stage 5 is to teach them to pass the exam…we might say well that's geography - but what I end up saying to some teachers is - yeah, you're right, that is brilliant geography, it's great that they know that. But will it help them pass their exam? Are they meeting the learning objectives of the lesson? And actually those two things shouldn't be incompatible but the pressure is on us to make sure that, you know - the exam pressure is unrelenting. (Steve, interview 1:260)

Steve's descriptions and engagements with geographical knowledge are complex and nuanced, with views being offered, qualified, and opposed. The ways in which Steve conceptualises knowledge in school geography are informed by his own experiences of geography (particularly the way geography was taught to him), and are situated within his specific perspective of middle-management in an English comprehensive secondary school in 2012/13.

5.2.2: Views on relationship between school and academic geography

Steve's views on the relationship between school and academic geography were also discussed in terms of his own experiences at university, and of the specific demands he now faces as a school teacher. His experiences at university led him to the conclusion that academic geographers were highly (or, possibly, over-) specialised:

> I remember at University and my lecturers...one guy, his focus was South East Asia, so all he did was focus on South East Asia and research that area. Another guy, his focus was political and geo-politics - so you would go in there and you'd talk to him specifically about that, and there was another guy who was health - the geography of healthcare and all this sort of stuff, and actually, ok, a cohesive view from all those people isn't necessarily guaranteed. Is that diplomatic? (Steve, interview 1:256)

Presenting academic geographers as highly specialised was contrasted again with the immediate and practical concerns Steve faces over results. He believed that pressures associated with results were

> massively increasing. Maybe that's just this school. Maybe this school weren't focusing enough on that in the first place, but the level of pressure to reach certain levels and to reach national average - if you don't reach national average you cannot be a good school - you know, it's all - your results is the fundamental indicator, so therefore if your students aren't getting that…it becomes increasingly difficult to focus on anything but doing well in the exams. (Steve, interview 1:262)

He described relying on the exam specification, which guided the teachers 'towards what we know the students must know' (Steve, interview 1:142). Following our interview Steve was going to see the Assistant Head about

> the latest tracking, and how I can then look at interventions for students who are below their target grades by a substantial manner in the last tracking round, and what I'm going to do - and my time will be consumed by pursuing them - so as well as us having to worry about all the knowledge and the subject base... (Steve, interview 1:274)

Imagining what the relationship between school and academic geography *ought* to be like was something that all geography teachers in the current study found hard. Practical concerns, expressed through personalised examples, occupied the majority of teachers' time and thought. Academic geographers were seen as authority figures; when asked what kind of comments an academic geographer might have about the teachers' resources, most teachers immediately offered (negative) evaluative

statements; [they might say] it's not detailed enough, it's overly simplistic, it's a bit dated. Steve described 'building up' his subject knowledge by reading popular books written by 'academic geographers', although who counts as an academic geographer was a grey area. Popular science books, along with school geography textbooks, are produced by an expanding industry that teachers assume is closely related to the academic discipline of geography. The 'struggle for the control of the field' (Bernstein, 2000, p.115) includes drawing on influential associations, and the academic discipline was seen by Steve as an authoritative source of knowledge, even if that authority was limited by over-specialisation. Studying geography at university was seen as important for school geography teachers. However, Steve immediately contrasted geographical knowledge (empirically based statements of fact) against the skills of teaching:

> when you're appointing someone as a head of geography - or when you're appointing anyone in a classroom, you're looking for skills - and the skill of teaching - and the skill of teaching is really really important, and you, if they've got those skills and they've got the skills of enquiry, and the skills of finding out information and then using that information then I think that those skills are as important - if not more important - than geographical knowledge. (Steve, interview 1:89)

Geographical knowledge is what you might get after carrying out what Steve describes as enquiry. It is in the doing of this enquiry process that Steve saw his geographical knowledge being built up. Enquiry does not here seem to be equated with a kind of knowledge-how, and is not seen as a part of geographical knowledge (although elsewhere, and with other teachers it often was). Skills and knowledge are seen as separate, and skills are described in more generic terms; finding and using information are not geography-specific, but in carrying out these enquiries into topics of geographical study, the teacher will gain geographical knowledge: they will learn propositional facts derived from empirical data about geographical topics. Hence, Steve

describes an 'absolutely brilliant geographer' as someone with 'fantastic, *encyclopaedic* knowledge' (Steve, interview 1:104). This propositional knowledge, referred to above as static and a prescribed given, was seen by Steve as dynamic. He believed in the progress of knowledge, and described conversations with parents who had read geography at university: these parents often assume school geography might include a topic they studied at university, to which he replies that 'actually, it's moved forward' (Steve, interview 1:159). Geographical knowledge is moving forward because, for Steve, it is based on empirical evidence, and so is constituted by facts about current events: 'what I really love about the subject is that it really is about what's going on now' (Steve, interview 1:169). Contrasting knowledge against skills, and identity politics surrounding teachers' subject knowledge are themes revisited through the descriptions of the other teachers in Town Comprehensive.

5.3: Ruth

Ruth had taught for thirty one years, and all but one of these in Town Comprehensive. She was the head of year nine, and the only geography teacher to have their own office next to the geography rooms. Being the head of year nine was seen by others in school as a challenging role. Before school, at break time, and at lunchtime the area outside her office filled up with year nine students 'on report'. Listening to iPods, chatting, and play fighting in the corridor, they quickly filed into line on hearing her call *Right my little dumplings!* 'Yes Miss' they nodded, waiting for reports to be read and judgements to be made. Whether they got to spend break time with their friends, and whether or not their parents were called was in the hands of Miss. When Ruth was not teaching she spent most of her time in her office. There, she was the head of year nine. The name on

her office door said 'Head of Year 9', and the walls were filled with leaflets about pastoral issues and house matters. She invited me into her office to be interviewed. When someone knocked during the interview she either ignored them, or responded with 'Sorry I'm in a meeting' and the person went away, whereas interviews held in department offices with other teachers were regularly walked in on and interrupted.

For two years before Steve came to the school as HoD Ruth had covered the role. The previous HoD had suffered from personal issues and left before a permanent replacement could be found. Ruth told a story of the first meeting Steve ran as the new HoD, during which Steve presented a 'new' idea for teaching the structure of a rainforest by getting students to act it out. Steve learnt it from his PGCE mentor, who in turn had learnt it from his PGCE mentor, who coincedentally was Ruth.

> Poor old Steve - his light bulb spot was actually something that I had taught - yeah, but that was lovely - something that I'd taught to an intern, who then purely by chance some years down the line had Steve as an intern, and he'd picked it up from him, and then - you know, statistically the chances of that happening were just [laughs]… (Ruth, interview 1: 171)

With a wry smile she discussed the 'latest fad' of dynamic, interactive teaching, arguing that she had been using 'kinaesthetic' learning for a longer time (using her story as one piece of evidence in support of this). She also described 'losing track' of changes to curriculum. She was not interested in what changes were introduced at a national level, only what the department's scheme of work included, and she could also recall, in detail, the latest updates made to the examination specification (Figure 26).

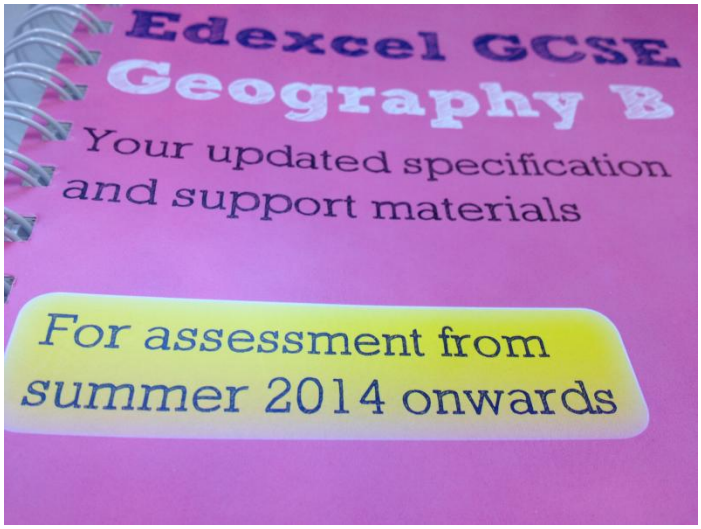


Figure 26. Examination specification updates

During Ruth's career there have been rapid, unprecedented technological changes (Arrigo & Kukulska-hulme 2013; Helsper & Eynon 2010; Carrington 2008):

> news is kind of 24 hour news…[but] when I was the age of a lot of the kids that I'm teaching, there were initially only 2 television channels, then there was 3, real excitement when we had 4, and it wasn't 24 hour - and I can remember when TV actually stopped for the evening… there were times during the day where there wasn't a programme… we didn't have a phone in the house until I was in my second year of University, and, um, we didn't have a colour television until I was at University… (Ruth, interview 1:132-134)

She described many changes in the teaching profession over her career; changes to curriculum, technology, resources, working conditions, and initial teacher education:

> it was different to how it is now - it was basically up until Christmas you were in the department, learning stuff, and then from Christmas to Easter you were just dropped into a school - there was none of this sort of, um, none of the support they get now - it was basically these are the classes you're teaching. There was no watching them with other people first. It was this is what you're teaching, these are the classes you're teaching it to, off you go. (Ruth, interview 1:16)

Ruth's own experiences of higher education represented a break from her background, being the first from her family to go to University. She described her home town as typical working-class welsh valleys. 'Around [my] school basically there were three

major council estates…your dad worked in the steel works, your mum worked in a shop' (Ruth, interview 1:56). Ruth's experiences of geography in the school in the shadow of the blast furnace were shaped by two teachers, one of whom 'was physical geography, the other one was very much a human geographer' (Ruth, interview 1:108). She also described an earlier recollection of geography:

> I can still remember my first geographical memory, my first fascination was when I was three, and it was November 1963 and it was the eruption of Surtsey, and I can remember watching that one the television in black and white, on the news, um, and being absolutely fascinated, um, but that that's the first thing I can remember. (Ruth, interview 1:108)

Here 'watching' and later 'actually experiencing' physical landscapes and processes were described by Ruth as important. She presented herself as a physical geographer, and made strong claims for the primacy of physical geography over human geography (and also over English literature). Geographical knowledge for Ruth is described below in terms of timeless archetypes combined with empirical verification. She described an English lesson in which she, as a sixth form student, was studying Keats' Ode to a Nightingale. The aim of the lesson was to study the thought processes Keats had gone through in writing the poem.

> I'm thinking how do you know that? how d'you know he wasn't just…sat there thinking I need to knock out another poem [laughing] - what shall I write – oh, lets write about a nightingale! (Ruth, interview 1:22)

Keats calls a lady in his poem Ruth; the pseudonym this teacher went on to choose. Keats' Ruth has a sad heart which is passed through by the Nightingale's song as it flies

> Past the near meadows, over the still stream,
> Up the hill-side; and now 'tis buried deep
> In the next valley-glades:
> Was it a vision, or a waking dream?
> Fled is that music:—Do I wake or sleep?
>
> (Keats, 1977, p.194)

For our Ruth, these questions are empirical, and obvious. She enthusiastically described the empirical, verifiable nature of geography in terms of physical proximity to the objects of study: being able to *actually see*. First-hand experience of physical features played a significant role in Ruth's decision to study geography at university, based around a 'strange pivotal moment' (Ruth, interview 1:26) on a Drumlin in North Wales:

> I can remember the moment where the teacher actually said to us what's this? What's this feature we're on? …and then looking down and realising I was actually stood on a Drumlin, and going 'this is a Drumlin!' I'm in a glaciated valley - this is a Drumlin. This is just brilliant! I love this! (Ruth, interview 1:22)

One of the benefits Ruth saw in technology (in addition to giving her more contact with her sons whilst they are away at university; she does not have to arrange times for them to visit their local telephone boxes) was her digital camera, which she combined with movie making software to create short films for her lessons. She also described the internet as providing 'far more updated information' (Ruth, interview 1:128) than the 'old textbooks' behind her desk (Figure 27).



Figure 27. 'Old textbooks'

However, there is an important sense in which, amid rapid technological developments and changing approaches towards finding and presenting information, fundamentally for Ruth geographical knowledge (particularly in physical geography) has not changed.

5.3.1: Conceptions of knowledge in geography

Two aspects of Ruth's conceptions of knowledge in geography are now presented:

1. Geography as dichotomous; Physical / Human

2. Geographical knowledge as unchanging

In some senses Ruth's descriptions of geography as human and physical were similar to Steve's use of the dichotomy (ascribing similar topics to each, and applying the categories to teachers), but, whereas for Steve the two were equally interconnected (even if he found one more enjoyable), for Ruth physical geography had primacy:

> there is a firmly held belief underneath all of that, that I do try to get across to the kids is that actually if you took everybody off the planet, if there were no humans, physical geography would still exist - and actually it's physical geography that underpins everything else. (Ruth, interview 1:62)

Ruth was referred to by others in the department as a physical geographer. Jess, who had only been working in the department for two months, already had a clear view: 'Oh, I know that Ruth is a physical geographer – like glaciation; she loves glaciation, and…physical processes, definitely' (Jess, interview 1:54). Months later Gemma echoed this; 'Ruth loves glaciation' (Gemma, interview 1:88). Glaciation was used by the teachers in Town Comprehensive to exemplify positions held towards physical and human geography. Ruth related her 'love' of glaciation to her history; 'it's partly because I come from South Wales' (Ruth, interview 1:108). 'Actually being there' and 'seeing' glaciated landscapes are important for Ruth.

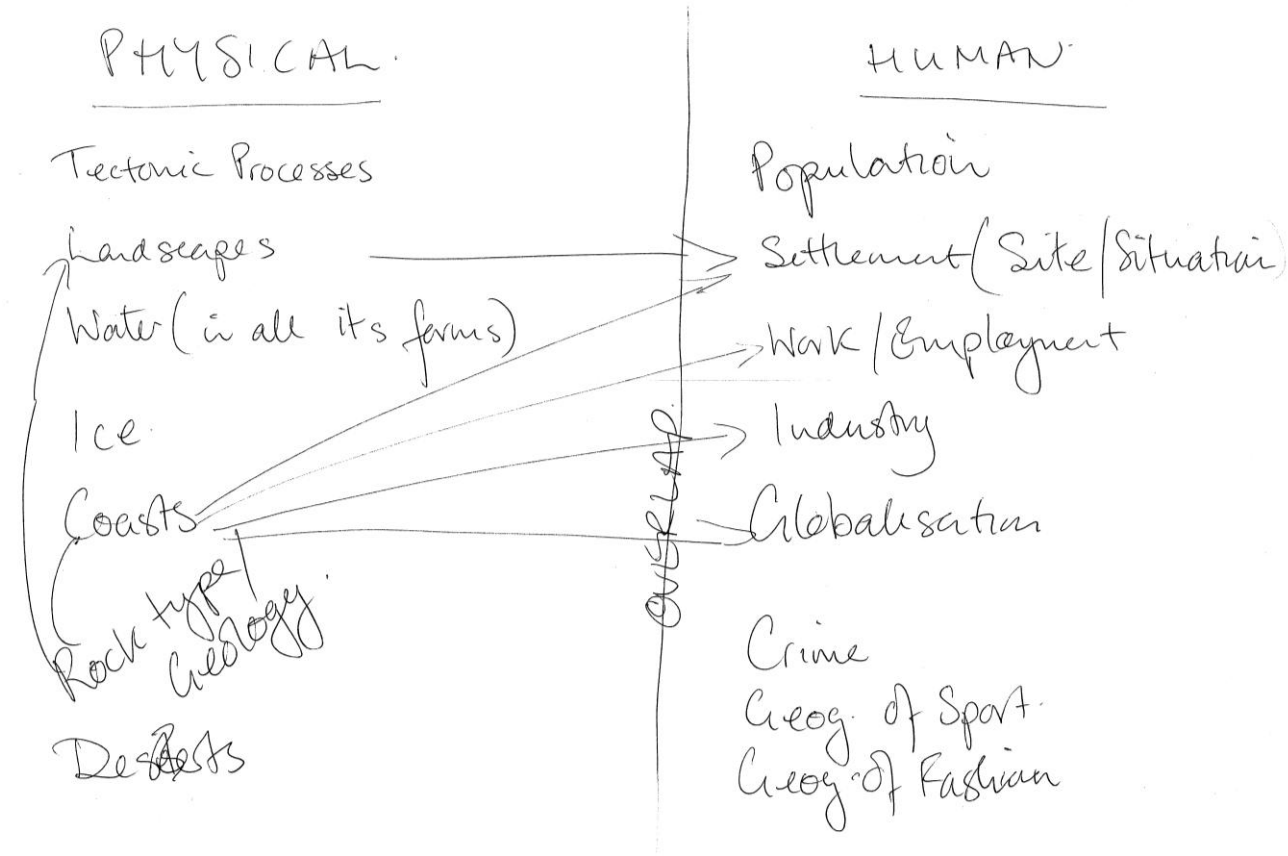


Figure 28. Ruth's map of areas of subject knowledge

Ruth's map is linear, and the arrows are one-directional; physical geography provides the literal ground for human geographies. The linear connectivity of 0.82 (Table 10) was the lowest in the current study, and seemed to relate to the clarity of her description of the relationship between human and physical geography, seen unequivocally in terms of dependency. Using a vertical line to separate physical and human topics creates a distinct separation of spaces; 'I do actually see it in kind of separate compartments' (Ruth, interview 1:114). The word 'overlap' was written along this vertical line as she described a fieldtrip to the Netherlands that she organises each year. On a journey up the Euromast in Rotterdam, Ruth discusses a physical process with students: 'there's that overlap – so you've got adiabatic processes, you've got a

man-made structure, um, you've got a little bit of technology cos it's actually showing you' (Ruth, interview 1:96). The 'overlap' is in terms of a human structure providing an example of a physical process.

	Ruth's Map
Nodes	17
Links	14
Linear connectivity	0.82
ASK	15
NCKC	1

Table 10. Numerical description of Ruth's map

One of the ways in which Ruth differentiated between Physical and Human geography was in terms of knowledge as unchanging or changeable. Part of her argument for the priority of physical over human geography was the former's stability. For Ruth, facts may change, and there is a need to update information (or 'case studies'), but there is an underlying knowledge that is unchanging: Platonic archetypes of things, and, secondary to these, local particulars. There exists an ideal earthquake archetype, and then particular, local case studies of earthquakes. While it is important, Ruth argues, to use more recent case studies with students, fundamentally (and most importantly) students need to be taught about the concept (archetype) of an earthquake. The reason that the archetype is more important is that it does not change, and Ruth equates archetypes with the processes, and the concepts describing the processes: she holds a mix of strong empiricism, with its insistence on perceptual verification, and platonic idealism. In discussing the tsunamis of 2011 and 2004, Ruth argued that the tsunami was 'the same' in both instances. Differences between them were just in terms of 'data' about magnitude, death count and 'that kind of thing':

> so y'know, certainly more with the physical stuff, it's more about changing your case studies…y'know, the tsunami was the same in 2011 as it was in 2004, you're just swapping the different data of what the magnitude was, what the, y'know (Gemma: number of deaths) number of deaths, all that kind of thing. (TC department interview:205)

Ruth has a multi-layered conception of geographical knowledge, with different types of knowledge hierarchically ordered. Geographical knowledge includes archetypes, or concepts about processes, and these concepts are, for Ruth, conflated with the processes they describe. For example, she argues there is no differentiation between our knowledge about rivers, and what rivers are, and so physical geography is unchanging: '[physical concepts] don't go out of date...timeless...that fact is still the same...at the end of the day that river is still a river, isn't it?!...' (TC department interview:77-80).

Ruth's beliefs about the timelessness of physical geography and its archetypal concepts affected some of her uses of technology:

> I've still got some of the textbooks that I would have used at A Level, and actually, sometimes, the diagrams in there are bloody good! And, y'know, that you would use them but now all I've got to do is go online and I can find that diagram, um in an electronic form, and I just copy it straight onto a page, and I don't have to do what I used to do in the past, which is have to photocopy the page, cut out the bit that I want, actually glue that onto a page, and then, y'know...your Rostow's model, and your - standard things that have seen the test of time - it's just where I get the model or the diagram from now. I don't have to go to the book… (Ruth, interview 1:132)

The journey on which Ruth embarks in her search for diagrams has changed considerably. Previously, she would turn her chair around, reach for the physical textbook behind her desk, and find the diagram she was looking for. She would then copy and glue onto sheets for her students. She presents the new, online, journey for these diagrams as something easier: *all* I've got to do…I *just…*' In the past Ruth used a textbook, but now she 'goes' online. These journeys are different. However, the

purpose of the journeys is the same. The knowledge she is seeking has not changed; it is just being accessed in a different way.

5.3.2: Views on relationship between school and academic geography

Ruth used her own experiences of geography as an undergraduate to discuss the relationship between school and academic geography. She never uses academic journal articles or university textbooks directly, although she described often presenting her own knowledge (from university) to her A Level students. Her dissertation on 'Multivariate regression analysis of tree growth in a managed forest environment' (Ruth interview 1:37) provided an important source of knowledge, and Ruth vividly recalled asepects of her undergraduate geography:

> Mike Walker - who was my lecturer at the time - was one of the leading quaternary geographers… he was going off and doing some of the early research in the Arctic and, some of the stuff - some of the analysis they were doing on ice cores from Antarctica, and so we would actually be there with ice cores that he was working on, and actually looking at pollen grains under a microscope that had come out of these ice cores from thousands of years ago. (Ruth, interview 1:45)

Her lecturer's 'going off' and 'actually be[ing] there with' the evidence is an example of the importance Ruth places empirical evidence: she sees geographical knowledge as scientific in that it is based on perceptual, empirical evidence that can be seen, measured, and weighed. Ruth described the relationship between school and academic geography as continuous (Stengel 1997). The geographical knowledge she introduced students to was 'in terms of the first year of a geography degree…a lot of this stuff is actually still quite useful, because not everybody will have done the same stuff' (Ruth, interview 2:47). Ruth's view of school and academic geography as even overlapping

seemed to follow from her beliefs about geographical knowledge as unchanging. The school subject is, for Ruth, not 'imaginary' (Bernstein 2000, p.33), but is *the same thing* as the academic discipline; the school subject just summarises concepts more simply and covers a wider breadth of topics.

5.4: Jess

Jess was in her first year of teaching. She began the NQT year in a different school on a temporary contract, and was working in Town Comprehensive also on a temporary contract, covering for Gemma. She would not finish her NQT year in this department, and so spent time applying for other jobs and attending interviews. Jess studied environmental science at university and then decided to complete a PGCE in secondary geography. She described her PGCE in emotional terms, having been 'overwhelmed' by it.

> Everyone was like ah, you need to apply for jobs, but I just thought I don't want to apply for jobs. I knew I wanted to teach, but I needed…a bit of space after finishing to just go and, I don't know, I just did a normal job. I worked in an office. I went to work at 9 and I finished work at 5. I just kind of regained control of my life. I think I had to do that because it's just such an intense experience. (Jess, interview 1:6)

However, the 'normal job' that enabled Jess to regain control of her life was not 'particularly stimulating, or challenging – it was easy but it wasn't challenging' (Jess, interview 1:10). So she went to the Maldives and taught English as a foreign language, although she also seemed to have spent a considerable amount of time learning about the geography of the Maldives, as she often mentioned it in lessons. She had also given lectures about sustainable development to undergraduates at her mum's university.

Jess' mum is a development economist, and Jess passionately described her interest in gender inequalities in India:

> the whole reason I'm quite interested in the human aspect is because my mum's a development economist and so the whole like, the human thing about like how poverty, and how you have these big differences between rich and poor countries - that's something I'm very kind of used to talking about and being very exposed to and so I suddenly got to combine the science aspects, which I do really like, with those human aspects in geography, and so, and that's how I got on - that's why - that's how I ended up becoming a geography teacher instead of a science teacher. (Jess, interview 1:30)

My relationship with Jess had characteristics of a mentoring relationship (unlike any other relationship I had during the fieldwork), because both Jess and Steve asked me to provide feedback on her lessons. The notes I made during her lessons reflect this unique aspect (I used asterisks to denote feedback I might give):

> *Split up / shorten / simplify the task – maybe get the left side to do green, the middle orange, and the right red. Question to Jess: did the students understand the first task?
>
> …
>
> *Students drawing places – maybe just include an outline on each sheet – more time to look at the places (and many students didn't finish it)
>
> (Fieldnotes, 28/11/12)

Observing Jess's lessons with consideration of the conversations we might have following the lesson made it a different experience. Often these conversations were prompted by Jess asking me how I thought the lesson went, whether I thought a particular task worked, or what she might do differently. Having these questions in mind meant I included evaluative statements in my notes, which was something I did not do in other lessons. Asking 'how might Jess improve as a result of our reflection on

this lesson' raised questions about resources with Jess that I might not otherwise have done, because they felt more intrusive and (potentially negatively) questioning of the resources. For example, questioning one resource stimulated a useful conversation about them. She had found them on the department's virtual shared area. Time was tight, particularly because there were application letters to write and interviews to prepare for, and so she often used the resources from the VSA unchanged. Jess also raised questions about these resources (and even felt guilty when using them), feeling that ideally she should create all of her own resources so they might be more *responsive*.

5.4.1: Conceptions of knowledge in geography

A notion of 'responsiveness' was important to Jess. She described geographical knowledge as dynamic, having the ability to address important questions in a holistic way that other sciences could not. Retrospectively, she suggested that where she had found responsiveness in other sciences, actually, that is properly called geography. She argued that the school geography she experienced as a student

> wasn't responsive, it didn't reflect like all these changes that were happening in the world, it was really kind of, looking back on it, incredibly outdated, and I think I recognised that - I was just like "well this is a total waste of my time" - I'm not really taking anything out of it, and I felt as if I took a lot more out of other subjects, like for instance Science, in terms of I took more geography out of Science than I took out of geography, so I didn't pursue it to A Level, um, but then when I went to University I started a degree in ocean science and it was really perverse because, um, I've come to realise looking back that the reason I didn't enjoy ocean science was because it was very much about the kind of the physical world, but it didn't look about the kind of geography aspect of it - so it didn't have about the kind of interactions with people, or human interactions, and so I didn't feel that like that degree really reflected the reality of the situation. (Jess, interview 1:20)

'Reflecting reality' meant, for Jess, avoiding over simplifications, and representing in the school subject something of the super-complexity of the world. Knowledge that ignored human interactions was described as 'unresponsive'. There is a strong empirical element to Jess' conception of geographical knowledge, which might also be described as a kind of realism, or correspondence theory: geographical knowledge *reflects* reality. Jess represented the highly connected, interactive nature of geography in her map (Figure 29) with very high linear connectivity of 6.44 (Table 11); over twice that of any other map in the current study.

> being able to teach a responsive curriculum is incredibly important, because the world is changing - like what's the point of studying Italy when we have the internet, and we live in such a global kind of - Europe is so, there's so many links, it's so connected that these things don't apply. (Jess, interview 1:36)

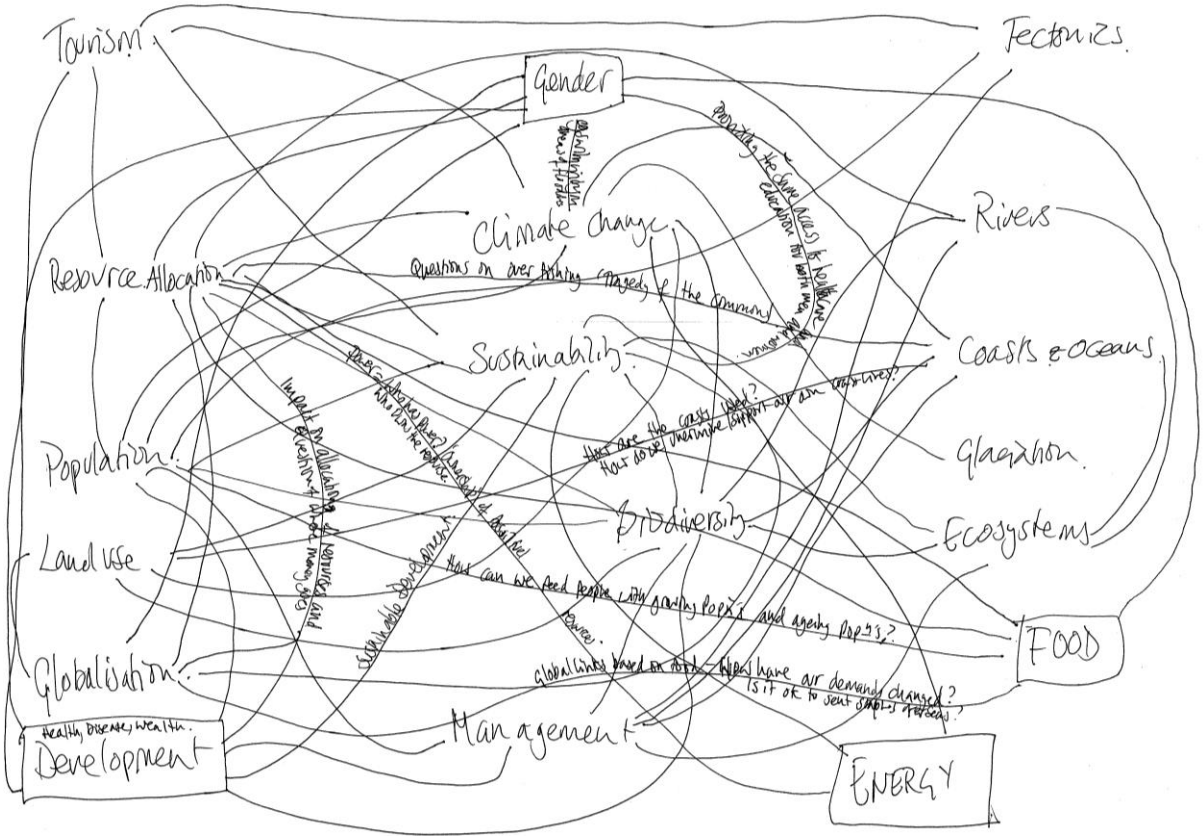


Figure 29. Jess' map of areas of subject knowledge

Rather than joining to a centre, the areas of knowledge on Jess' map are completely inter-related. Her map is unbounded, and 'spaghetti'. She did not use the categories human and physical to explicitly mark areas of her map, although the categories on left and right are broadly human and physical as she described them. Four areas were highlighted using square boxes: gender, development, energy, and food, which seemed particularly important to Jess. These were areas she had also given lectures on to undergraduates.

	Jess' Map
Nodes	18
Links	116
Linear connectivity	6.44
ASK	18
NCKC	1

Table 11. Numerical description of Jess' map

5.4.2: Views on relationship between school and academic geography

Jess studied environmental science at university, and she drew no strict disciplinary boundaries between subjects. Instead, anything 'responsive' was included within geography, allowing her to freely draw on other disciplines. Jess had an openness to whatever approaches might work towards the ends she envisioned for school geography. Academic geographers may be useful for the knowledge they produce, but in themselves did not have any particular authority over the school subject. Instead, school geography is about developing skills in young people to explore the world:

> in Key Stage 3 I love the fact that it's focused on the skills that are taught, rather than on the subjects that are taught, because it means that we can make things, we can really do the whole personalised geographies so...we can focus things on [our local town]...like flooding...settlements, even kind of like industry - where people are living and things like this - on this area that they know and they recognise and they can like see the trends from - it's pointless us teaching them

> about Birmingham if they've never been there and they don't even have that great an idea of like where it is and the greater context, because at least they know this area, they can explore it themselves, and so I think that's very important. (Jess, interview 1:90)

There are interesting similarities between Jess and Gemma, particularly in their positioning in relation to Ruth and Steve.

5.5: Gemma

Gemma had taught geography for nine years, all in Town Comprehensive. She was on maternity leave during my first visit to the department. She was the head of year eight, and much of her time was, like Ruth, spent handing out report cards, seeing students, and giving detentions. At times she explicitly separated the roles of geography teacher / head of year when speaking to students. For example, at the end of one lesson she asked Ryan to stay behind: 'I want to talk to you, not as your geography teacher, but as your head of year. Because, as your geography teacher I think you're great, but…' (fieldnotes, 24/4/13). Gemma was keen to find a different job, possibly as head of sixth form in a different school. The head of sixth form position previously came up in her current school; she applied for it, but was unsuccessful and it was given to another internal candidate. The experience was highly emotional and adversely affected her relationship with the head teacher. Working at a computer in the humanities office, she exclaimed

> I hate key stage 3! It's the same thing over and over again. I've got the same lesson for the third time running next'. Later, she laughed; 'my one free period and I've spent it ordering stationery! (Fieldnotes, 23/4/13)

During this free period she also spent time on emails, one of which was a job alert from the TES (Times Educational Supplement) website. Browsing jobs advertised on the site, she thought out-loud about them. The office was filled with the sound of new opportunities; how about a houseparent job? I could do that? Ooh, here's a head of sixth job… House master… What's that? Ooh, this looks good – a really nice, small school… The politics associated with internal promotions left Gemma disillusioned with the school. However, she had good relationships with both Ruth and Steve, and often saw Steve socially outside of school. Gemma provides an example of the importance of departments, and the collegiality they may facilitate.

5.5.1: Knowledgeable people

Gemma described her own experiences of school geography as having been affected by the high expectations placed on her as the youngest of four siblings. After a 'sort of minor meltdown' during sixth form Gemma re-took her A Levels, a year she described as the hardest of her life. Amid the struggles of that year she got enjoyment from geography which led her to study it at University:

> I wanted to do a geography degree cos I…I enjoyed it – it was the only A Level that I really enjoyed…I had two fabulous teachers, who had completely different teaching styles…One was an NQT who was full of enthusiasm – she was young, interesting, she was really kind of fired up about, you know, things, she'd come in the room and she'd be fascinating in that respect, and then I had [laughing] and then I had a guy, erm, who was just like…a very serious man…but had the driest sense of humour, but he was also incredibly intelligent, and he could have taught any subject to any level. He was the most knowledgeable man I think I've ever met in my life. (Gemma, interview 1:166-170)

Gemma's teachers' personalities and enthusiasm for geography were described as being important in her decision to study geography at university. Being intelligent or

knowledgeable was often described by Gemma in revered terms. Both Steve and Ruth were regarded by Gemma as being very knowledgeable: Ruth has so much knowledge in her head that Gemma was surprised it did not spill out of her ears. Similarly, Gemma described Steve's knowledge of various human geography topics as 'incredible'.

> Steve is so actively interested in contemporary issues, that, y'know, he reads prolifically – I wish I had the time to read [laughing] – or the energy, um, but he knows loads and loads of stuff. (Gemma, interview 1:94)

Holding others in high esteem based on the volume of their knowledge was used by Gemma to separate herself from them, only referring to her own knowledge self-deprecatingly. Ruth was able to say 'right, we need to go and do this, this, this, this [clicking fingers], straight off the top of her head…', whereas Gemma '…would probably know that, but [Gemma] would go well, hang on a second, we'd probably want to do that, um…' (Gemma, interview 1:94). Gemma argued that she knew where to find things, and would be able to 'get there', but in quite different and more humble terms than those she used to describe Steve and Ruth.

There is a tension between setting others apart as being more knowledgeable, while also defending one's own knowledge and position. So, Steve's prolific reading and engagement with current affairs through social media is described as being very useful. Ruth's ability to tell them what they need to do for a fieldwork project about a physical geography topic is likewise very useful, and the kind of thing that Gemma positions herself as being unable to do. They have, and give, knowledge that Gemma does not have. However, this does not mean that Gemma believes she has a lesser role to play. In both Ruth and Steve's abilities and knowledges, limitations are also described. In one example Gemma describes the ways in which Steve might share something he had found:

> We might be talking about something and he'll go oh, hang on a sec, I'll show you this I found – this might be good for your A Level lesson…or he would send an email link – I've added this to… (Gemma, interview 1:96)

Grateful for this, and highly appreciative of the collegial nature of the department's culture of sharing knowledge and (or through) resources, Gemma then goes on to describe the limitations of this knowledge, and thus position her role:

> I would probably then take that and go right, erm, turn it into something different…particularly where the activities in the scheme of work are quite generic and are not necessarily differentiated. (Gemma, interview 1:98-100)

Using the specific example of class '9R', Gemma would

> tend to differentiate everything…whenever there's any writing that there's sentence starters, that it's much more basic language, that it's much more colourful, there's more use of pictures an images…I tend to do the same with GCSE as well…I take whatever has been created and then…doing it down…I would go away and make it simpler for my group. (Gemma, interview 1:98-104)

Her role is described in pedagogic terms, as opposed to the knowledge that may have been provided by Ruth or Steve. Being different yet complementary to Ruth and Steve was paralleled in her descriptions of the department's human/physical categorisation of the subject: 'I find things easier [than Ruth or Steve] because I'm happy to dip into both…I don't particularly mind which topics I teach' (Gemma, interview 1:90).

5.5.2: Conceptions of knowledge in geography

Gemma's views about geographical knowledge were presented above as being related to people and emotions, including teachers from her past and the subtle identity politics within the department. Gemma personalised her map from 'geography' in general to

'my knowledge in geography' (Figure 30). She described knowledge in school geography as something the teacher is *supposed* to have:

> when you're teaching A Level if they're asking questions and you can't answer it you look like an idiot, and it's like that's not a good feeling - let's be honest [laughing], you don't want to stand there at the front and think I'm supposed to be- look like - I'm the one that knows what they're doing, and you've just asked me a question and I've got no idea how to answer it…I wouldn't like to feel that at sea, if you know what I mean…because otherwise I'd probably poo my pants and wouldn't know what to do [laughs]… (Gemma, interview 1:144-146)

Here, knowledge is important for maintaining the students' perceptions of the teacher as the one who 'knows what they're doing', and for protecting the teacher. During the department interview I asked how confidently we should hold geographical knowledge. Gemma personalised her response, applying the terms to her position as a teacher:

> I think maybe when you're teaching…we've taught things at A Level which were things we hadn't taught before, or had very much experience of – that was only the time when I felt tentative about making sure that I…was completely jenned up on everything (S: yeah, you have to), so that if they asked me a random question then I could go, yeah, erm, so and so and so and so – erm, that's the only time I've probably felt a bit under-confident about, erm, knowledge… (TC department interview: 221)

Affective dimensions were invoked; Gemma discussed feeling tentative or under-confident, although this was qualified as 'the only time' and even then only 'probably'. Gemma's subject knowledge is defended and personalised. Raising questions about how confidently knowledge should be held was seen by all teachers in Town Comprehensive as a potential attack on their professionalism. They were expected to be knowledgeable, and this knowledge is objective, separate to them as teachers; it is something they get, hold, and give to students. Not being confident about knowledge was seen in negative terms as something to be avoided, rather than an epistemological position based on the partial nature of geographical knowledge. One reason Gemma

gives for this defensive, objective view of knowledge are the situations she anticipates facing ('if they asked me a random question'). Gemma expects her subject knowledge to be *tested* by her students, particularly at A Level, the only Key Stage named on her map (Figure 30). She contrasted traditional geography against current issues, and included 'current' three times.

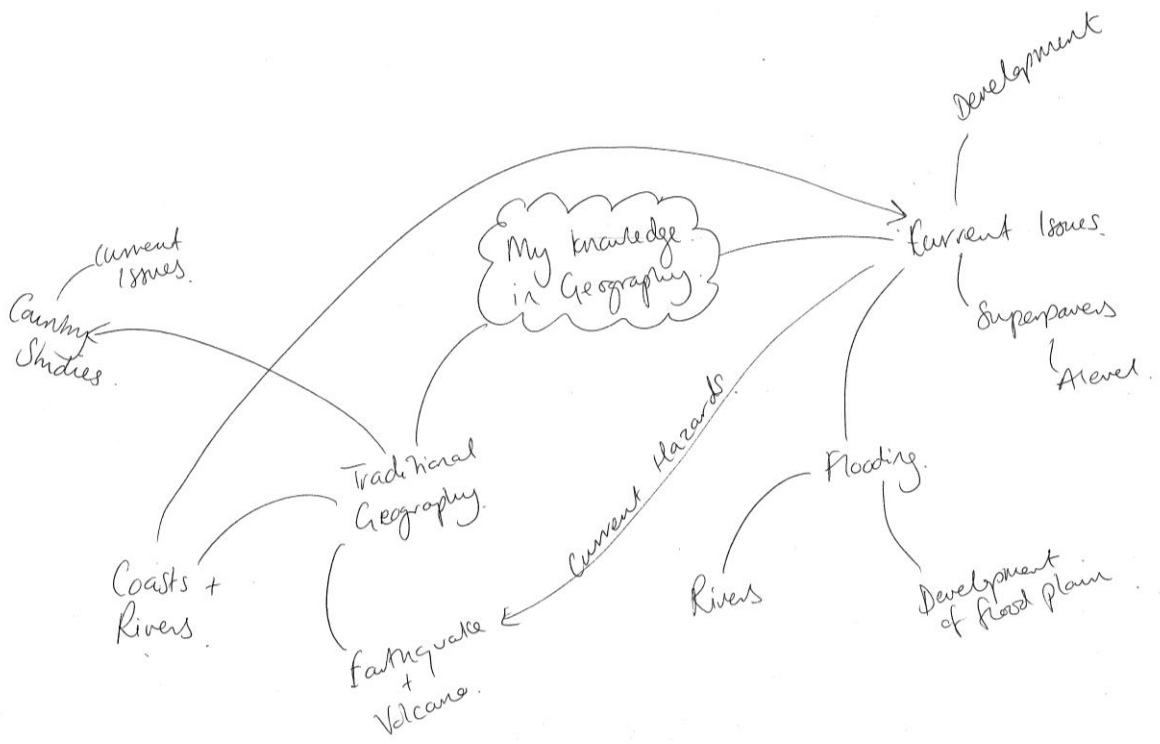


Figure 30. Gemma's map of areas of subject knowledge

The areas of traditional geography, and current issues were directly linked to her geography node. Her map is unbounded and several-centred. For Steve and Ruth human and physical geography were the organising categories of the subject, whereas Gemma visually divided geography into current and traditional; the terms human and physical did not feature. However, this does not mean that physical/human were not important categories for her, and she often used the terms when verbally describing

geography. The central node 'My knowledge in geography' also represents Gemma's discussion of geographical knowledge in terms of identity politics; this knowledge is something held in different quantities by people between whom she differentiates (students, and other teachers in the department). The knowledge has use value between these people, creating and sustaining status and identity. The teacher is different to the students, which is demonstrated by their subject knowledge (in terms of the teachers' ability to answer students' questions), and is different to the other teachers because of their subject specialism. In this department there is a very clear allocation of roles and identities.

	Gemma's Map
Nodes	13
Links	24
Linear connectivity	1.85
ASK	11
NCKC	0

Table 12. Numerical description of Gemma's map

Gemma's areas of geography were described as parts of the same whole, sharing the same 'basic concepts that under-run' (Gemma, interview 1:142). The unity of fundamental concepts meant that categories of traditional/current were not presented as dichotomies. She shared something of Ruth's platonic archetypes: there are timeless, unchanging concepts (traditional geography, concepts that under-run), which the school subject studies through current issues. What these current issues might include was left open. Her map is unbounded, and she believed that

> fundamentally geography underpins pretty much every subject in the school, because – and this is what the kids need to understand – because there are elements of geography in pretty much every subject. (Gemma, interview 1:160)

Here the identity politics of geographical knowledge move beyond the teacher-student and departmental relations, to those with other subject areas. It is seen as important;

kids need to understand that geographical knowledge is not restricted to geography lessons, but underpins and is in almost all other subjects: the type of 'current issues' included within geography is open, and nothing was described as necessarily out of range.

5.5.3: Views on relationship between school and academic geography

Gemma imagined that an academic geographer looking at the resources she uses may say 'gosh, that's basic!' (Gemma, interview 1:226). She assumed their comments would be (negatively) evaluative, although she also argued that reactions may depend:

> if they were an academic geographer who had experience in education or not, cos I think that would change their viewpoint, because if you were just an academic who had never taught children, you might not necessarily think about some of the things that you have to do in order to break things down and make things more accessible to kids. (Gemma, interview 1:226)

The distinctive domain of the teacher is described here as breaking concepts down to make them accessible. Recontextualisation as simplification is the same process Gemma sees as her own role in the department. Others may have a larger *quantity* of knowledge, but she is able to simplify so that students understand. Gemma was also critical of over-specialisation in academic geography. 'That's the trouble, as soon as [Academic geographers] get into research it's all about one tiny, tiny, teeny-weenie area, and they forget about everything else' (Gemma, interview 1:228). The school subject (from the teacher's perspective) is seen as being much bigger than the academic discipline (from the academic's perspective). However, while the school subject may be bigger, the control exerted on it by examination specifications was, for Gemma, considerable and restricting.

5.5.4: I forgot your syllabus had changed

One Wednesday (24/04/13) Gemma taught her year 10 class about a flooding event in Boscastle. She began the next lesson with this class (the following day; 25/04/13) with an apology:

> I forgot that your syllabus has changed. We didn't need to do Boscastle yesterday. Your case study has changed. The current year 11's were examined about it, but you won't be. Sorry! [HoD] did tell me, but I was so busy that I didn't have time to remember and I forgot! So, we're going to do the case study you need today. (Gemma, fieldnotes 25/04/13)

The exam board specification played a powerful role in determining what teachers taught, and this example from Gemma is particularly, although not uniquely, explicit. Students were often told that a topic was being studied 'because we have to', or because 'it's on the specification', and 'it will be on the exam'. Students expected, and accepted, a rationale based on exam specification. When they were unhappy to be studying a topic the first question they asked (if the reason had not already been given) was whether or not they 'needed' to know this. Will it be on the exam? The implicit value attributed to studying school geography both by teachers and students was often expressed in terms of accreditation (gaining a GCSE or A Level grade). The teachers in Town Comprehensive contrast against those studied by Priestley, Biesta, and Robinson (2013), whose data gives 'little sense…of teachers seeing education as being about the acquisition of knowledge. Similarly, and equally surprisingly, there is also little about accreditation as a purpose of education' (p.196).

5.6: Recontextualising principles and summary of Town Comprehensive

This chapter has described Town Comprehensive's physical and virtual spaces, and has presented summaries of Steve, Ruth, Gemma, and Jess. Teacher summaries included background information about careers, conceptions of knowledge in school geography, and views on the relationship between school and academic geography. Three dimensions of recontextualising principles emerging from these descriptions are now outlined; recontextualising principles as *personalised*, created in *space-time*, and *regulated*.

5.6.1: Recontextualising principles as personalised

The term 'personalised' is primarily used here to indicate that teachers' views about knowledge in school were overwhelmingly presented in highly personalised terms by the teachers, often through examples of what *I did, this morning*. Normative questions about, for example, the position academic geographers ought to have in relation to school geography, were answered with reference to a tutor *I* had when *I* was at university. Teachers in Town Comprehensive spent most of their time in their own classrooms. While they shared a considerable amount of resources, each acted and spoke as to indicate that their classroom, and the knowledge students learnt there, was their responsibility. What knowledge to recontextualise, from where and for whom, are issues these teachers are engaged with in the context of their particular classes. Whether or not it is good to draw on academic journal articles is directly related to whether or not '9R' would get anything meaningful from it. Personalised aspects of

recontextualising principles are closely related to the space-time dimension considered below.

In addition to the argument that recontextualising principles are described by teachers in personalised terms, each teacher in Town Comprehensive also had personal, as in individual, views about knowledge in school geography, which seemed to have been shaped by (and effected a shaping influence on) their experiences of geography at school and university. The individuality of teachers' recontextualising principles was particularly noticeable through their individual positioning within the department. All the teachers spoke about geography through a physical / human dichotomy, and allocated areas of expertise to one another. Steve is a 'human geographer', Ruth is a 'physical geographer', Gemma, and to a certain extent also her replacement, Jess are seen as a 'balance' in-between. Identifying oneself as 'strong' on certain areas of knowledge created expectations and informal responsibilities, and the department shared a belief in the complementary nature of their individual, personalised understandings of geography.

> Ruth: we've got different strengths in our knowledge (Steve & Gemma: uh-humm) but I think we are all pretty knowledgeable (Gemma: laughing) about the kind of stuff we're teaching (Steve: yeah), whereas I think in some departments…the degrees that people have – all of us have got degrees in geography (Gemma: yes) – in terms of what has gone into that degree, it's (Gemma: all different) it's different (Steve: yep) but at least they are all basically geography degrees – there are other departments where people don't have degrees in what they're teaching. (TC department interview:163)

5.6.2: Recontextualising principles in space-time

Teachers made journeys for knowledge, whether from the undergraduate degrees they went and 'got', or the websites they 'go online' to read. Their recontextualising

principles are constructed in space-time, through journeys that intersect different space-times on a range of scales, including aspects of the past, present, virtual, and physical, and with individuals or groups. Some journeys involved rigorous planning, others were spontaneous and unplanned. Just as these teachers described geography as being 'everywhere', their searches for knowledge were not restricted to time in school 'at work'; family holidays, social media over breakfast, and sport at the weekend were all drawn upon and provided knowledge to recontextualise for their lessons.

In tension with an 'always on' attention to subject knowledge was a feeling of having very little time. Teachers' experiences of space-times were often described negatively; compressed, strained, and restricted. Spaces and times were primarily used for short-term planning and activity, driven by a perceived need to maintain a normal desirable state in the classroom, keeping students busy (Brown & McIntyre 1993).

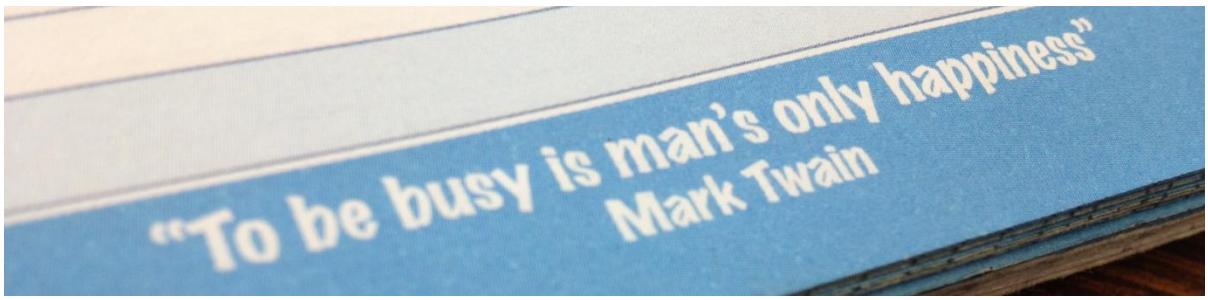


Figure 31. One page in Town Comprehensive's student planner

A great deal of time is spent by teachers on practical tasks around the department, such as photocopying and cutting up resources in order to 'be ready' for the next lesson. Being ready meant being found in a certain location (the classroom) at a certain time (on the bell). The comprehensive scheme of work Steve had put in place, and the organisation of resources on the VSA meant that finding resources was normally an

efficient process, and teachers in this department often used the same resources for similar activities.

Teachers face other demands in addition to teaching; being a tutor or a head of year, running clubs, and organising trips. The institutional rewards (including praise from Ofsted and promotion in school) did not come from having spent time developing recontextualising principles; subject knowledge is an assumed prerequisite.

The combination of various demands made on teachers' time, the immediacy of the students waiting in the next lesson, and the institutional rewards for things other than subject knowledge all make subject knowledge, or reflection on recontextualising principles unlikely recipients of teachers' time. Although there is not the historical evidence in the current study, teachers described their experiences in similar terms to Ball's (2013, p.60) description of the 'increased pace and intensification of work'.

5.6.3: Regulation of recontextualising principles

Increasing pressures were attributed by the teachers in Town Comprehensive to examinations, and their related uses in league tables and Ofsted inspections. Exam specifications exerted the most obvious regulation of recontextualising principles at KS4 and 5. Regulation of recontextualising principles is about control; who decides what may be taught, to whom, and when. Other factors regulating recontextualising principles include; teachers' beliefs about knowledge, examination specifications, the National Curriculum, departmental schemes of work, available resources, and time.

Grouped on the left in Figure 32, this department added to the examples I provided by including, among others, exam board PowerPoints and past papers / mark schemes.

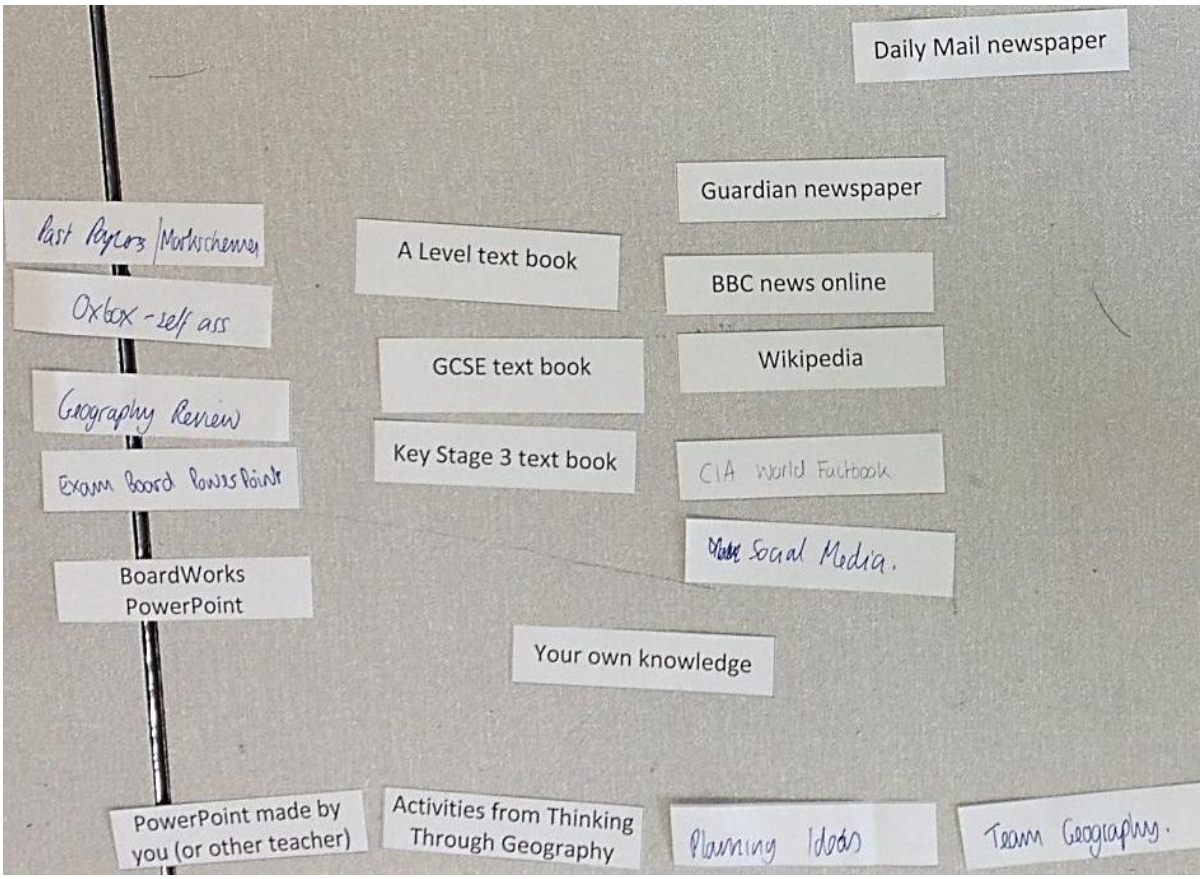


Figure 32. Town Comprehensive sources of knowledge

The exam specification was on display in the department, and the exam board's scheme of work provided the structure and majority of content (in the exam specification's terms, it prescribes 'detailed content'; Figure 33). The specification regulated the content of lessons to the extent that Gemma apologised to a class for teaching a case study that is no longer on the exam board's official list.

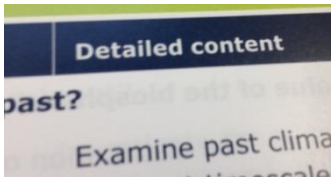


Figure 33. Detail from exam specification

At KS3 recontextualising principles in Town Comprehensive are regulated by the PRF; the department's scheme of work dictated what should be taught. This structure was followed closely by all the teachers in the department, and was reinforced by the HoD's

regular bulletins. The NC plays an auditing function at KS3, which is different to the regulatory function played by the examination specifications. There is a striking contrast between the attention given to the NC, and examination specifications. For example, when asked about changes that have been made to the NC in 2008, Ruth stated that 'to be honest, I kind of stop noticing anymore' (Ruth, interview 1:142). Whereas, she was aware of the latest minor alterations to their examination specification:

> the syllabus has had some amendments to it, so we've got to be wary of that because there are some things that are not in the textbook that we've got to include, but for example, one of the other topics that I was doing the other day…the examples that we've got in here of big projects and dams are mainly focusing on water shortages and management in LEDCs but they're now putting a little bit more emphasis on MEDCs as well, so that's fine - we've just added in the Hoover Dam and the Colorado River project. (Ruth, interview 2:27)

The nature of the examination specification's authority was rooted in the accreditation provided, rather than in the authority held by examiners or textbook authors (often the same people), whose testimony was accepted, but about whom little was known: 'I'm not sure who [the textbook authors / chief examiners] are. I'm assuming they're geographers…[laughing] or I'd hope, anyway' (Gemma, interview 1:222-124).

5.7: Conclusion to chapter five

This chapter has described Town Comprehensive's geography department. The departmental level as unit of analysis has revealed important aspects of these teachers' recontextualising principles, and has provided a broader context in which to understand their work than would be possible through individual teacher analysis alone. Descriptions of the physical layout of the department included the individual classrooms and offices, and the space-times of these areas were explored: notions of

front- and back-stage were used to frame discussion of the norms expected in these areas by these teachers, whose busyness was suggested to be hard to over-emphasise.

I have argued that recontextualising principles are constructed in space-times, and while it is important to recognise the continuing significance of historical journeys for knowledge, the immediate context of the department is a very significant part of the space-times in which these teachers know geography. Virtual spaces are a part of this context, and the organisation of their VSA and schemes of work has established shared rhythms of topics which have been maintained for at least five years. All teachers make considerable use of PowerPoint to structure lessons, present information, and describe tasks. Worksheets and card sorts were also shown to be significant formats through which information was presented by these teachers.

Changes to the staffing of the department were argued to be potentially significant, and the inverse relationship between subject knowledge and career progression was outlined. The high consistency of the department's work, in terms of the topics taught to students, the timings of these topics, and the resources used, contrasts against the individual teachers' conceptions of geographical knowledge I have presented. Steve, Ruth, Jess, and Gemma have been shown to believe quite different things about geographical knowledge, holding conflicting views, particularly about the nature of this knowledge within and between their individual perspectives. Considerable differences were noted between descriptions of geographical knowledge as dynamic, timeless, responsive, and static. Some differences between views were shown to be understood

socially, in relation to others in the department; for example, in Ruth's self-identification as a physical geographer in contrast to her descriptions of the HoD as a human geographer. These teachers have also been shown to share beliefs about the scope of geographical knowledge as expansive, and potentially related to all other areas of study (seeing all other school subjects as being underpinned by, or related to geography). I have also suggested that all of these teachers include empirical evidence as an important dimension of the nature of geographical knowledge, describing this knowledge as being not only about the world, but more strongly than that as *reflecting reality*, or showing *what it's really like*.

6: Findings and analysis of Beach Academy

This chapter offers a detailed description of Beach Academy's impacted geography department (a department with just one full-time geography teacher), beginning with summaries of the staffing, organisational structure, physical space, and VSA. The 'learning language' and IMYC (International Middle Years Curriculum) being introduced to the school, and relations between this themes based package, and subject departments are discussed. Tensions between subject specialists and generic auditing processes are also explored through one observed lesson (taught by part-time geography teacher Tim), presented as a performative moment, and the implications for teachers' subject knowledge and their construction of recontextualising principles are considered. Beach Academy's on-going building projects are discussed, and the school is described as experiencing and constructing an 'in-between' time, a major part of which is the use and embrace of technology. Descriptions of the individual teachers are presented, including summaries of teaching careers, conceptions of knowledge in school geography, and views on the relationship between school and academic geography.

6.1: Beach Academy summary

Beach Academy is a mixed, comprehensive 'all through' 5-19 school in a coastal town in Devon. The school was undergoing major changes during the fieldwork, both to the physical buildings and the curriculum. The department is organisationally impacted; Hugh is the only full time geography teacher, and the other geography teacher (Tim) teaches 50% geography and 50% history.

No.	Pseudonym	Formal role(s)	Length of service (yrs, inc. current year, ex. training yr)
5	Hugh	Geography teacher (informally HoD)	10
6	Tim	Geography (0.5) and History (0.5) teacher; NQT	1
7	Pam	PGCE Geography student teacher	0
8	George	PGCE Geography student teacher	0

Table 13. Summary of teachers in Beach Academy

The department takes part in a university initial teacher education programme and during both fieldwork visits PGCE interns were in the department. The formal staffing structure of the school was undergoing significant changes, moving from a hierarchy based around subjects with Subject Leaders / HoDs, to a structure involving two main areas; 'Communications and Language,' and 'STEAM' (Science, Technology, English, and Maths). Teachers described the restructuring of staffing as an attempt to integrate the whole school (from 5 year olds to 19 year olds) in a more *joined-up* way. The titles given to the new groupings of subjects were taken from the IMYC. The IMYC, produced by a private company, is being used by the school at the 'Gateway phase' (years five to eight). The IMYC, and the views of the geography teachers on this themes-based approach to the curriculum are discussed further below, after a description of the geography spaces and technologies.

6.1.1: Geography office, classroom, and technology

Beach Academy's geography department have an office, and one dedicated classroom. The office has four desks; one for Hugh, one for Tim, one for the Head of History, and one with a computer that PGCE students (and I) used. Tim regularly worked at his desk,

while Hugh never worked at his, preferring to use his laptop in the classroom. Hugh's desk was used for storing resources, paperwork, and his bike (Figure 34).



Figure 34. Beach Academy's geography office

Cycling carried cultural capital in Beach Academy, and was portrayed as being *like the new golf*. Many of the senior teachers and SLT raced at weekends. Hugh was particularly good, and used this capital to protect Tim: 'I'm a man, and I cycle: my face fits…That's one of the reasons I'm going to make sure they don't shaft him' (fieldnotes, 20/6/13). These comments came after the lesson observation discussed in chapter three.

Desks around the edge of the geography classroom were used to store textbooks and resources (Figure 35). Hugh's departmental budget was limited, and there was rarely money to purchase whole sets of textbooks.



Figure 35. Geography classroom storage

Hugh photocopied pages from sample copies of textbooks, stacks of which were also stored around the room (Figure 36). Storing in the open meant that most of the department's paper based resources were visible to the teacher. Surveying the room, teachers would walk to an area and look through materials until they found what they were looking for. Taking these papers back to the computer, a lesson would then be planned on the laptop. Tim seemed to be gaining familiarity with the room, and Hugh had a well-developed mental map of the area.

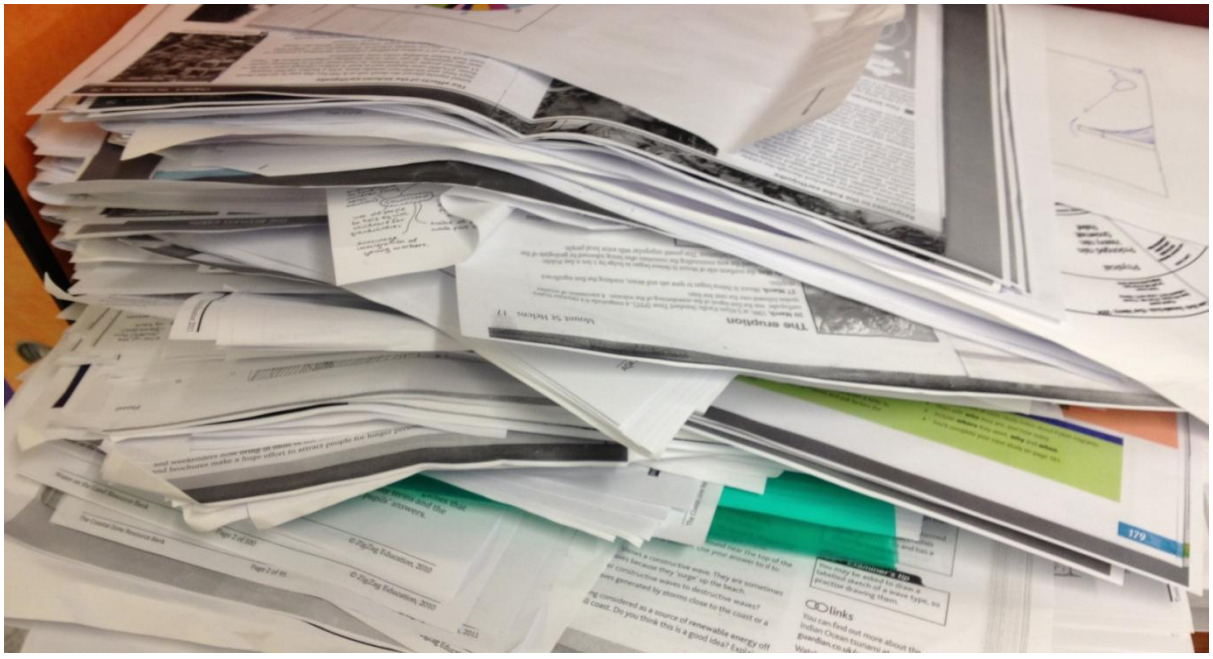


Figure 36. Stacks of photocopied textbook pages

The geography classroom had a laptop on the front desk. It was connected to speakers and a projector, although both the speakers and the projector often suffered from technical problems. Geography was occasionally taught in two other rooms; the barn, and a computer room. The barn is an open-plan area used for teaching, and testing out new furniture and technology for the new buildings. Hugh had responsibility for trialling new technologies, and on the first day I arrived in the school he was presented with a big touch-screen television to use. There was considerable interest in new technology in the school: class sets of iPads were readily available, teachers were given iPads, and the latest gadgets frequently appeared at Hugh's door. Hugh described a tension between Beach Academy's embrace of new technology, and a struggle to ensure 'the basics' (among which he included projectors) were functioning properly. When I arrived for the second visit the computer in the geography office was not working. It had stopped shortly after visit one, and nothing was going to be repaired until the new build was completed. During one GCSE course work lesson I noticed that all the students' monitors displayed a pulsating windows update icon (Figure 37) in the tool bar; symbolic of technology as the beating heart of the school that demands attention and craves constant updates.



Figure 37. Windows update

6.1.2: Physical and curricular school changes

Millions of pounds were being spent on building works at Beach Academy, replacing structures such as those used by the geography department (Figure 38); 'temporary' buildings bought from a local council who stopped using them twenty years ago.



Figure 38. Outside of the geography classroom

Teachers in the school regularly spoke about the new build (Figure 39), and throughout the fieldwork year Beach Academy could be described as experiencing and constructing *in-between* space-times. In-between, because a clear gap was imagined between what was then happening, and what may happen in the future. Teachers expressed a combination of expectation, excitement, frustration, and apprehension. Curricular and physical changes were associated with uncertainty and possibility.



Figure 39. Building works during visit two

The new build brought with it promises; modern classrooms, a restaurant endorsed by a Michelin starred chef, hot desks, hot classrooms, and a full immersion room. The hot desks and classrooms were planned for shared use; no one (apart from the Head Teacher) would have their own office space, or classroom. Geography resources would no longer be stored and accessed from the side of a room, but would need to be filed in another, as yet undecided, but certainly shared, filing area. The new curriculum was also associated with a range of promises and uncertainties.

The IMYC featured heavily in teachers' descriptions of their work in the school. Adopting the IMYC was a source of pride and concern. The school hosted a conference for the IMYC, attended by adopters of the programme from across the world. Few schools currently work with the IMYC,



Figure 40. One box of IMYC files

and teachers described the school's adoption in ground-breaking terms, seeing themselves as pioneering early-adopters. Impetus for changing the curriculum was provided in part by assumptions about the existing National Curriculum as broken and in need of replacement, a critique articulated by contrasting knowledge against skills: 'the knowledge-drive in the current curriculum often fails to address and develop the significant levels of skills needed for our students to thrive in their adult lives' (IMYC 2012). Adopting the IMYC was also described in terms of competition with other local schools;

> we're trying to push the school in an area which is, y'know, is gonna make it something that's different to other schools in the area, so it'll have its own kind of ethos that people will be able to clearly see. (Hugh, interview 1a:68)

Physically, the IMYC's presence was felt through large boxes containing full IMYC lever arch files. One set was stored in the geography classroom (Figure 40).

The IMYC is written using a 'learning language,' which Hugh argued had effected a shift in the discourses at work in the school. There are similarities with the 'learnification' described by Biesta (2009b; 2005); 'a shift in the vocabulary that is being used to talk about educational processes and practices' (Biesta 2009a, p.37). Instead of schemes of work, the department now have schemes of learning, students are now learners, lesson objectives are now learning goals, and home-work is now home-learning. Learning 'flight paths' are displayed in subject areas around the school; photographs of the learners placed either above or below a horizontal line on the wall. Above the line indicates the learner is 'at altitude' (they are making the expected progress); below the line means 'below altitude' (the learner is not making the expected progress). Occasionally, the old terms (for example, schemes of work, or students) were used and teachers corrected themselves; in this scheme of work, *sorry*, scheme of learning…

Teachers' adoption of the IMYC learning language was self-critically reflected on by Hugh. Without any prompting, after describing schemes of learning, and referring to students as enquirers and critical questioners, Hugh laughed: 'it sounds like I'm kinda spouting the, the kind of learning language here that we've just kind of bought in' (Hugh, Interview 1a:93). He was not passive in accepting a different way of describing his work and subject, and often challenged aspects he felt unsatisfied with. The strongest expression of this was his summary of it as 'all bollocks' (Hugh, interview 1b:0). His description of the learning language as a commodity that was 'bought in' is subtly subversive, positioning the school as consumers.

Changes to the terms used to describe the curriculum were paralleled by changes to school structures. Two 'Directors of Learning' were being appointed, one for STEAM, and the other for Communications and Language. Geography was placed in the latter of these, which pleased Tim (who saw it as a 'humanities' subject) and frustrated Hugh (who saw it is as a 'science'). Schemes of learning and lesson plans were required from the departments, and were checked by the Head Teacher and Directors of Learning. During visit one the first audit of departmental schemes of learning (to Hugh's knowledge, the first in the school's history) was being undertaken. Some aspects of the lesson plans were centrally controlled, including use of 'the language for learning…this is my objective, so this is non-negotiable – differentiated outcomes and objectives' (Hugh, interview 1b:22-28). Adopting the IMYC created a considerable amount of work for teachers. For Hugh, KS3 schemes of learning had to be re-written. He felt increasingly under pressure, attributing mounting pressure and workload to the school's disappointing GCSE results, and Requires Improvement Ofsted judgements. He

contrasted this increasing accountability and bureaucracy against the lighter requirements placed on a nearby school judged Outstanding by Ofsted:

> There's this huge dichotomy between what we're being asked to produce here, as a school who's been under – not special measures, but near enough – and the element of scrutiny under which, y'know, we're put, compared to…the school which is outstanding, and to me this is about ticking boxes and getting us up to that next level…Because they don't come under any of the kind of scrutiny that we do…And if they came in and saw this [pointing to the Outstanding school's comparatively brief scheme of work] we'd be under the cosh even more. (Hugh, interview 1b:53-59)

Hugh's new schemes of learning and resources are stored electronically on the department's VSA.

6.1.3: Departmental virtual shared area

Beach Academy's geography department grew shortly before the fieldwork of the current study to include Tim on a full time contract teaching 50% history and 50% geography. Until Tim joined, the VSA was almost exclusively used by Hugh, who felt the VSA was not useful or accessible to people other than himself. As an impacted department, which until recently had not needed to submit schemes of learning to SLT, Hugh did his own lesson planning, and no one else needed to see or understand the plans he made. He said that communicating plans to others is

> what you kind of lose sight of in a small school like this…and I don't want Tim to have to take on board that as an NQT – he should be able to see schemes of learning, and develop his lesson planning from that. (Hugh, interview 1b:14)

Tim decided to (re)organise the files in the VSA, a reorganisation which caused Hugh difficulties: 'It's right there, um, oh bugger, where is it?! Oh, where has he put the data stuff?! See, this is what someone else coming into the department does for you – I can't

find my data now…' (Hugh, interview 1b:125). The VSA had been used by Hugh in a way that appeared to others as unorganised, yet he seemed to know where everything was. It was similar to the geography classroom, in which resources were spread around the desks at the edge of the room. To anyone other than Hugh it would take a considerable amount of time to find resources. For Hugh, who had placed almost all of the papers and files around these spaces over years, locating them was quick and straightforward. Without his tacit knowledge the spaces are harder to navigate.

Hugh did not determine which resources Tim ought to use, nor were pre-planned lessons readily available. Both Tim and Hugh understood this situation in multiple ways; positively, as giving freedom, autonomy and developing Tim's professionalism, and negatively, as disorganised, proving too little guidance, leading to inconsistency of students' experiences, and placing too great a responsibility on Tim. The formal organisational structure of Beach Academy affected the relationship between Hugh and Tim because Hugh was not formally the HoD, nor was he Tim's line manager. Yet informally, he was both.

Following the approach taken in Town Comprehensive, the KS3 sections of the VSA are summarised in Table 14.

What is included?	Propositions (more than just labels)	341
	Sounds (inc. spoken work, music and effects)	16
	Images (inc. photographs and diagrams)	335
	Numbers (inc. grid references)	56
What format is it in?	PowerPoint	69
	Website	0
	Textbook	0
	Worksheet	209
	Photograph	221
	Video	30
	Book	0
	Newspaper	7
	Spreadsheet	8
	Google Earth	3
	Card sort	17
Who made it / where was it produced?	This department	312
	A teacher from elsewhere	31
	General published material	4
	University / Academic	0
	NGO	4
	Commercial school geography resources	20
	Student	157
	Government	1
	News organisation	11
Year groups	7-8	
Dates of creation (most recent modification)	09/2001 – 10/2013 (analysed 10/2013)	
Total number of resources	661	
Total number of lessons	N/A	
Mean number of resources per lesson	N/A	

Table 14. Summary of Beach Academy's VSA

The columns used for Town Comprehensive's VSA were changed to accommodate the additional formats of resources (spreadsheets and google earth.kml files) found in Beach Academy. KS3 in Beach Academy covered only years seven and eight. However, the total number of resources (661) was higher than the total in Town Comprehensive's VSA (472), which covers years seven, eight and nine. In Beach Academy it was not possible to count resources per lesson because they were primarily organised by broad

topic, then resource type, rather than by specific lessons. Typical breadcrumbs showing the organisation of files were:

Year Group > Topic > PowerPoints

Year Group > Topic > Resources > Local images

It seemed significant that PowerPoints were not included within the general 'resources' folder (Figure 41).

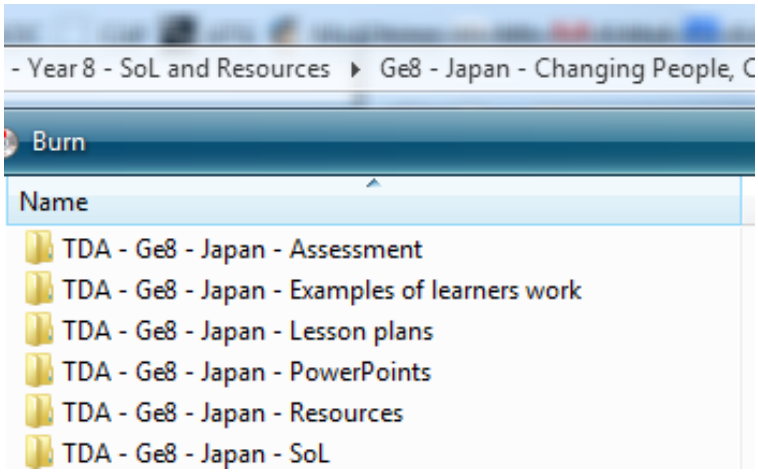


Figure 41. Beach Academy VSA Structure of folders

The screen shot in Figure 41 is an example of the structure Tim is now using in his re-organisation of the VSA. Many of the folders Tim has made are currently empty, but have been created to show how the area ought (in Tim's view) to be organised. This structure contrasts with the more open approach towards the filing of resources previously used.

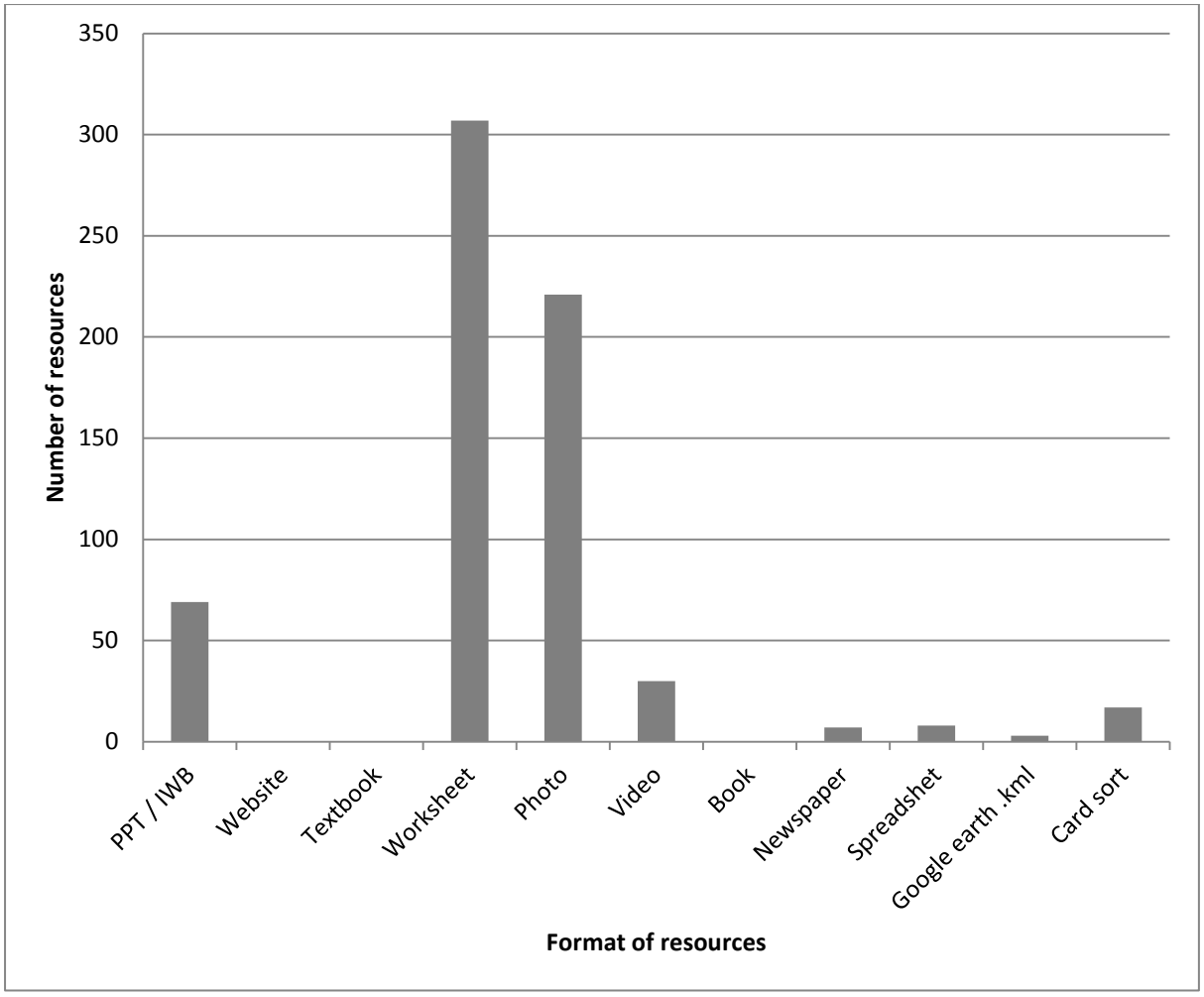


Figure 42. Totals of different formats of resources in Beach Academy's VSA for KS3

As in Town Comprehensive, worksheets were the most frequent format of resources held in the VSA, and the department created the majority of resources themselves. Photographs were the second most frequent format, and many of these were taken by Hugh during geography fieldtrips. The number of PowerPoints, both as an absolute number, and as a percentage of the resources in the VSA, was far lower than in Town Comprehensive. Tim's use of PowerPoints and the structure he has created indicate that the number of PowerPoints in Beach Academy's VSA will increase in the future.

Many videos made by students were stored on the VSA. They were sometimes shown during lessons, either to illustrate a process, or to provide an example of the task set. Students' videos were also uploaded to the department's YouTube channel. The most

recently created folders changed in title from examples of *students* work to examples of *learners* work.

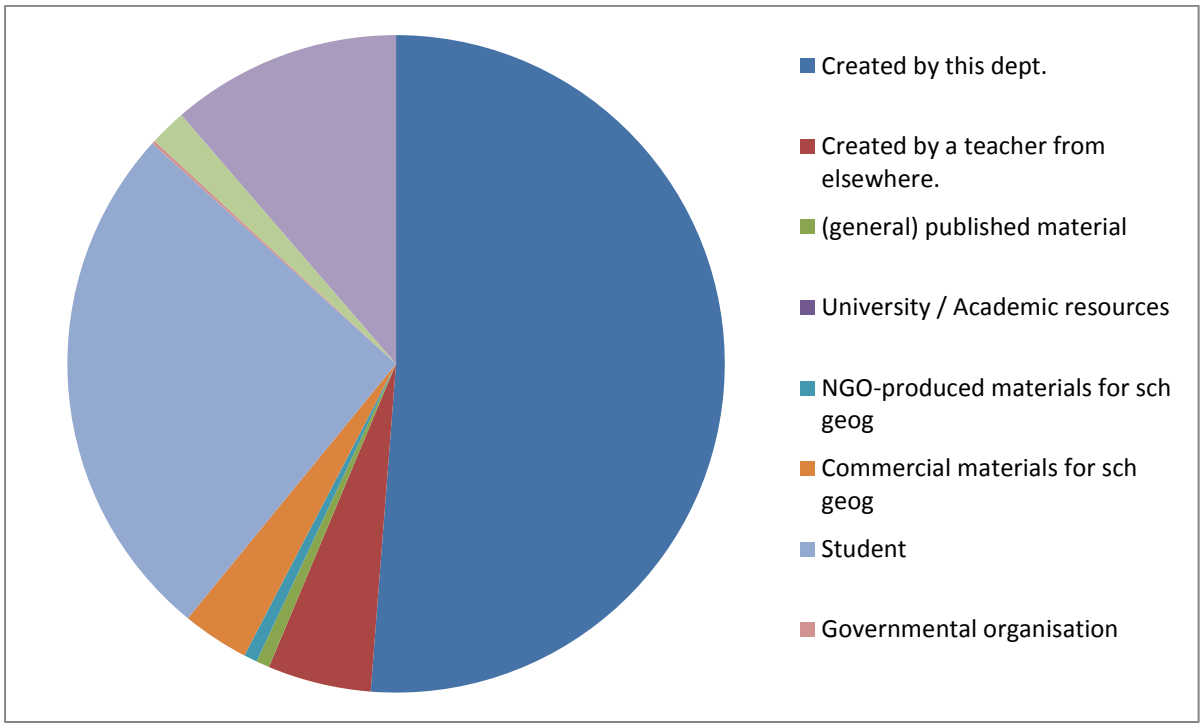


Figure 43. Authorship of resources in Beach Academy's VSA

The general resources folders contained images, worksheets, and lists of 'useful websites'. PowerPoints played a different role to the other resources, and so were assigned a different category. Many lessons I observed featured PowerPoints, although Hugh and Tim used them in quite different ways. For Tim, PowerPoints often showed the title and lesson objective (Figure 44):

> Tim: I tend to use PowerPoints…sometimes as like a starting point to thinking about things…my teaching at the start of the year heavily relied on PowerPoints
>
> Hugh: So is it a crutch for you, or is it
>
> Tim: yeah, I think it was – and then I took it away, and so I just use bits now, rather than everything
>
> (BA department interview:79-82)

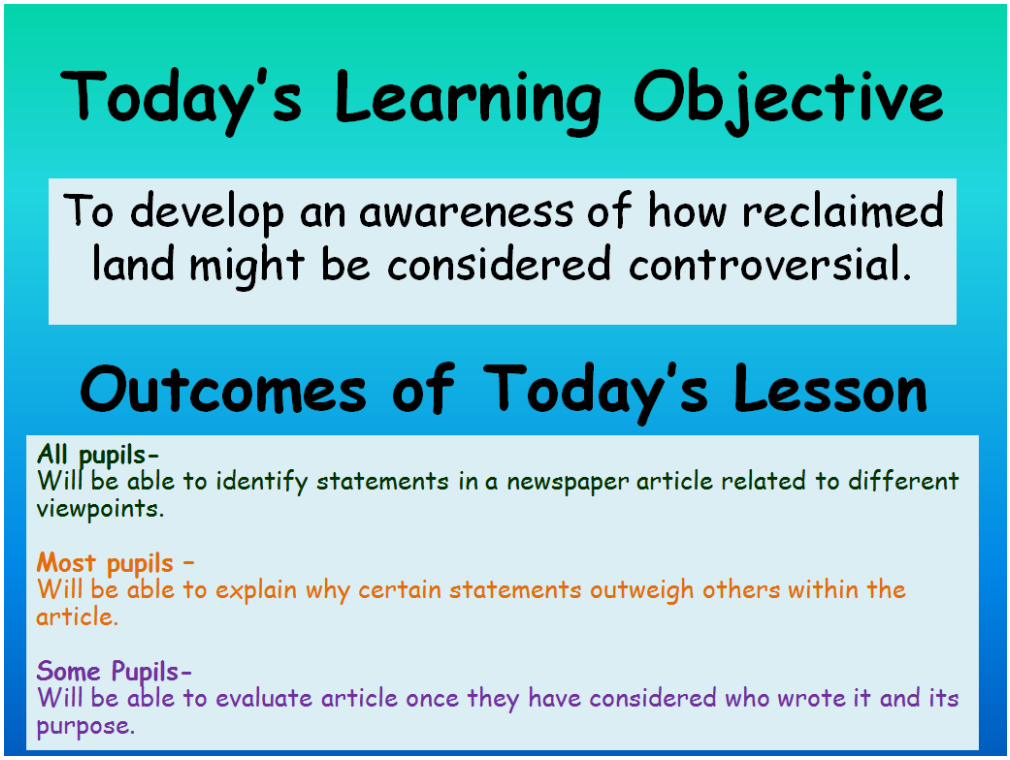


Figure 44. Example of Tim's PPT from Beach Academy's VSA: yr 8 > Japan > PPTs

Hugh normally wrote objectives and titles by hand, using PowerPoint for animations, and to display images. Many of the PowerPoints created by Hugh in the VSA contained just one slide with a single image or map. The earliest of these PowerPoints were created in 2001; 12 years before the fieldwork of the current research.

The earliest date a resource was last edited was August 2001. The most recent was created in September 2013 (just days before the area was analysed). In contrast to Town Comprehensive, Beach Academy's resources within each topic were often created at different times of the year. For example, PowerPoints in the geography of ME topic were dated between 07/2005 and 02/2012, with no clustering around particular months. The 'resources' part of this topic were all (53 in total) last edited between

August 2008 and December 2008, with one 'useful websites' page updated a year later than anything else (in November 2009).

The order Tim is imposing on the VSA is a replication of other VSAs Tim saw as a PGCE intern. He knows the structure of other VSAs well, because he still has copies of them on his hard drive.

Tim described one way in which he, as a PGCE student, used the VSAs of the departments he, and his colleagues taught in. Each copied the resources held on their VSA, then uploaded the resources online. Everyone else was then able to download the other VSAs, resulting in each intern having a hard drive with up to 20 departments' VSAs (over 150GB of data). Tim completed a history PGCE, and so the VSAs he accumulated were all from history departments. His girlfriend is a geography teacher, and her PGCE cohort shared resources in a similar way, then 'she gave me all her resources…my girlfriend's taken geography resources off the schools that she's been at' (Tim, Interview 1:35). Resources are taken on journeys from where they were created, and are used in different contexts. The ways in which Tim drew on these resources is explored further below, including discussion of the recontextualising principles he applied to these resources.

6.2: Hugh

Hugh's role in Beach Academy was one of HoD, despite this formal position having recently been redefined, renamed as Director of Learning, and given to someone other than Hugh. Formally, Hugh is a geography teacher. In practice, he has the same responsibilities as the other HoDs in the current study, including; control over which exam board to use, some control over budget, power to allocate students to particular classes, responsibility for schemes of learning, resources, and shared departmental areas (primarily one classroom, one office space, and the VSA), and acting as the first point of contact for parents wishing to discuss their child's progress in geography. The Head Teacher introduced Hugh to me as the HoD; Tim, Pam, and George also referred to him in this way.

Hugh was in his tenth year of teaching, all of which were in Beach Academy. After graduating from his undergraduate degree (in geography) he gained a Master's degree in geology, and then worked as an artist. He subsequently completed a geography PGCE at Exeter University, and maintains links to their PGCE programme by hosting interns in his department.

6.2.1: Connections with the environment

Hugh was a very keen cyclist. Well respected among the growing numbers of (almost exclusively male) cyclists in school, he completed the 'Dartmoor Classic' (a gruelling 100 mile ride across the National Park) shortly after my final fieldwork visit. His working day begins with his cycle to school, often taking an in-direct route to cover more

distance. On Saturday mornings he would occasionally rise at 4am to cycle until 10am, allowing him to then spend the day with his family. He described his journey to school as an immersion in the landscape:

> …it's that connection that you have with the local landscape - which is why I cycle to work instead - so you're kind of out and you're in that environment again...so whilst it's knackering, and, y'know - in terms of the landscape - it's not flat like Oxford! It's still - you're still part of that kind of landscape before you've come to work, you've already immersed yourself in it, which I think is a really positive thing before you come to work and you're teaching kids about the landscape and things like that - I think it's really, really useful. (Hugh, interview 1:89)

Coincidentally, my second fieldwork visit in Beach Academy began with a day of coastal fieldwork for Hugh's GCSE students. He greeted me by saying 'to be honest I'd totally forgotten you were coming!' (fieldnotes, 10/06/14, BA). There was a space on the bus, and so I also spent the day on the coastline that informed so much of the department's work. The sea and the South Devon coastline were instructive in Hugh's selection of topics.



Figure 45. Looking north on the sediment cell studied on the GCSE fieldwork day

Hugh's description of Beach Academy and the surrounding area as an 'insular place to work' (Hugh, interview 1a:93) motivated him to 'broaden students' horizons' (Hugh, interview 1a:97). He believed the best way to do this was through first understanding their local context:

> ...I want to broaden students' horizons, but they need to understand what's around them to start with before they can start understanding what's the difference between being somewhere like here and being in a city - because some of them won't even have thought about that - so to understand their local surroundings - but I'm sure that if you live in an inner city area in London somewhere, where your perception of rural isn't going to make sense until you really look at [your] own landscape - and I suppose that's what it is, just being aware of opening your eyes to what's around you, and questioning it, and not just taking everything as read. (Hugh, interview 1:97)

The example Hugh uses (landscape) reflected his wider interests in physical aspects of geography. His emphasis on, and extension of seeing; *really looking* and *opening your eyes* express ways in which he hopes students might start to explore or *understand* their

surroundings. One reason Hugh chose not to teach a module on glaciation to his students was because he felt that not having seen a glacier made it harder to understand:

> ...there are options to teach [glaciation] at GCSE – I haven't gone into that kind of glacial kind of landscape. I dunno, I suppose it's because it's harder for the students to really understand the context without going there – of really getting an understanding of it – whereas I can tap into that more for their coastal, for understanding coasts, and they can really start to see that… (Hugh, interview 1b:32)

A long-standing interest in landscapes provided a focus for Hugh's earlier artwork, and his research interest in geology. 'I'm just teaching – this is what I feel about life, what I feel about, y'know, the landscape in general' (Hugh, interview 1a:32). 'The landscape' was often used by Hugh as a term to refer to that which geography studies, although he held an open view about what geography might be. That is, he was not concerned with identity politics surrounding disciplinary claims; 'it's not necessarily just geography – this is about just understanding the way the world works' (Hugh, interview 1a:34). His descriptions of what it might mean to broaden students' horizons were relational, embodied, and (possibly paradoxically) informed by a scientific physical geography.

6.2.2: Conceptions of knowledge in geography

Hugh conceived of knowledge in school geography in intensely relational and embodied terms, situated in his teaching of geography in this school, in this landscape. His *knackering* bodily experience of cycling to school in order to *immerse* himself in the landscape is an important part of his daily routine. The relationship between himself and the landscape of which he is a part is significant for him, and he wishes it to be

significant for his students. He included his students, or learners, on his map of areas of subject knowledge in geography, representing them as being of the same level of importance as physical and human geography (Figure 46).



Figure 46. Hugh's map of areas of subject knowledge

Hugh's map is unbounded, and there are two main types of nodes; text in squares, and in circles. Squares, with physical, and human geography are placed in the centre of the page, and are connected together twice. Learners, and sources are also placed in square boxes on the left and right of the page. Circles, which seem to indicate a secondary level below the main square boxes, show their examination specification modules. For example; Restless Earth, and Water on Land. 'I suppose that comes from the fact that I'm geared towards looking at GCSE – I'm thinking about how that's kind of set up'

(Hugh, interview 1a:75). As Hugh reflected on the separation of human and physical geography, he argued that making this distinction actually

> becomes more and more obsolete over time…the physical and the human becomes intertwined – I suppose the only reason I do that is because of the, y'know, the constriction of GCSE specifications and A Level specifications, and working to…someone else's idea of what geography is all the time. (Hugh, interview 1a:79-81)

Restless Earth is linked with an area that was not the name of a module: Natural Sciences. A Social Sciences equivalent for Tourism or Development Gap is not given. Learners are linked to text which is not enclosed in a shape, and includes the terms enquirers and critical questioners. These labels are drawn from the IMYC, and several other nodes replicate those used in the examination specification. Only one is directly taken from the National Curriculum (Table 15).

	Hugh's Map
Nodes	21
Links	34
Linear connectivity	1.62
ASK	11
NCKC	1

Table 15. Numerical description of Hugh's map

6.2.3: Views on relationship between school and academic geography

In his first degree Hugh majored in Physical geography and minored in Human geography. After graduating he studied for a Masters in geology, and then spent four years setting up his own art business. Hugh's research experience in geology provided him with some areas of specialist knowledge which directly informed his teaching of geography. During his Masters he wrote a dissertation titled *Thermo luminescence and optically stimulated illuminescence of paeleo-fluvial deposits in the upper Thames and lower Seventh*. A bound copy of his thesis sat in the geography office, beneath exam

scripts, above a book named *And The Main Thing is…Learning*, and next to an undergraduate textbook on Fluvial Geomorphology.



Figure 47. Hugh's MSc dissertation

During his Masters he had focused on

> minute detail, and your world becomes just one small, tiny little, relatively insignificant spec in this whole mass – and so yeah I suppose teaching was the antithesis of that…it was kind of generalising…giving students an overall feel for it…it's kind of blowing everything up to a certain extent for students, and seeing this is where they fit into the big scheme of things. (Hugh, interview 1a:32)

Hugh argued that his experiences of academic geography gave him a rigour that he now brought to school geography. Rigour, associated with detail, was an important term for Hugh in his evaluation of sources of knowledge, along with being useful. Being *more useful* was often, for Hugh, about a resource's potential to inspire or connect with students: 'it's finding that connection that the students can make…I think the connection to start with comes from that emotion' (BA, department interview:54). Hugh described videos, and other resources he uses with students, as not being rigorous; they are far removed from his perception of academic geography. At times he criticised non-specialists for not being able to give students 'that real getting into the minutia of things and getting into the real nitty gritty and detail' (Hugh, interview 1b:79). Moving from *general* to *detail* played an important part in Hugh's views of progression in geography, and he often used these terms when giving feedback to students in class. For example:

Hugh: where is going to be most vulnerable?

Student one: the South

Hugh: south? Who said that?

Student two: North

Hugh: ok, why is that?

Student one: because Longshore drift moves material from the south up to the north so the north will be more protected, because there will be more material

Hugh: good, you've provided a *generalised* answer and you'll be looking in more *detail* about this

(Lesson observation: 17/7/13, period 5/6)

Academic geography plays an interesting role in this discussion. For Hugh, the discipline of geography is where knowledge about Longshore drift (LSD) was discovered, and so the discipline's expectations (for more detail) stimulate his desire for students' knowledge to progress from general to detailed. However, there is an important sense in which the academic discipline is also disconnected from the exchange. The argument provided by the student, and accepted by Hugh, illustrates one way of legitimating knowledge claims through deductive reason, which was often used by these teachers and students (discussed further in chapter nine). Short propositions are used to make an argument that is then accepted on the basis of its own logic. In the example given above, the argument is that the North is more vulnerable to erosion, because:

1. LSD moves material from the South up to the North

2. There will be more material in the North

3. Therefore, the North will be more protected

Student two's suggestion of 'North' is ignored, and student one's 'South' answer is listened to and affirmed. These kinds of arguments, with apparently obviously true propositions that lead apparently inevitably to a conclusion were used by students and teachers with the expectation that they would attract agreement from everyone listening. Single word rhetorical questions ('See?', or 'Understand?'), or assent ('good') often followed the stating of such an argument, reinforcing the perceived certainty of the conclusion.

In these classroom exchanges the role played by the academic discipline is one of now-removed producer; knowledge has been discovered, and now released, in the form of propositions or justifications from deductive reason. Hugh (or the resource authors) often gained this knowledge through his experiences of the academic discipline, but there is now a disconnection. Justification depends not on the characteristics of who produced the knowledge, or where, or how, but on the logic by which it can now be shown to be true. While deductive reason is used to justify the conclusion, the source of this knowledge at a more basic level is testimony. Issues surrounding testimonial knowledge, its importance in school geography, and relationship with knowledge from deductive reason and perception as modes of legitimation are explored further in chapter nine.

Hugh discusses academic geographers and their role in producing knowledge only when asked directly about them. In contrast, without any prompting, his descriptions of school geography make constant reference to students; what they currently know, what

he would like them to experience, and what they ought to know. While Hugh regarded academic geography as an authoritative source of knowledge, he does not make direct use of sources from academic geography (for example, journal articles or university textbooks), and neither do Tim or George:

> Hugh: I don't know, have you ever used academic journals at all in your teaching?
>
> George: Not in terms of my teaching, no
>
> Tim: No, I haven't
>
> (BA department interview:76-78)

One reason Hugh does not directly use sources of knowledge from academic geography is that he believes students are not be able to understand their language. They would also take time to recontextualise, whereas most knowledge is presented unchanged. Another reason academic journals were not used was that they did not feature highly on search engine results. When searching online for resources, 'the first result that comes up 99% of the time is a Wikipedia article' (BA department interview:74). The visibility of highly ranked articles and websites, combined with their accessibility (both linguistically, and in terms of open access), led, for Hugh, to their high usage. Even more accessible for Hugh were the news apps on his tablet:

> For me it's about apps, it's about the news apps that I've got, and seeing how it kind of links to, to the curriculum that I've got…you've got the BBC news app that comes through on the iPad, and that's what I'll read every morning before I go to work – so 6:30 in the morning I'll check that, and I'll check the cycling news overnight. And then on the way to work I'll check the news app on my phone – and that's not to say that I'm necessarily just looking for geographical things, but if I see something that's useful I can forward that to the inbox of, in particular my A Level students, so they can start to see where you can gather different sources of information from… (Hugh, interview 1a:46)

Having experienced academic geography, Hugh felt confident about selecting sources of knowledge from these frequently updating news apps. Knowing what is *useful* involved

a combination of his knowledge about the subject matter (did it have the *detail* and *rigour* he required?) and his knowledge of his students (will they understand it? Is it relevant to them?). The frequency of his app-checking is significant. Hugh makes hundreds of decisions every day; making visible some stories, excluding others. Hugh provides little commentary on these sources of knowledge, attaching them to emails and forwarding, or linking to them from his geography department twitter account, which students are encouraged to follow. Because he often presented the sources of knowledge directly to students, his decisions about which to include may be particularly important. His experiences of academic geography, along with his embodied immersion in the landscape seemed to be the basis of his tacit knowledge; practical decision making about which sources to share. While most of the time judgements were made very quickly (a headline scanned and ignored, or forwarded in a second or two), one example of Hugh critiquing information at a slightly slower pace is discussed further below (chapter nine), and is suggested to be made possible by his knowledge of academic geography.

6.3: Tim

Tim read History at university, and then completed a History PGCE. During the fieldwork of the current research he was employed as an NQT (Newly Qualified Teacher) in Beach Academy. Half of his timetable was spent teaching history, and the other half teaching geography. He was the first permanent geography teacher to work with Hugh in Beach Academy: 'the department's really like Hugh, and me sort of merging into it' (Tim, interview 1:18). Tim studied history and geography at GCSE and A Level, despite his school not normally offering both. To get around this a teacher

tutored him afterschool. He felt that not having been in a 'normal' class made his own teaching of geography harder. However, Tim's experience teaching two subjects provided him with a source of comparison, and he would often reflect on the way things might be done in the other subject. Since the time he attended school as a student himself he felt that 'teaching's changed [and] I think that, sometimes I think, or I want, to go back to that method of teaching – the way I was taught – but actually it probably isn't fantastic' (Tim, interview 1:10). The difference between 'then' and 'now' was described by Tim as a shift from a more didactic approach (then), to a more student-led ethos (now); strong continuity of content, taught very differently.

Tim was finding his NQT year hard. He described having small 'meltdowns', which he attributed to the competing demands placed upon him, some of which are explored through a discussion of one inspected lesson I observed.

6.3.1: Performance under inspection

Tim's observed lesson was discussed above (4.8.3) in relation to the ethical issues I felt were raised by it, and the ways in which I acted. The lesson is now considered from the perspective of Tim's subject knowledge. A notion of performativity is relevant for analysis of the episode, and so the discussion begins by introducing this concept, and then continues by asking questions raised (through the discussion of performativity) of Tim's observed lesson.

The term performativity has been employed for different purposes and at various scales. For example, Butler (1997; 1993; 1990) has developed a notion of performativity in her arguments about the construction and performance of gender:

performativity as embodied, linguistic acts performed repetitively as ritual with normalizing effects. She often uses the term in an individual sense, situated in her discussions about gender. Lyotard (1984) cites performativity in his analysis of whole post-modern systems in which 'the true goal of the system, the reason it programs itself like a computer, is the optimization of the global relationship between input and output – in other words, performativity' (p.11). He describes this version of society as '"hard" and technocratic' (p.12), and characterises it by a collapsing of 'traditional' categories such as right and wrong, or truth and error into exchange-values: 'knowledge ceases to be an end in itself [because of a] mercantilization of knowledge' (p.5). His conception of performativity, with its associated vocabulary (for example; managerialism, efficiency, technologies, measurement, governance) has been taken on by educational researchers and used to frame strongly worded critiques of educational systems (and the broader societies in which they are set, serve, and reproduce). The notion of performativity used in educational research has also drawn on a sense of individual performance as discussed by Butler. For example, Ball (2013) shifts scales, moving between systems, and single inspected lessons of individual teachers:

> Performativity is a culture or a system of 'terror'. It is a regime of accountability that employs judgements, comparisons and displays as means of control, attrition and change. The performances of individual subjects or organisations serve as measures of productivity or output, or displays of 'quality', or 'moments' of promotion or inspection. These performances stand for, encapsulate or represent the worth, quality or value of an individual or organisation within a field of judgement. (p.57)

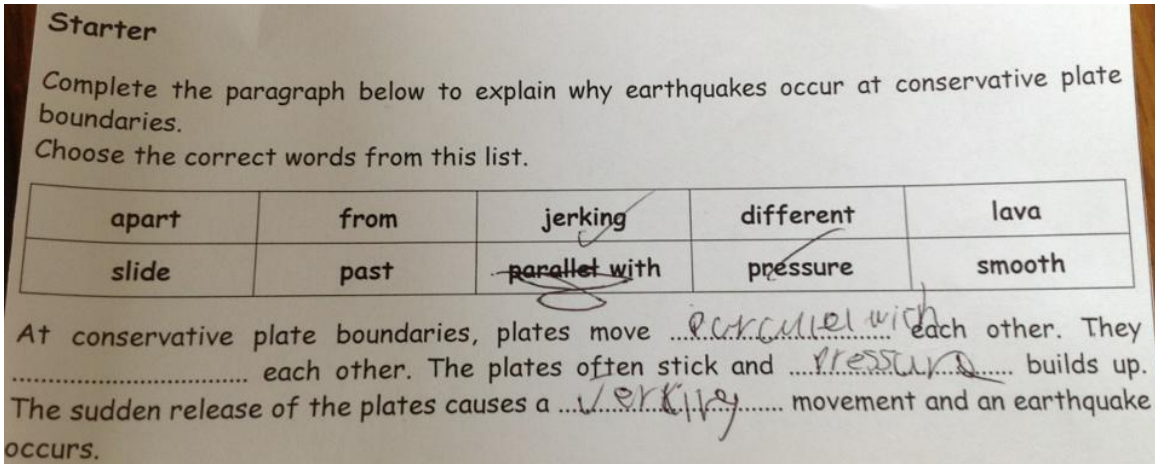
Claims about the 'whole system' made by Lyotard, Ball, and others (Cf. Jeffrey & Troman 2012) are ambitious, and too readily dismiss Lyotard's (1984, p.4) own qualification that it 'is not as simple as I have made it appear': a degree of incredulity toward these meta-narratives seems appropriate. However, it does not seem necessary to agree with

their descriptions of 'whole cultures' in order to still use aspects of the concept of performativity. In particular, Ball's description of a moment of inspection that represents the worth, quality or value of an individual seems an appropriate way in which to understand Tim's lesson observation.

Tim had spent much of the weekend planning for his inspected lesson, and discussing it with his girlfriend, who teaches geography elsewhere. Tim asked me to look through his lesson plan. Is there too much in it? He asked. 'Yes'; I suggested he allow much longer for one task that involved students drawing on different sources of information and writing about tectonic plate boundaries. Hugh came into the office and we asked his opinion. Looking over the lesson plan he gave a wry smile; 'so, if you could just do a 500 word essay on plate boundaries as part of your starter…!' Laughing, and poking Tim in the arm, he said 'it'll be fine…actually, I can't believe you're using George's idea! Ha! I'm only joking - I've never had an original idea in my life' (fieldnotes, 19/6/13). Hugh reassured Tim that while he would also give the students longer on the task I mentioned, the plan looked good. He wished Tim good luck. An observed lesson is a high-stakes event for which people are wished good luck. I only heard teachers wishing one another 'good luck' for observed lessons, and when their students were going to sit a GCSE or A Level exam. These are particular moments on which a considerable degree of importance is placed for teachers. You need luck, and possibly originality. The observed lesson, as a moment of performance, distils that which is valued as important.

Tim's anxiety before the lesson was palpable. When Hugh, George, and I sat down in the geography classroom before break time Tim paced around the room and then walked to the sixth form block. He was back soon and set up his lesson, distributing resources

between tables, ensuring his PowerPoint slides were all in order, sharing out rulers and other stationary, and placing students' exercise books (marked, ready for the lesson) at



Starter

Complete the paragraph below to explain why earthquakes occur at conservative plate boundaries.
Choose the correct words from this list.

apart	from	jerking	different	lava
slide	past	~~parallel with~~	pressure	smooth

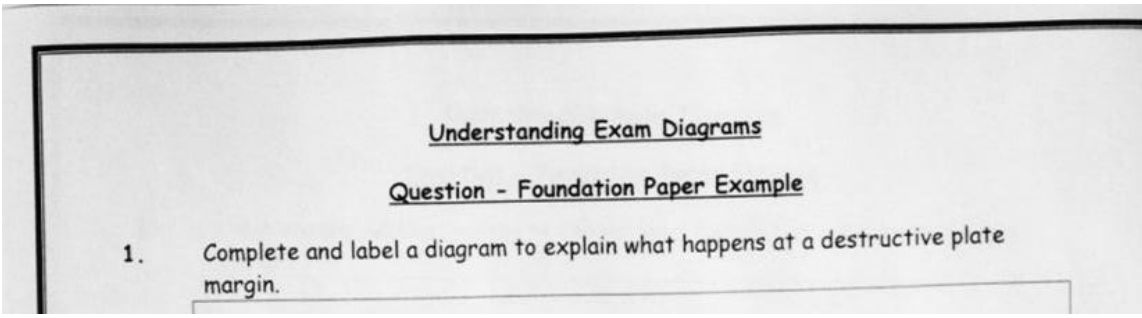
At conservative plate boundaries, plates move parallel with each other. They ..... each other. The plates often stick and pressure builds up. The sudden release of the plates causes a jerking movement and an earthquake occurs.

Figure 48. Tim's starter activity

their places. Tim's break time was normally spent in the sixth form centre (the old staff room having been knocked down in the first stage of the re-building of the school site), sitting and drinking tea. Not today.

Five minutes before the lesson began Tim's NQT mentor arrived, found a seat at the back of the room, and sat down. He placed his iPad on the table, and would remain in that seat, from where no students' work could be seen, until leaving the room at the end of the lesson. His position in the room was powerful; in the centre of the very back row, separated from the closest students by two desks. No students spoke to him during the lesson, nor did he speak to Tim during the lesson. He watched, listened, and wrote on his iPad. Just as Tim was engaged in a performance, so too was the observer performing a role, projecting objectivity, and authority. A performance with the effect described by a teacher in Priestley et al.'s (2012, p.105) study in these terms: 'the silence weigh[s] heavily from the 'judge in the corner''. Tim's lesson began with the activity shown in Figure 48.

As the students began to work Tim described the lesson to them. He explained that they would be building on previous learning about plate tectonics, earthquakes, and volcanoes. He briefly outlined the tasks, and finished by emphasising the purpose of the lesson: 'we're going to learn what we need to do in an exam' (lesson observation 19/6/13). One of the main tasks Tim planned was a practice exam question (Figure 49). The students would answer the question,


Understanding Exam Diagrams

Question - Foundation Paper Example

1. Complete and label a diagram to explain what happens at a destructive plate margin.

Figure 49. Tim's exam question

and then comment on one another's work. After the lesson the feedback to Tim was not concerned with his originality, or lack thereof. Where the knowledge or activities came from were not discussed. The lesson was judged as 'Requires Improvement', an Ofsted grade three. For Tim, this number was the most important aspect of the judgement. A grade three meant he was in danger of not passing his NQT year. He was devastated. He had been told prior to the lesson that his mentor was concerned about the 'pace' of his lessons, and that he was looking for 'pace' in this lesson. The observation of Tim's lesson might be described in Priestley et al.'s (2013) terms as an example of interventionist regulatory mechanisms: within-school auditing of performance identifying under-performing teachers leading to quick intervention by SLT. The school holds a spreadsheet recording the lesson observations carried out on teachers. This spreadsheet makes visible (only to SLT; it is not made publicly available) the grades of teachers' lessons. Simple sorting functions make rankings of teachers quick and easy to do. Performative moments of display are used to record evidence which form part of an

audit, and it seems reasonable to assume the possibility of judgements being partly self-fulfilling as narratives of 'success' or 'failure' are constructed.

The judgement of Tim's lesson was primarily justified by criticism of one task. The task involved students working on an A3 sheet with four rows; Plate Boundary, Diagram, Explanation, Example. The sheets had four blank columns on which students named, drew, explained and exemplified four types of plate boundaries; Conservative, Constructive, Destructive, and Collision. Tim told the students to use a range of sources; the teacher's knowledge, (through additional examples and verbal explanations), the examination specification textbook, successfully completed versions of the starter activity, and their memories of the previous lesson. The students had to draw on all these sources of information to carry out the task, which Tim had assigned 10 minutes for in his lesson plan (this was the task Hugh and I suggested Tim allow longer for).

Tim was told he ought to have allowed only 2 minutes for this task, by providing learners with pre-completed cards to stick down. Tim was shaken after the feedback, and said that he *just needed to get it right next time*: one result of the observation was to generate a further observed performance. Firth (2011b) argues that in the conversations he has observed in schools, he has been concerned by a lack of attention to questions about knowledge. The particular way in which this lesson observation was conducted illustrates this concern. A considerable amount of time was spent by Tim planning the lesson, but this time was not spent on his knowledge of plate tectonics. Time was spent planning the tasks that students would be doing, and the 'pace' of these

tasks. The inspection criteria used by Greg was generic, and about pedagogy; subject knowledge was something assumed.

Despite their differences, both Tim and his mentor agree that the judgement should be made about the pedagogy: in Young's (2008) terms, it is about *how* the content is taught, rather than *what* is taught. It is particularly important to refer to this inspected lesson as a *moment* because of Tim's relationship with the subject matter. An understanding of Tim beyond this one lesson must include awareness of his background, and his training primarily as an historian. As he has not studied geography at university, exploring the ways in which he is developing understandings of the subject are particularly important. Interestingly, during the first fieldwork visit Tim identified plate tectonics as the area of geography he found most difficult. However, the judgements made on Tim's lesson are restricted to the performance as observed – the moment – and do not consider (or seek to improve) the broader context from which he is working.

6.3.2: Conceptions of knowledge in geography

Tim applied his knowledge of the discipline of history to his teaching of geography. He argued there are few differences between the subjects, whose different terms refer to the same concepts:

> Like in the Japan module we're looking at with year 8 at the moment…they're looking at pictures a lot and trying to figure out what Japan's like – well in history we'd just call that inference. (Tim, interview 1:59)

Applying his historical skills to teaching geography, Tim developed strategies to systematically work through the topics he found most difficult. One example (plate tectonics) is shown on his map of areas of subject knowledge (Figure 50) under Tsunami, Earthquakes and Volcanoes. For each of these areas he makes explicit his 'Cause, Effect, Response' approach, a framework taken from his history teaching through which he approaches areas of geography he feels unsure about.

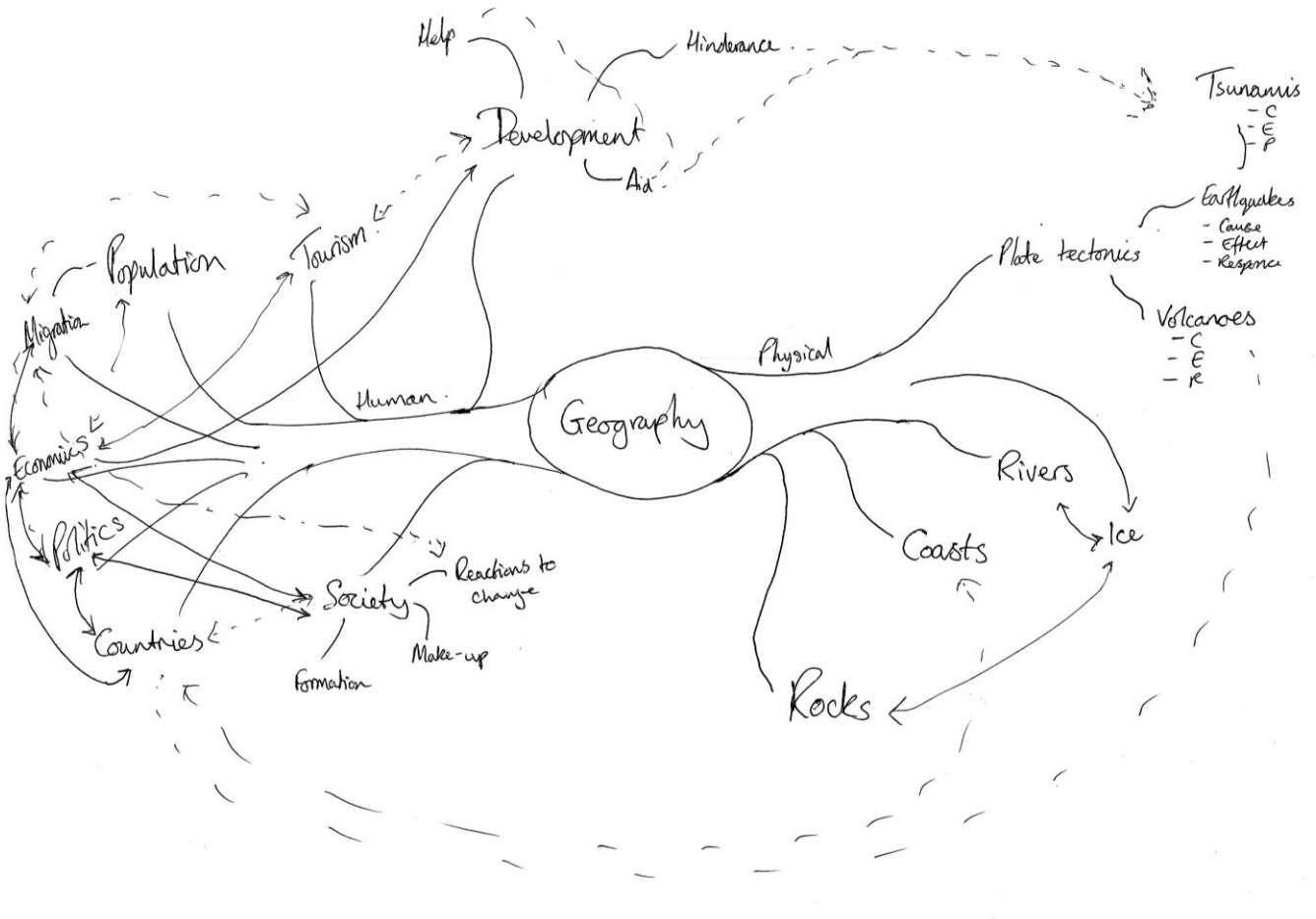


Figure 50. Tim's map of areas of subject knowledge

Tim's map is unbounded, and one-centred. Links are related to a central 'Geography' node. The left hand side of the map is labelled 'Human', and the right 'Physical'. Over two thirds of the outer nodes are on the Human geography side, which in Tim's case

seems to reflect his academic experiences of Human geography issues through his study of History, and the relative difficulties he experienced with Physical geography topics. He described his own choices of A Levels as leading to the high connectivity between the human topics:

> I did A Levels in Geography, history, economics and politics, so they're all quite connected…and doing all 4 together that all just sort of connected, right; there are reasons why economics is like it is because of politics, history and geography…there's a reason why politics is like it is - that history…as you can see it's more the human side of linking things. (Tim, interview 1:125-127)

Tim made connections between areas of subject knowledge using solid and dotted lines, with and without arrows. The two broad areas of physical and human are tentatively linked with three dotted lines: one to link Aid and Hindrance (of development) to Tsunamis; one linking volcanoes to countries (that is, volcanoes are found in different countries); and one (with arrows on both ends) between coasts and countries.

	Tim's Map
Nodes	25
Links	76
Linear connectivity	3.04
ASK	18
NCKC	1

Table 16. Numerical description of Tim's map

6.3.3: Views on relationship between school and academic geography

Tim had not studied geography at university, and felt unsure about the relationship between the fields. He also felt that he relied more heavily (than teachers with a geography degree) on the prescriptions of content provided by schemes of work and exam boards. His lesson planning begins with him looking for resources, and the lessons he subsequently teaches are strongly directed by the accessibility of resources.

His resources came mainly from the exam board, the department's VSA, and other geography teachers:

> I look at the schemes of learning, and what Hugh's set up in the department…look at resources…like on the system and what Hugh's given me, or…before I left my PGCE I was with a geographer, so I said to her "can I have all your resources?" …so she gave me all her resources, and my girlfriend's taken geography resources off the schools that she's been at… (Tim, interview 1:29-35)

He was not regularly engaged in finding other sources of knowledge, for example, in the way that Hugh frequently reads and curates news articles. Tim's experiences on his history degree were applied to the way in which he considered the use of one particular source of knowledge (Wikipedia) for school geography.

> At university it was – there were two thoughts of the lecturers – some lecturers would say [Wikipedia's] a starting point for your research; start on Wikipedia then you'd follow the references. Some would just be like "Pfff! If I ever find out you're using Wikipedia…" (BA department interview:75)

Tim has few opportunities for contact with the academic discipline of geography. The organisational structure of the school seems to make it less likely for questions about knowledge in geography to be raised: non-subject specialists carry out lesson observations, and his line manager is not a geographer.

6.4: Pam

A PGCE student, Pam began her placement in Beach Academy shortly before my first fieldwork visit. When I met her she was at an early stage in her PGCE year, and was beginning to teach sections of lessons. Listening to the kinds of things Pam noticed about the department provided me with an interesting perspective. For example, in her perception of the school's embrace of technology. Planning one of her lessons, Pam

tentatively asked Hugh if it would be 'ok' for her to use paper atlases with the students, rather than using google earth on the iPads: 'I'm not going to be frowned on for not using technology, am I?' (Pam, fieldnotes 15/1/2013).

Pam had no dedicated space in the department to store her belongings (Figure 51), working in any areas that were free; either at the computer in the geography office, the geography classroom, or the school library.

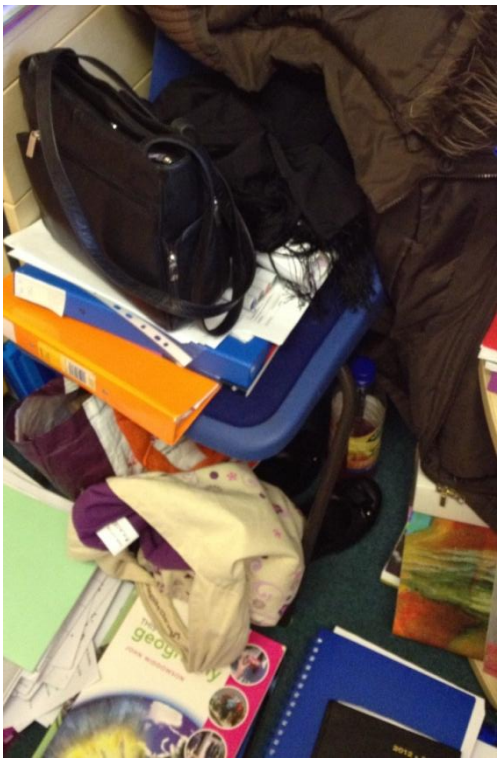


Figure 51. Pam's belongings in the office

She chose to study geography at school and university, and then to teach secondary school geography because of her love of the subject. In particular, she described her love and obsession with volcanoes.

6.4.1: Love and obsession

In contrast to the difficulties Tim described with plate tectonics, Pam enthusiastically described volcanoes as being her favourite area of geographical (or any) knowledge.

> I love volcanoes – I am obsessed with volcanoes – I have been since I was 12 [laughs]. Everything that I do I will try and do something with a volcano, or put in a picture of a volcano…every opportunity I now try and go and see a volcano… (Pam, interview 1:20)

After her geography undergraduate degree Pam studied for a Masters in Geological and Environmental Hazards. She passionately described her dissertation on predictive models of Mount Katmai's eruptions. She attributed her love of volcanoes to a family

holiday to Hawaii when she was 12 years old, when she first saw an active volcano. She has been hooked ever since, and was thrilled to be teaching a year seven class about hazards. That she was able to teach this topic was fortuitous, having been determined by the department's scheme of learning.

> Interviewer: How do you decide what you're going to teach in a lesson?
>
> Pam: You mean after I've looked at the scheme of work?
>
> (Pam, interview 1:56-57)

Pam described the department's scheme of work as being 'always my first port of call…and then pick out from there really what would be a suitable way to go' (Pam, interview 1:58). She uses the same metaphor as Gemma (Town Comprehensive) to describe how she decides what to teach: the question is framed spatially as being concerned with *where* to go. Pam expressed a desire to innovate and not just replicate the scheme of work:

> I don't always stick to the scheme of work, particularly with different classes, but I do try, because obviously I know that's what the Head of Department – in this case [Hugh] – that's what they want to achieve, so for the moment I have to try and follow it as much as possible [laughs]. (Pam, interview 1:58)

'For the moment' seemed to indicate Pam's thoughts about the future, and her understandings of the probable changes in power over what is taught. As a PGCE student she is told what to follow, but in the future she expects to have more power.

6.4.2: Conceptions of knowledge in geography

Pam described knowledge in geography as being 'really complicated', contrasting it against other school subjects, which are 'very contained' (Pam, interview 1:168). Geography's complicatedness arose from the interconnectedness of its areas of inquiry. 'The way that I now look at geography, rather than a physical or human, I try and look at it as a theme and then split that down into Social, Environmental, and Economic' (Pam, interview 1:170). These three areas were used as main headings on her map of areas of subject knowledge (Figure 50).

Pam's map of areas of subject knowledge in geography is unbounded, and is made of two distinct halves. The top half of her map is linked to a circled node 'Subject knowledge areas of geography', which was the first thing she drew in the middle of the page. The lower half of the map is presented in three columns; Social, Environmental, and Economic. The number of nodes on her map was the second highest in the current study at 37, one less than Claire's (CA). Some of her areas of subject knowledge are statements, or labels. Others are questions, such as 'Settlement – why there?' She suggested that all of the questions she raises could be asked in any of the topics. Each of the departments in the current study adopted different versions of a generic questioning framework for students to use, such as the '5 W's'; what, when, where, why, and who. Students might be given a photo to stick in their books which they would then annotate the photo by answering questions prompted by the 5 W's, an activity replicated across all departments in the current study.


Knowing where you are
How to get somewhere
Map skills
Apply to everything
In what job
How you are
What you value
Sustainability
Apply to everything
Apply to everyone and everything!
Location Knowledge
Global, National, Local
Models/ theories
Other subjects areas
Climate zones
Migration (often relatable to lots of topics)
Development
Subject knowledge areas of geography
Historical + political links
There are always
"Processes"
Social
Environmental
Economic
Population
What impacts people or have why there?
Why do different areas of the world cost different things
Settlement
Hazards (natural - physical + meteorological)
Impacts and benefits
Impacts People reaction
Hazard, Response Preperation
Rivers
What they cost - impact + response.
How people are effected
Physical Landforms e.g. glaciers, TRF
What value are they.
how people are effected + Why they make it worse
Coastal zone
What it costs to prepare and rebuild
All questions that could be asked in any topic

Figure 52. Pam's map of areas of subject knowledge

Conceptualising geographical knowledge as *questions* was linked with a notion of enquiry, which Pam described as emphasising the processes of finding out information and developing an inquisitive disposition. The generic nature of Pam's questions is similar to the transferable areas of knowledge in the upper half of her map. Several of them (Sustainability, Map Skills, and Location knowledge) have 'apply to everything' written below. 'Processes' is prefixed in red by 'There are always', and it is the only outer node circled: she put it in 'its own bubble…because it applies to everything' (Pam, interview 1:196-198), and she later commented that all of 'these ones here at the top – they're all the things that are applicable to everything, irrespective of what is being taught. So they're the underlying things that should always be in geography' (Pam, interview 1:209).

	Pam's Map
Nodes	37
Links	60
Linear connectivity	1.62
ASK	16
NCKC	2

Table 17. Numerical description of Pam's map

An important part of Pam's conception of knowledge in school geography might be understood as being concerned with processes, rather than substantive areas. There are no limits to the objects of geographical study; instead, and in contrast to other subjects, it stimulates a passionate inquisitiveness towards the world, and provides a framework (in the form of a set of questions) that may be asked of everything.

6.4.3: Views on relationship between school and academic geography

For Pam, school and academic geography study the same topics in the same ways; there are no fundamental differences, but simply different levels of study. Academic is higher, and school lower. She applied her expansive view of geography to both school and academic geography, between which there was a clear continuity. One of her motivations for becoming a secondary school geography teacher was the opportunity she hoped it would provide for continuing her relationship with the subject, or *using* her subject knowledge well:

> I used to want to do Primary School [teaching] until I went to university, and then I decided to…do a masters because I loved the subject so much, by which time I thought it'll be a bit of a waste of time to do primary teaching – to have that much subject knowledge and then not ever use it in quite the same way, whereas at least secondary, and particularly obviously GCSE and A Level I'm going to be able to use that more – in what I've gathered from higher up – I'll be able to use it. (Pam, interview 1:36)

Pam was at the start of her PGCE course, and often speculated about the future, expecting that her subject knowledge will increase as she teaches more school geography. She felt that at this early stage in her PGCE she had been 'using particular things from my degree, not necessarily my masters though – cos obviously it's a bit high-level – but it's nice to have that background, particularly when planning' (Pam, interview 1:40). Her knowledge of academic geography had remained in the 'background' in the sense that she had not yet explicitly referred back to a university textbook, or her own notes. When using this knowledge, 'in the first instance…I just know it – I can remember certain bits – but I typed up all my university notes after I finished…they're on my computer so I can refer back to them if I need to – for key terms' (Pam, interview 1:44-46). She also described her experiences of academic geography as having provided her with

> a wider view…so, therefore, if someone asks me a really outrageous question about something – because they're year 7s they're really inquisitive at the moment, they come up with the most obscure questions – I might actually be able to answer that for them…I want to avoid saying well go and find that out for yourself and let me know – y'know – cos I want them to have the faith in me that I do know quite a lot of that particular subject. (Pam, interview 1:84)

Aspects of Pam's status are tied up with her subject knowledge, in a similar way to Young's (2011) descriptions of subject knowledge as bearing the weight of legitimating teachers in the eyes of students and parents. Pam expresses these ideas through the language of others having 'faith' in her. There is a sense in which Pam's description of 'providing answers' by virtue of her experiences of the academic discipline adds some detail to her conception of geographical knowledge as being comprised of questions. The questioning that students are inducted into leads to them finding answers, which are hopefully already known by the teacher. Her desire to provide answers to students' questions contrasts strongly against Hugh's interactions:

> Hugh: Just flick through. I want to get you looking for information. How do you gather it? I love the images – I think some of the photos are absolutely phenomenal. Take some time to just look at them…I am going to let you use the iPads, I am going to let you use the computers – and we're gathering information…
>
> Student: Sir, what is a lunar month?
>
> Hugh: Despite the way it looks, I am not the fount of all knowledge!
>
> [Students then all searching for information about lunar months on their iPads]
>
> (Lesson observation 20/06/13)

Hugh's phrase 'despite the way it looks' might be related to his status in school; he is not in the process of trying to establish anything, in contrast to Pam's self-conscious efforts to establish herself. Pam's placement in Beach Academy finished after my first fieldwork visit, and she was followed by George.

6.5: George

George described his own experiences of school geography as fun, active, lively, modern and up-to-date. He described enjoying, and achieving in geography as his reasons for reading it at university. At the start of each year of his degree he was given two lists of optional modules (one human, one physical). His selections were based partly on the fieldtrips offered, but there was no 'set rhyme or reason for why I chose stuff – it was just because I liked the sounds of it and I liked the description and the lecturer…' (George, interview 1:34). His final year dissertation investigated the social impacts of casinos on local areas. After graduating he worked in Morrison's as a 'general lackey', and then as a cashier in the bank his dad managed. He enjoyed working in the bank, but felt he was 'a bit over-qualified for it…it wasn't challenging me enough…I was just getting bored' (George, interview 1:38). Wanting more challenge and interest, and to put his degree to use, George reviewed several options and felt that teaching stood out. After accepting a place on a geography PGCE course he left the bank. Asked if he felt that teaching school geography was now putting his degree to use he said 'definitely, cos I can feel like I'm actually achieving something with the knowledge that I've got…I think it's helped me, and it's certainly helped me further my interest in the topics which has been really good' (George, interview 1:42).

George's general interest in geography was developing through his teaching of school geography, and he was thinking through the implications of his epistemological need for

'definitive' evidence: as he believed that no evidence is definitive, and different opinions exist, uncertainty had become a significant dimension of his conception of geographical knowledge.

6.5.1: Uncertainty

A dichotomy between certainty and uncertainty featured prominently in George's descriptions of school geography. He recalled an episode from his previous placement, during which he and the teacher had shown

> the Al Gore [video] to the year 12s, and they just took it for given that it was all fact…and at the end the teacher really had to sort of push the point that like there is – and then the next lesson we watched, er, totally opposite one that said that it was like all a natural process, and this sort of thing, and it was like just showing them both ends of the spectrum and then they came up saying like, well, what's the right answer? And they were...they weren't really happy with the uncertainty around it but then that's just showing that's just the way it is. (BA department interview:153)

George concluded that there is a need for scepticism based on the fact that different points of view exist. He felt it important to always provide students with 'both sides,' often represented as contradictions. In the example above the students watched the Al Gore film, and then the 'totally opposite one'. George's claims about the pervasiveness of uncertainty are in tension with the certainty with which these claims are made: 'that's just the way it is'.

On another occasion an animated George returned from his tutor group, who had watched Newsround's summary of recent headlines. George described how, after a clip about burning landfill waste to generate electricity, the teacher had 'gone off on one', saying 'ooh, it's bad, it creates global warming and releases harmful gases'. In response,

George thought 'actually, there's no definitive evidence that global warming actually exists'. He described one student presenting an argument for a cyclical view of global temperature change. George's response to this view was also scepticism: 'but actually we haven't got a time machine, so we can't know what it was like 1,000 years ago' (field notes, 19/6/13). George's standard of 'definitive' evidence is empirical; data that can be tested, and experiments that can be replicated in the present. This standard of evidence leads him to see geographical knowledge in terms of absolutes; it is not only harder to know about the past, but instead 'we can't know'. He had begun to explore some issues surrounding certainty and the production of knowledge with students in his first placement school:

> one thing I've found since I've been in teaching is that some of the stuff you do teach is theory and there's no definitive evidence for it, so like the structure of the earth. I put it to the year 7s at [my first placement school]: how do we know what the inside of the world's like? And there was like deathly silence across the whole class, and they were like what do you mean how do we know? They'd never considered that what I was telling them…wasn't 100% true and accurate, and that was quite interesting for me, cos when you're at school you're just – if a teacher tells you something I just assume that it was right… (George, interview 1:80)

At the start of this exert George uses the terms of 'definite evidence' as the standard for properly accepting something as being true, or as '100% true and accurate'. He believes teachers' testimonies are accepted as being 'right'. Again, the terms of evaluation are dichotomous; right, rather than wrong. Issues surrounding testimonial knowledge are discussed further below in chapters eight and nine.

6.5.2: Conceptions of knowledge in geography

George's experiences on his PGCE course played an important role in the way he describes school geography:

> one of the main things we got told at uni [on the PGCE course] was like the government has put a big emphasis on local and expanding it out - so like starting in, almost like layers of onion; that's why I put that one down. (George, interview 1:72)

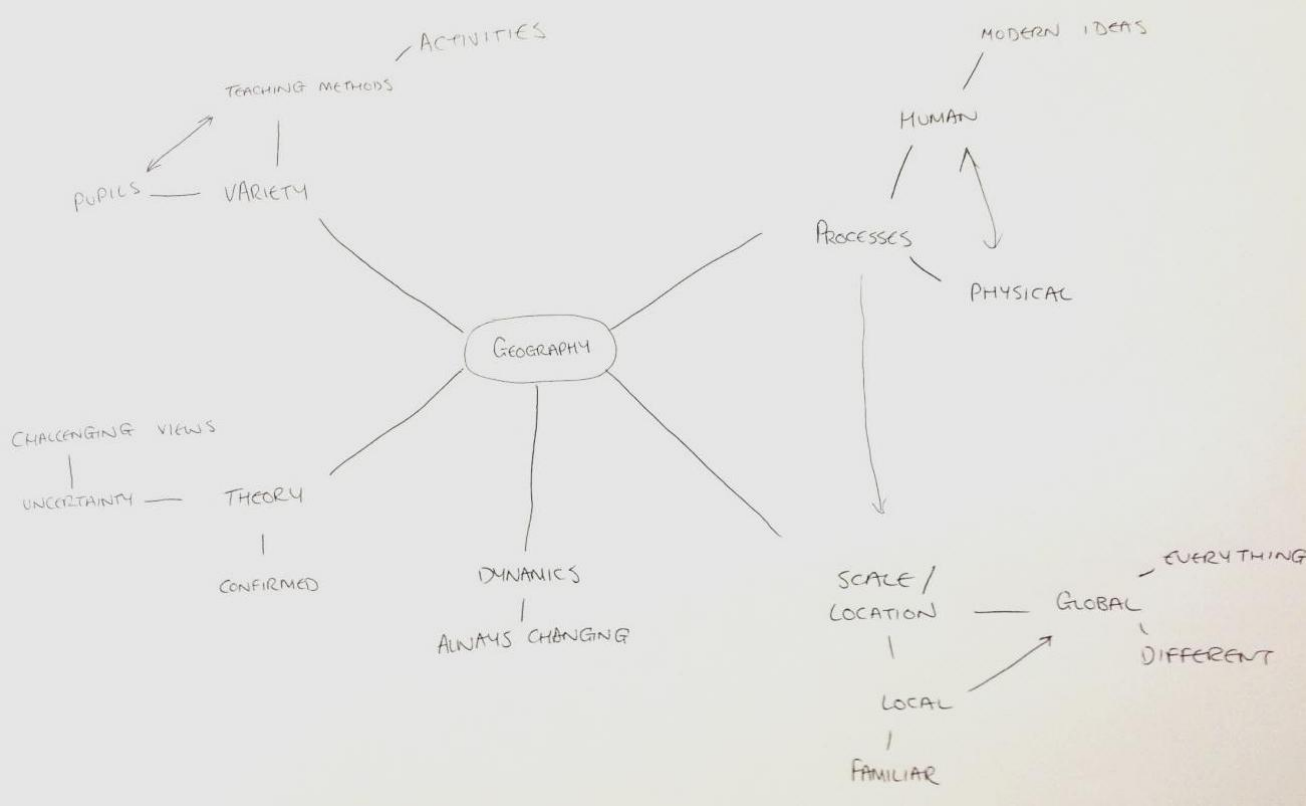


Figure 53. George's map of areas of subject knowledge

His map is unbounded, and several-centred: geography is capitalised and circled in the centre of the page, and other nodes (variety, theory, dynamics, global, and processes) all act as centres of interest. These nodes, and the links made to and from them (most links are lines with no directionality) are nearly all self-contained. Processes link to scale/location, but apart from this categories of nodes are only linked within themselves, rather than between groups of nodes. The areas of subject knowledge George included are general, rather than substantive. He also includes 'pupils', whom he links with a two-way arrow to 'teaching methods'. Both are linked with 'variety'.

The only other two-way arrow is between human and physical, which are both linked to 'processes', rather than being used as organising categories through which geography might be conceptualised (as in many of the other maps in the current study). George's map, when considered alongside the other teachers in the current study, was close to the mean in all aspects measured apart from areas of subject knowledge (for which his map is joint second lowest). A numerical summary of his map is shown in Table 18, alongside the mean and standard deviations for all teachers in the current study.

	George's Map	Mean	S. Dev.
Nodes	21	23.5	10.62
Links	48	46.4	21.13
Linear connectivity	2.29	2.03	0.48
ASK	8	14.1	6.62
NCKC	2	2.6	1.78

Table 18. Numerical description of George's map

George includes pupils as an area of subject knowledge in geography, referring to this in multiple ways; as a source of knowledge for other students during a lesson, and as a resource for teachers to engage with and use. During the department interview he described a recent lesson in which, following feedback from a lesson observation questioning his (it was suggested over-) use of PowerPoint, he had subsequently not used any. He summarised his lesson without PowerPoint as being 'literally the students in charge of their own learning' (BA department interview:92). In this lesson he had given students grids which listed the sub-sections of their current topic. The aim of the task was to complete the grids with key terms and ideas for each sub-section, and to do this with the help of other students. Hugh asked if George regarded the lesson as having been based on the learners' knowledge. George's response partially agrees that it is, but then qualifies this. He designed the task in order to

> reveal areas the students needed to work on, which sort of gave them a view as to any gaps in their knowledge, and then I got them to research the gaps and then do a little presentation about the gaps that they had…it just allowed them to see gaps in their own knowledge which they might not of previously thought, because in the lesson when you're going over, it, like a lot of them really didn't know what freeze-thaw is, so that was...I made sure I went through that with anyone who came and asked me. (BA department interview:94-96)

Students' knowledge is described using a metaphor of gaps; part of the source of knowledge in this lesson is introspective, but knowledge about, in this example, freeze-thaw weathering, is not something that might be gained in this way and so George describes his role as explaining the concept to them.

Hugh and Tim used PowerPoint very differently. In the PowerPoint-heavy lesson George described using the medium to provide content, titles, objectives, and explain activities or tasks (similar to Tim's use of PowerPoint). Hugh rarely used PowerPoint, describing it as a crutch. George's response to Hugh's feedback was to not use PowerPoint. It was interesting that the feedback George mentioned was about a pedagogical aspect of his lesson. It is not about the content, or the knowledge he is seeking to teach but instead is about the way in which this content is taught. One example of a source of knowledge being discussed between Hugh and George was stimulated during the department interview. In these interactions they tend towards assent. George's initial remark is provocative (although very similar to the thoughts expressed about the Daily Mail by teachers at Town Comprehensive and City Academy). However, after being questioned by Hugh he reframes and assimilates his beliefs into Hugh's argument:

> George: isn't there a lot of bad press about the Daily Mail? All I ever hear is 'oh, Daily Mail readers blah, blah, blah'

> Hugh: blah, blah, blah?
>
> George: yeah, and like, like I don't know if it's from particular sources but, like, I don't know it it's…
>
> Hugh: but actually it's [G: different viewpoints] it's quite useful to use that sometimes [George: it's good to give different opinions] so you can put a point to them…they can absorb it, and if they take it for granted you can be like hang on, it's like a really biased article, and then that's challenging their preconceptions isn't it [Tim: hmm]
>
> (BA department interview:99-103)

The departmental context seems particularly important for PGCE interns and NQTs, because of the distinction between their status, and that of more experienced teachers. The discussion above of George's use of PowerPoint is also interesting in the context of his experiences at his first PGCE placement school (and the school he attended as a student):

> at the grammar school there was quite a lot of textbook work, and focus on textbooks rather than focus on like PowerPoints or that sort of thing, so, and a lot of the schools - like this school they don't; I've hardly seen one lesson that's been based on [a] textbook, whereas when I was at school and on my first placement they had shelves of different textbooks that you could pick and choose from and work from, so that's quite a contrast. (George, interview 1:62)

Textbooks are used to represent one approach towards teaching geography; traditional, and associated with grammar schools. PowerPoints 'or that sort of thing' are positioned against textbooks, and the different resources emphasised by the schools George has experienced are described by him as being 'quite a contrast'. There is the potential for textbooks, and PowerPoints to present quite different geographical knowledge. For example, the latter may reflect more recent developments. However, George's view is that the differences are not knowledge, but pedagogy: 'In terms of the...subject I don't think it has [changed] - I just think it's the teaching methods' (George: interview 1:60). The arguments made in the literature critiquing school geography are primarily based

on understandings of the relationship between school and academic geography. For George, the knowledge taught in the school subject has remained constant (even if data in *case studies* are updated), but the subject has remained 'modern' because of pedagogical developments. Consequently, he sees academic geography as being personally useful to him as a teacher, but without having a wider relevance to the school subject.

6.5.3: Views on the relationship between school and academic geography

During the department interview George led the discussion to consider the different opinions presented by different sources. The topic was enthusiastically taken up:

> George: Even stuff like academic journals will be presented from one viewpoint
> Hugh: Exactly
> George: Yeah
> Hugh: …yeah, academia's the bitchiest thing [George: laughs] isn't it
> (BA department interview:143-146)

George's beliefs about the uncertainty of geographical knowledge, partly based on the existence on different views, led him to comment that providing students with different sources of knowledge is important. Through his own experiences of academic geography he had gained knowledge of strongly argued, contradictory positions. George was 'on the BBC news website all the time!' (George, fieldnotes 18/06/13) because of the recentness of the stories, and his belief the stories have *balance* through the presentation of contrasting views.

George described processes of *re-teaching* himself before teaching students. He often went to revision guides, both hard copies and online (using websites such as BBC learning zone), because he felt they made the material *simple*. He also used one textbook from his undergraduate course:

> *An Introduction to Physical Geography*, which I use quite a lot, cos even though it's got way too much detail than I need in school, it's just good to have that much detail if I need it, so…like if I get asked a question I can sort of further answer it, and push the kids as well… (George, interview 1:52)

George's discussion with Hugh during the department interview was outlined above. In this exchange George described 'even' academic journals as being presented from 'one viewpoint'. His belief in the multiplicity of existing perspectives led to a tempering of academic geography's authority over school geography. Offering *balanced* views, and presenting students opposing viewpoints was, for George, more important than recontextualising knowledge from the academic discipline. He did not see his role as one of inducting students into the discipline, but of stimulating interest and excitement in topics; similar aims to his own reported experiences of the school subject.

6.6: Recontextualising principles and summary of Beach Academy

George, Pam, Tim, and Hugh all describe contrasting experiences of geography, specialising in disparate substantive areas, and having different affective relations with the subject. Summaries of these teachers presented above included information about careers, conceptions of knowledge in school geography, and views on the relationship between school and academic geography. Physical and virtual areas of the department

at Beach Academy were presented, and now three dimensions of recontextualising principles emerging from these descriptions are outlined; *performativity*, *space-times*, and *regulation*.

6.6.1: Recontextualising principles and performativity

A notion of performativity was introduced in the analysis of Tim's observed lesson, described as a performative moment. Performativity might 'typically include performance pay, incentivisation, appraisal or performance review...consistent with the development of a high accountability, low trust culture' (Menter et al. 2012, p.25); examination grades, and the making visible of these grades are features of this accountability. The important role played by examination boards in the regulation of recontextualising principles is considered further below. Trust has been considered in the current study in relation to teachers' trust in sources of knowledge (and in terms of testimonial knowledge is explored further in 8.2.4), but the type of trust shown towards these teachers seems to be low only with regard to pedagogy, whereas, their subject knowledge is highly trusted. Recontextualising principles – that is, questions about the knowledge taught in the lesson (where it is from, why it was used, what kinds of geographies it introduces students to) seem to be rarely discussed either between teachers, or between observers (such as SLT) and teachers. Several aspects of the performative system encourage and reinforce a focus on generic rather than subject specific questions, including: (1) the making visible of assessment criteria between teachers, as comparing teachers across subjects leads to the generation of criterion suited to generic judgements; (2) school hierarchies in which the most powerful positions are not related to subjects, and so those making the judgements are given

authority and their judgements follow the nature of that authority, that is, generic and not subject specific; (3) judgements are based on moments of performance, and as *moments*, they prioritise how people act at a specific time, rather than issues about the development of knowledge, whether that of the student or the teacher. One consequence of judging the moment is that the performance is prioritised, and so Tim is concerned before the lesson about choreography; is there 'pace'? He is not concerned about plate boundaries; are these four types good (and appropriate) representations of the best we currently know about tectonic plate margins? In what ways do these typologies limit our understandings? Does this text book represent the information well? What are the possible implications – particularly for students' perceptions of the knowledge taught – of saying the purpose is to 'learn what to do in the exam'?

6.6.2: Recontextualising principles in space-times

The virtual and other space-times constructed by each department in the current study share some characteristics; their years follow similar rhythms of the academic calendar, welcoming and settling-in new students in September, then devoting time to revision then exams from Easter onwards. Each department has a dedicated VSA, with the same level of autonomy over it, although expressions of this autonomy in terms of the organisation of these areas vary. Beach Academy's VSA provides an interesting lens through which to view the changes to this impacted department, moving from an area owned exclusively by Hugh, to one now co-negotiated with Tim. The imposition of a new order on the VSA, replicating the structures he has seen in other schools' VSAs is an example of a standardising process. The changes being experienced at Beach Academy have been suggested to be creating *in-between* space-times. Narratives of these changes

were often articulated by teachers in the school, expressing both hope and concern at the curricular, physical, and organisational changes. While there is excitement about some of the new arrangements, such as the provision of a more comfortable physical environment, and a tastier restaurant, the intention to remove department-specific spaces and shift from teachers' dedicated offices to open plan hot desks was tied into narratives of cost-cutting and associated with a low-trust, high accountability culture. The importance of the school's space-times are hard to over-emphasise: where these teachers work, and who they are able to interact with, at what times, and in what ways have significant implications for the types of conversations that occur. The accessibility of resources, when considered in relation to the limited time teachers had for finding and choosing them, may present significant changes to the way in which information is accessed; hot desks favour the accessing of resources via a laptop.

The wider context – or landscape – of which Beach Academy is a part has also been argued to be related to the geographical knowledge taught there. In particular, substantive areas of study are chosen (fluvial processes, coastal geographies), and excluded (glaciation) on the basis of their proximity to the school. Hugh's immersion in the landscape, beginning with his cycled commute, plays an important role in his conceptions of geographical knowledge as relational and embodied; it is something he experientially relates to, and he hopes to induct students into a different, more expansive and inquisitive way of being in and seeing the world. Were Beach Academy part of different (for example, inland) space-times, Hugh's belief is that the type of geography they teach would be very different.

6.6.3: Regulation of recontextualising principles

Contrasting with the expressions of freedom and autonomy that are communicated through the heavily situated account of geographical knowledge taught at Beach Academy is the strongly regulative role played by examination boards. The 'detailed content' prescriptions provided by examination boards were found in the analysis of Town Comprehensive (4.3.3), and these detailed statements of content were also highly visible in Beach Academy, as was their 'Delivering the Specification' or 'teacher support' guidance (Figure 54).

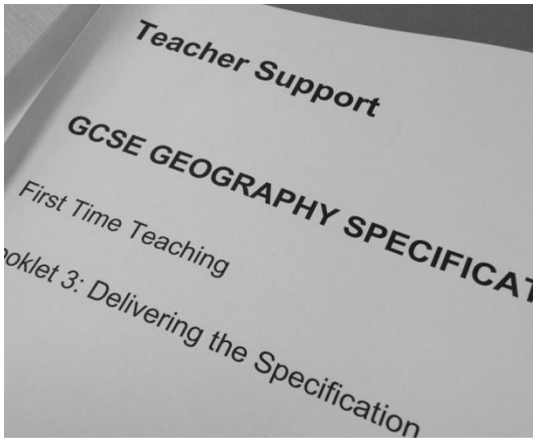


Figure 54. Delivering the specification

Examination grades are an important aspect of a culture of performativity, with implications for the power and status attributed to materials from examination boards. Legitimacy and trust are given to examination board approved resources, which reduces the potential for questioning them. In the example of a performative moment described above there is a conflict between the subject specific views expressed by Hugh and myself, and those of the observer. Generic principles about pedagogy dominate subject specific judgements; processes of teaching are judged, and issues about knowledge are not discussed, with consequences for the recontextualising principles enacted. Exam grades provide the background to the event, and the exam

board is authoritative, prescribing content (Specification and 'Detailed Content' lists), resourcing this content (AQA approved textbook), and suggesting pedagogy ('Delivering the Specification' CPD course and booklet). Questions about subject knowledge are assumed to have already been answered by the examination board. The integral role of examination specifications, and the importance given to accreditation contrasts sharply against the views of teachers reported by Fenwick et al. (2013), who argue that accreditation is not seen by their Scottish teachers as a purpose of education.

6.7: Conclusion to chapter six

This chapter has presented a detailed description of Beach Academy's impacted geography department. The school and department have been argued to be constructing in-between space-times through conflicting narratives of hope and concern surrounding physical, organisational, and curricular change. Beach Academy is being substantially altered, and the geography department is involved in all of these changes, some of which are actively seeking to remove the existing subject basis of the school's organisation. The geography department offers a case through which to analyse tensions between subject specific and generic approaches.

A further change in the geography department is in the expansion from being just Hugh, to also including Tim with a 50% geography teaching timetable. Changes to the department following the introduction of Tim were discussed, including the re-organisation of the VSA to become more similar to other departments. Tensions between subject specific and generic concerns were also discussed in relation to Tim's

position (without a formal geography line manager), and one observed lesson. The observed lesson was discussed in terms of performativity, and an understanding of the lesson as a performative moment was presented. Powerful auditing and assessing regimes were described, in which moments of performance assume considerable importance. In this discussion, tensions between subject specific judgements, and generic principles implemented by non-specialists were emphasised.

Through descriptions of Hugh, Tim, Pam, and George, it was argued that teachers conceptualise geographical knowledge in quite different ways, often expressing strong preferences for particular areas of the subject. These preferences are described as having been formed sometimes early in the teacher's life, and affecting their conceptions of geography. It was suggested that PGCE students and others early in their careers seem to conceptualise geography more strongly in terms of their own preferences, whereas, more experienced teachers are more likely to include topics from departmental schemes of work and examination specifications; a finding which conflicts against Brooks' (2006a) argument that teachers' engagement with the discipline increases over time, and supports Lambert's (2002) conclusion that the school plays an increasingly strong role in teachers' conceptions of geography over time. Examination specifications have been argued to play an extremely powerful role in the construction of school geography in this department, while the NC is largely ignored.

7: Findings and analysis of City Academy

Following the presentations of Town Comprehensive (chapter five), and Beach Academy (chapter six), a detailed description of City Academy's geography department is now offered. The broad pattern of these first two accounts is followed in order to provide some parity and enable comparisons to be made between the departments. The chapter begins with the department's staffing, organisational structure, virtual shared area, and time-spaces. Descriptions of the individual teachers are then presented, including: teachers' experiences of geography as a school student, undergraduate, and as a school teacher; their conceptions of knowledge in school geography; and their views on the relationship between school and academic geography. Drawing on these descriptions of the department and the individual teachers, the chapter concludes with a discussion of three dimensions of recontextualising principles: recontextualising principles as *personalised*, constructed in *space-times*, and *regulated*.

In important respects each department constructs school geography, and conceptualises geographical knowledge in surprisingly similar ways, yet with significant differences between them. The departmental level of analysis has been argued throughout to offer an important perspective. I found the experiences of being in each department to be quite different, and the teachers in each department have diverse levels and types of opportunities for support and discussion about geographical knowledge. Some of these opportunities are facilitated by dedicated physical

departmental spaces, of which City Academy have more than any other departments in the current study.

7.1: City Academy summary

City Academy is a mixed, comprehensive 11-19 urban secondary school which became an academy during the fieldwork of the current study. The department is organisationally unitary; formally, the geography department stands alone with the HoD responsible directly to the SLT. The geography department has its own budget, offices (one for all geography teachers, another for the HoD), storage areas, and classrooms. Informally, the organisational structure has similarities with federate departments, partly because the HoD was also the acting Head of Religious Education, and had responsibility for other subjects including philosophy and sociology. Teachers of these subjects also share the geography office space, at least for making tea and coffee. They also have some joint meetings, and co-organise social events. The department is the largest in the current study, with four full-time geography teachers. Richard (HoD) cited the size of the department as one reason for having not changed the exam specification (which he characterised as being 'issues-based'), comparing their department against other local schools: 'Our numbers as a percentage have been much better than theirs…of all the city schools that I'm aware of we've got by far and away the biggest geography department' (Richard, interview 1:42). Through the Oxford internship partnership the department hosts PGCE interns, increasing the number of teachers present during each fieldwork visit to five.

No.	Pseudonym	Formal role(s)	Length of service (yrs, inc. current year, ex. training yr)
9	Richard	HoD	15
10	Sophie	Geography teacher. Assistant Head Teacher	8
11	Paul	Geography teacher	7
12	Claire	Assistant HoD	4
13	Laura	PGCE intern (visit one)	0
14	Tanya	PGCE intern (visit two)	0

Table 19. Summary of geography teachers in City Academy

7.1.1: Staffing changes and responsibilities

Shortly before the current study Claire was appointed Assistant HoD. Paul had also applied for this position, but was unsuccessful. During my second fieldwork visit Richard was interviewed, and subsequently appointed as HoD in another school. Claire was then promoted to replace Richard, and another external candidate was recruited to replace Claire as Assistant HoD. Issues surrounding power, responsibility (particularly for the curriculum), and departmental politics are constantly being negotiated, and these issues are pronounced during times of formal staffing changes. As the only department in the current study with a formally appointed Assistant HoD it has the most obvious formal hierarchy, with contractual responsibility for the curriculum. At KS3, changes to the curriculum were identified by these teachers not with policy changes or NC revisions, but with staffing changes. Teachers described the KS3 as having been *provided* by Richard as Assistant HoD. The Assistant HoD, rather than the NC was seen as having the power to change the KS3 curriculum, and Richard articulated philosophical reasons for largely ignoring the NC. There was now an expectation,

already being realised in part, that with the appointment of Claire the KS3 curriculum would now be *renewed* and *refreshed*. At KS4 and 5 the curriculum was heavily regulated by examination specifications.

7.1.2: Geography offices and classrooms

The geography department had three rooms for office and storage space; the HoD's office, a storage room, and the geography office.

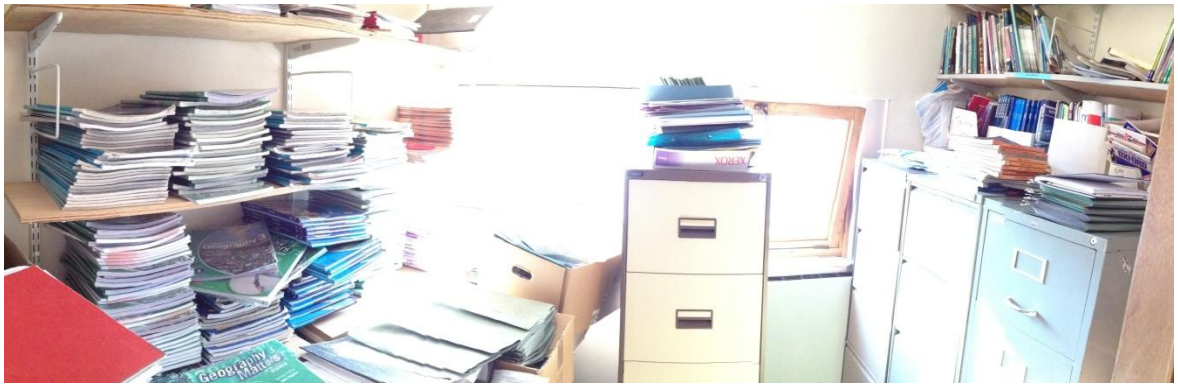


Figure 55. Storage room

The storage room (Figure 55) held hundreds of textbooks. In the mornings the sun streamed in through the windows on this side of the building.



Figure 56. City Academy's geography office

The geography office (Figure 56) runs parallel to the geography corridor, and has doors at either end. There are desks on both sides of the room, one of which has a computer. Shelves hold hundreds of video tapes (Figure 57), which Claire joked would be thrown out immediately upon Richard's departure.



Figure 57. Geography videos in City Academy

A large globe, chairs, and fieldwork equipment were kept in the office. At one end of the room are computer servers, and at the other is a sink and fridge. A kettle stands on top of the fridge. The department office was used by all teachers at some point every day, if only to store lunch in the fridge or make coffee. There is a separate office for the HoD, although this was not used during either fieldwork visits, having been flooded by a leaking water cooler from the floor above. Richard, Claire, and Paul all had their own classrooms, and normally worked there rather than in the geography office. Sophie also had her own classroom, but as an Assistant Head Teacher she also had her own office and she normally worked in there. She had responsibility for the Design and Technology department, and her office was in that area, rather than near the geography classrooms. All of the geography classrooms were next to one another on the same corridor which was controlled for students by a one-way system (Figure 58). The first sign students see on entering the geography area is shown in Figure 59.



Figure 58. Stair direction sign

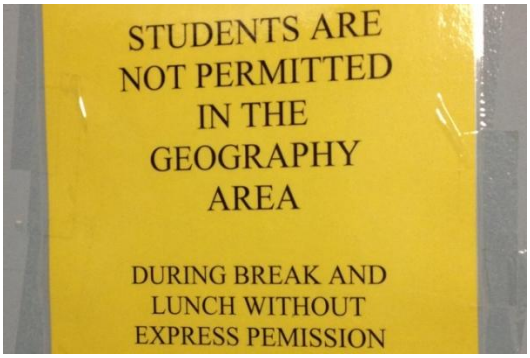


Figure 59. Geography area regulation sign

When I first walked around the geography department and then around the rest of the building, I was struck by the contrast between the instructional sign in the geography area and the Welcome display that greets people entering the Modern Foreign Languages department (Figure 60).



Figure 60. Modern Foreign Languages' welcome wall

Students' movement and presence within the geography area is strongly regulated. On several occasions students violated the rules, either by moving along the corridor without permission during break or lunchtime, or by ascending the down-only staircase. One group of year eight students made a game out of running and screaming up the staircase and along the corridors during lesson times. The teachers were annoyed by this practice, and the 'on-call' team were summoned several times. We also spent some time into the corridors trying to stop the students from doing this. One afternoon Claire remarked that she had spent all of her 'free' lessons either dealing with behaviour issues arising during her lessons, or with students who were disturbing other lessons. She had hoped to use the time for lesson planning.

PGCE students worked in the geography office, often using the computer and the desk area around it. Richard described the desk spaces in the office as being 'like those old council housing estates – spaces work when there's some demarcation of land – desk space works best when someone uses it' (Richard, fieldnotes 18/2/13). No-one had ownership of it, and so things (resources, photocopying, mugs, and papers) were left on the surfaces.

The walls in the geography office were used in a similar, static way to those of Town Comprehensive. Generic pedagogical ideas were written on two 'good ideas' boards (Figure 61 and Figure 62), which remained unchanged throughout my fieldwork.



Figure 61. Whiteboard in City Academy



Figure 62. Pin-board in City Academy

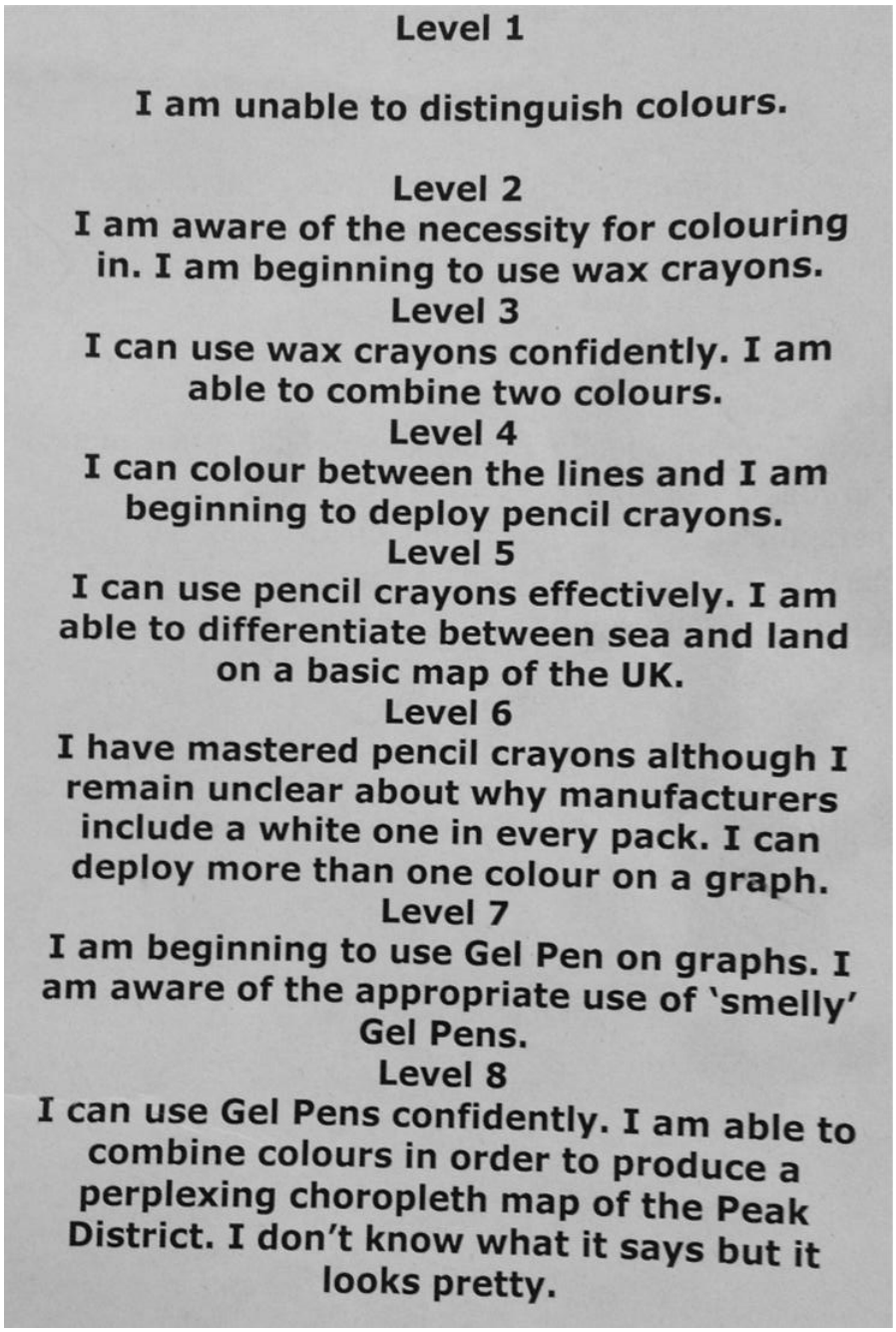


Figure 63 Memo from Richard, CA department office

One sheet of writing about Geography 'making sense of the world', produced by the GA,

was pinned under good ideas and encouraged students to choose the subject. There are also generic sheets produced by the school about lesson planning, two cartoons from a newspaper, and a satirical memo written by Richard (Figure 63).

The items on the board were the same during both blocks of fieldwork in City Academy.

Richard's memo offers an implicit critique of the assessment and levelling processes in school, and a self-deprecating satire of assessment in geography. Caricaturing the subject as *colouring-in* was mentioned by many of the teachers in the current study, and also by those in a pilot study: Richard's mention of colouring-in was not arbitrary.

Many of the teachers, and Richard in particular, used subject-specific humour. Sitting on a desk in the geography office, coffee in hand, he joked about the isostatic re-adjustment of the building he expected to occur when he removed his collection of rocks.

7.1.3: Coffee and kettle space-times

Coffee was an important part of teachers' daily routines in City Academy. Coffee? Was the most frequently asked question. The geography office was regularly filled with the sounds of the kettle being filled and boiled (Figure 64). Coffee aromas infused the air, and tired, busy teachers clasped freshly filled (if not always freshly cleaned) mugs, snatching conversations around the kettle. Before school several cups were often consumed, with more following at morning break, lunchtime, and afternoon break. Opportunistic between-lesson coffees were taken when teachers stumbled upon a freshly brewed Cafetiere.



Figure 64. Cafetiere, mug and kettle in City Academy

Waiting for the kettle to boil and the coffee to brew were important times for interactions between teachers in the department. Interactions were made possible at these times because one teacher was normally static; standing, and waiting. The lengths of times were constant; the kettle takes a certain amount of time to boil, and the coffee brewed for a relatively constant duration. Only on the busiest days would a teacher come into the office to fill the kettle and then leave it to boil as they dashed back to their classroom or over to the photocopying room. On these days the kettle might boil two or three times before the water was actually used to fill the Cafetiere, and often the process was a team effort with one boiling, another scooping the coffee, and another pouring the water. However, normally one teacher made coffee and stood, waiting as boiling and brewing happened. The coffee maker's presence was then met by another teacher passing by or through the office. Seeing, stopping, and then speaking with one another was facilitated by these kettle and coffee space-times. First thing in the morning conversations between teachers included plans for the day, and questions about the locations of resources: *do you know where that PowerPoint is? I'm going to use it with my year nines later*. These short kettle and coffee conversations frequently included

social topics about one another's families, and plans for the weekend. From mid-morning until the end of the day the conversations changed, becoming about *what just happened* in that lesson *I just taught*. Students' behaviour was often discussed, with teachers sharing frustrations and concerns. There was little critical comment on, or questioning of one another's practice, and rarely did I observe suggestions being given; sharing behavioural experiences received affirming comments, and reciprocal exchanges of personal stories of similar challenging or frustrating experiences. When asked whether teachers spoke about issues to do with subject knowledge, Richard suggested that:

> normally if [conversations about knowledge] happen at key stage 3 it's because someone's come onto a new topic they've not taught before…but they're never formal - they generally are informal, having a cup of coffee – "I've got to teach this", "I haven't got a clue what's going on"…there [aren't] really any systems for having those conversations in a formal setting. (Richard, interview 1:68)

Richard locates these conversations around a cup of coffee, and describes them as informal; they are not planned, nor is there an expectation they will happen. He imagines a teacher initiating the conversation by stating an obligation; this is about something they have *got* to teach. Examination specifications were the most powerful dictators of content, and Richard describes these conversations in reference to A Level topics, although interns uniquely expressed similar concerns with topics at KS3 (for example, see discussion of Tanya's engagement with physical geography topics below: 7.7.2: Conceptions of knowledge in geography). The conversation about subject knowledge described by Richard is based around an upcoming situation. A topic is going to be taught: the conversation arises out of necessity, and the purpose of discussing this aspect of subject knowledge is heavily purpose-driven (being able to teach the topic to this class at this time). The teacher described by Richard is in a

position of complete not-knowing. They have *never* taught the topic before, and they *haven't got a clue* about it. Distinguishing between those who do know, and those who do not is binary. One consequence of the binary between knowing and not-knowing is that conversations about subject knowledge are often restricted to the start of a teaching career, or at least of start of a new topic, rather than as an on-going enquiry incorporating development and critique.

7.1.4: Departmental virtual shared area

The VSA in City Academy contained folders named 'Old KS3' and 'KS3 2011'. Interestingly, the text on the summary documents for both; ks32008.doc (last modified 04/07/2008), and ks3overviewNEW.doc (last modified 18/07/2011) showed the same lists of modules. Claire's view of the approach towards choosing topics in the department, which was reflected in the organisation of the VSA, was that

> It does appear that things were quite haphazard, and every year it was taken as a new year, rather than we've established this because we know that it works, and y'know, I'm like sitting down with Richard and deciding what we're teaching, and…partly it's that he's really open to new ideas, and partly it just seems to me like he's not got a list of what was done last year and let's start from that, so, I think it does exist in places, it's just… (Claire, interview 2:115)

In City Academy it was not possible to count resources per lesson because they were primarily organised by broad topic then resource type, rather than primarily being allocated to (and organised by) specific lessons (and so the organisation of the VSA is similar to that used in Beach Academy, but contrasting with that of Town Comprehensive). A summary of the types, authorship, and dates of resources in the VSA is shown in Table 20.

What is included?	Propositions (more than just labels)	1206
	Sounds (inc. spoken work, music and effects)	31
	Images (inc. photographs and diagrams)	571
	Numbers (inc. grid references)	295
What format is it in?	PowerPoint	390
	Website	21
	Textbook	0
	Worksheet	968
	Photograph	62
	Video	37
	Book	0
	Newspaper	0
	Spreadsheet	33
	Google Earth	0
	Audio	6
	Card sort	51
Who made it / where was it produced?	This department	1237
	A teacher from elsewhere	78
	General published material	27
	University / Academic	0
	NGO	93
	Commercial school geography resources	57
	Student	6
	Government	23
	News organisation	0
Year groups		7-9
Dates of creation (most recent modification)		09/2001 – 03/2013 (analysed 03/2013)
Total number of resources		1616
Total number of lessons		N/A
Mean number of resources per lesson		N/A

Table 20. Summary of City Academy's VSA

The total number of resources (1616) is higher than that held in both Town Comprehensive and Beach Academy's VSAs combined (joint total: 1133). Typically, files were organised under:

Key Stage > Year Group > Topic

I used the 'Authors' tab to decide who had made each resource. Even if the resource was completely copied from elsewhere (for example, some worksheets were scanned from a textbook onto a Word document), for the purposes of this counting exercise the authorship was attributed to a teacher from this department if the author tab said so. City Academy's VSA included the authors 'FastTrack Teacher' (Sophie), 'Preferred Customer' (QCA), and 'Aragorn' (unknown).

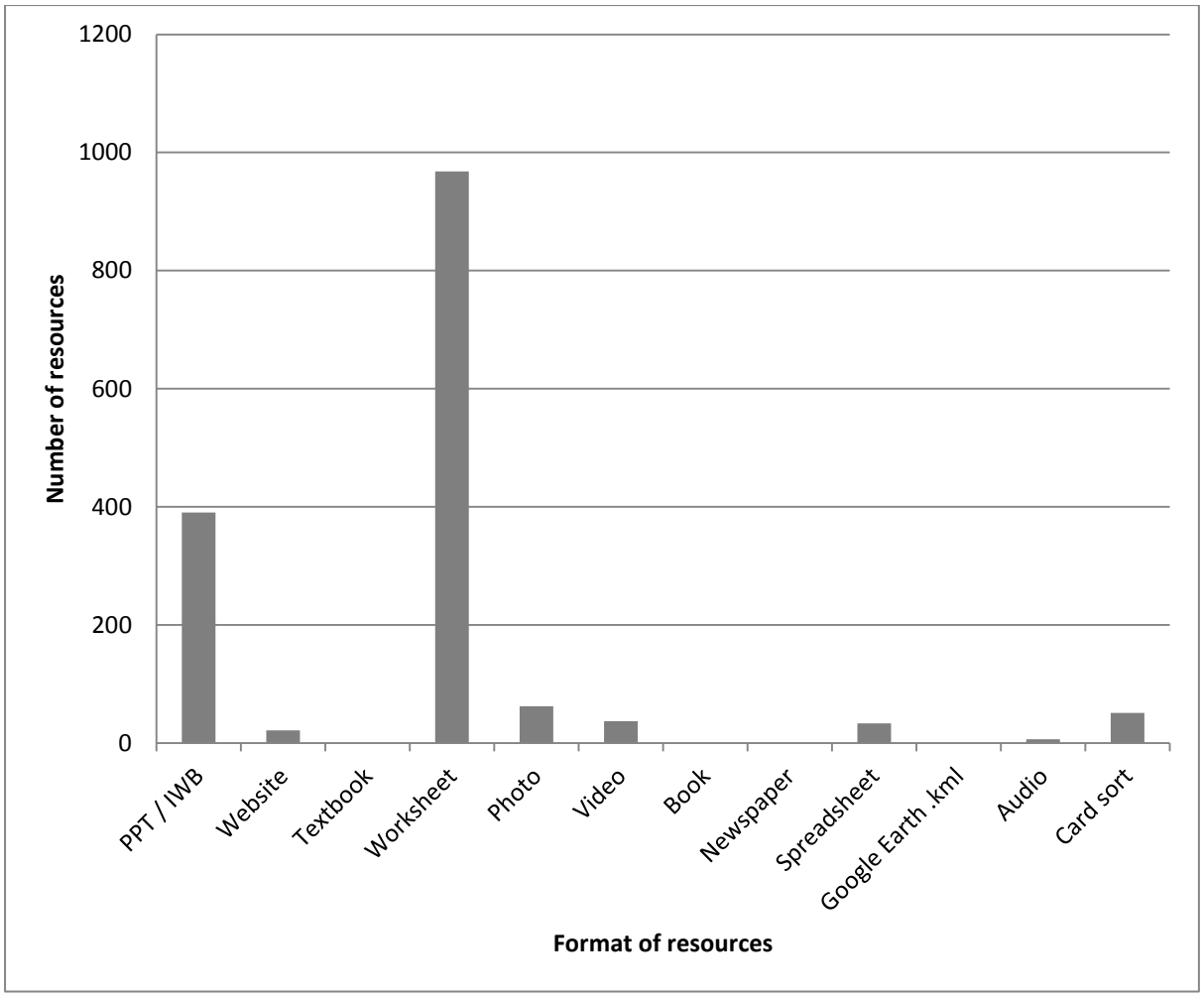


Figure 65. Totals of different formats of resources in City Academy's VSA for KS3

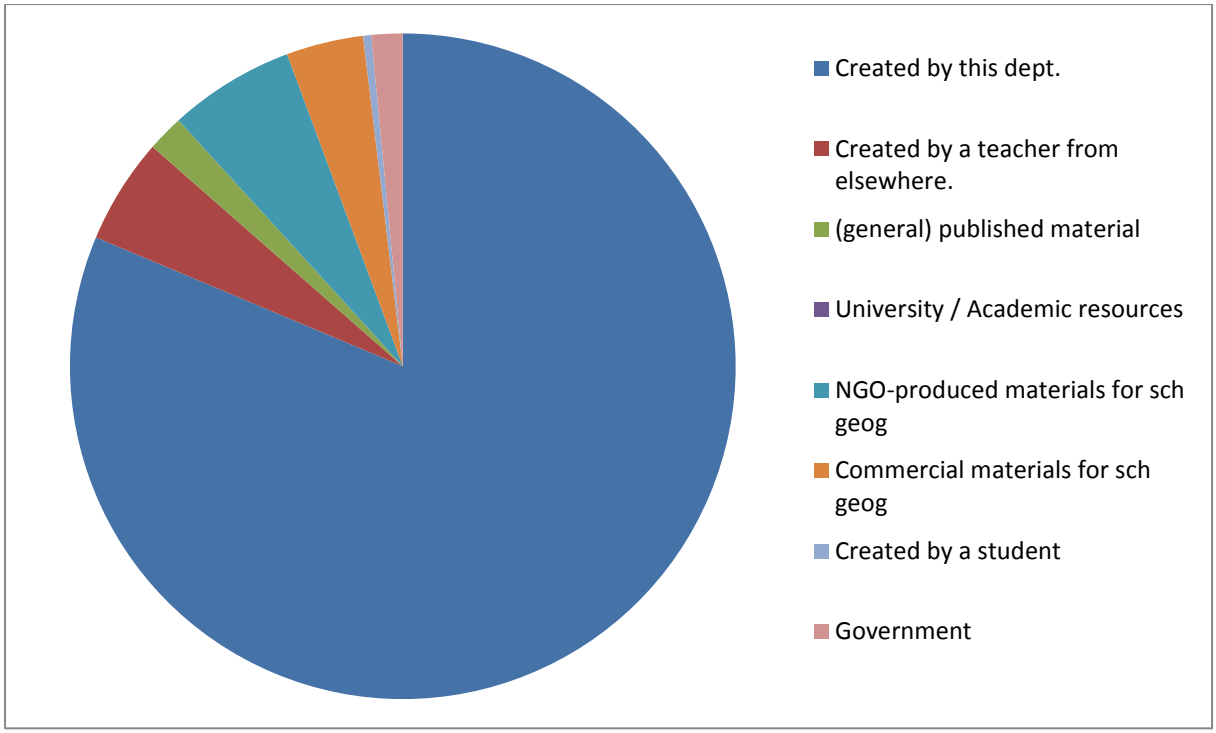


Figure 66. Authorship of resources in City Academy's VSA

Resources made by teachers from elsewhere had been found on three main websites used regularly by City Academy: the 'SLN' (Staffordshire Learning Net); 'juicy geography'; and the Edexcel Ning. The largest department have the most resources in the VSA, the highest percentage of which are produced by teachers in the department. The 'burden' that Hugh (BA) was concerned that Tim might face in having to create resources from scratch is not shared by Richard, although it is interesting to note the similarity between Tim and Claire's critiques of their (at least numerically) different VSAs.

The VSAs in all departments were used regularly, and in City Academy the most recently modified resource was dated the day before I analysed the area. Many topics have been taught for in City Academy over ten years. For example, the module on the Aral Sea (within year nine Fashion) includes almost ten years between the earliest (December

2001) and the most recently modified resources (November 2011). In some cases the date of most recent modification was several years ago, and the resources were still regularly used; in other cases new adaptations seemed to be added more frequently. There is some evidence of patterns in the dates of resource creation, although not to the extent that was found in Town Comprehensive; the teachers in City Academy have considerable freedom to develop topics and resources (at KS3), explored further in the discussion of Richard (HoD) below.

7.2: Richard

Richard read Geology at university, and last formally studied Geography at GCSE level. After graduating he worked for a year as a quantity surveyor, and then did a geography PGCE. With a geology degree he was able to apply for either science or geography PGCE courses, and he described his decision in terms of becoming 'a scientist or a geographer' (Richard, interview 1:22). After joking about losing his eyebrows and other, he felt unpleasant, physical changes that apparently happen to scientists he described his rationale for choosing geography over science in terms of the subject matter he would be teaching:

> when I thought about what I was going to enjoy teaching more, it was more the sort of processes, interactions, those sorts of aspects. I suppose I was attracted by the complexity of geography…linking ideas together and various other things, rather than, erm, the sort of pure science side of things. (Richard, interview 1:26)

His conception of geography as *complex* is discussed further below. Since completing his geography PGCE Richard had taught geography for 15 years, 10 of which were in City Academy. He moved to City Academy from another urban school in Oxford, and was first appointed as Assistant HoD. Although Richard was now formally the HoD, in

practice his work was broader than this, and more like a Head of Humanities. Following a 'car-crash' Ofsted report on the RE department he had been asked to act as the Head of RE, which he considered to be a 'challenge for a committed atheist' (Field notes, 18/02/13). He also had responsibility for the sociology and politics A Level courses. The geography department offered geography courses at GCSE and A Level, Travel and Tourism BTEC (Business and Technology Education Council), and an A Level in World Development. Richard had oversight of over 10 different qualifications, and during the previous summer exam sessions over 20 of the examinations had been his responsibility. He felt the school placed a considerable amount of pressure on examination results, and there was an expectation that 100% of students entered for an award would achieve a grade between A* and C. Percentages of students achieving examination grades at these levels were displayed around the school (Figure 67). The same text is repeated on each photograph: 'Well Done Year 11! Our Best Year 11 Results with 81% of Students Achieving 5 A* - C Grades'. This text was also displayed on a large banner attached to the front of the school.



Figure 67. Posters showing year 11 exam results

The Travel and Tourism BTEC course, taught by Richard and Paul, was initially set up in response to restructuring of the school that threatened geography teachers' job security. They were allowed to run the course in the hope that it would secure additional points for the school which, at the time, contributed towards the school's league table position. BTEC qualifications were subsequently downgraded by government policy to no longer count alongside GCSE grades as school performance indicators. The subject might be described in Hargreaves and Macmillan's (1995, p.145) terms as one 'conventionally accorded low status'. Richard and Paul hated teaching Travel and Tourism. The pressure on them to ensure that every student passed the course, combined with its project-based bureaucracy contributed to their negative feelings towards it. They were glad this was the last year they were offering the course, and at the end of the year 11's final Travel and Tourism lesson they did little to conceal their relief. One of the reasons Richard had applied for a different job was because of

the management and administration time he spent on the different examination entries. He described feeling spread too thinly, which restricted the time available for thinking about the subject knowledge of geography; the reason he originally entered teaching. During both of our interviews Richard commented regularly on time, asking what the time was, and calculating how long his next task would take, or how long he had until the next lesson or meeting. We conducted the first interview in two parts, spending the first half talking whilst he filed papers in his office, and during the department interview he left the room several times to complete various urgent tasks.

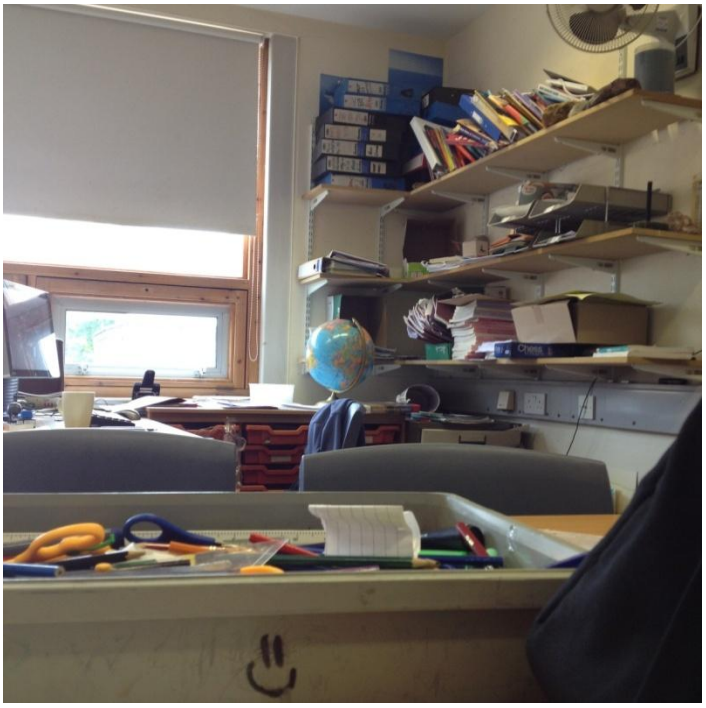


Figure 68. Inside Richard's classroom

On one occasion, carrying his cup of coffee out of the geography office, he joked that a good day is when he knows what he's going to teach before he walks through the classroom door: normally things are so busy that his planning time is the distance between the classroom door and his desk (Figure 68).

The restrictions on time for planning geography lessons caused tensions with his strongly held beliefs about education, including concerns with social justice, and geographical knowledge that is enquiry-based and recent.

7.2.1: Enquiry-based approach

Richard used the terms *issues-based* and *enquiries-based* synonymously when talking about different types of examination specifications. He made a distinction between traditional and contemporary specifications, and saw a conflict between the department's commitment to enquiries, and the National Curriculum:

> as a department we've always generally speaking, particularly at key stage 4 and 5, always had an issues-based, and enquiries-based approach to planning the curriculum...that philosophy that was in the department when I came – [it] has over-ridden the…curriculum… to not put too mild a point on it - I don't really care that much in my day to day work about the National Curriculum as it doesn't impact on me. (Richard, interview 1:34)

Richard's description of an enduring departmental philosophy echoes one science department studied by Childs, Burn and McNicholl (2013), in which 'there was a sense that the supportive role, adopted by the current Head of Science, was deeply rooted in a legacy 'handed down' from previous Heads of Science' (p.46).

The intensity of Richard's statements about the National Curriculum may be qualified by his current timetable as he does not personally teach KS3. However, as HoD he is responsible for the geography that is taught at KS3, and his GCSE and A Level students are all taught (and recruited from) KS3 geography. Apart from one module about the EU it was hard to detect any senses in which recent changes to the National Curriculum

had affected the geographical knowledge taught in the department. At KS3 the PRF exerted considerable control over the ORF.

At KS4 and 5 power shifts to the examination specifications. Richard contrasted *traditional* against contemporary, *enquiry-based* specifications. Making this division, and attributing the labels traditional and contemporary is a part of Richard's belief in the necessity of geography being as up-to-date as possible: he uses *traditional* as a negative evaluation. The popularity of geography in City Academy was part of Richard's rationale for not teaching a traditional specification: 'we've very firmly been in the issues based specs…and compared to [another school] up the road, which is a bigger school, which has taken the more traditional A spec route, our numbers as a percentage have been much better than theirs' (Richard, interview 1:42), equating student numbers with endorsement of a specification in a similar way to Roberts (2014), and the geography department reported in Childs et al. (2013), whose collaboration was driven in part by 'the need to attract more students, created by the post-14 options system...creativity seemed to be driven principally by the need to make geography a more attractive subject' (pp.50-51). Interestingly, Richard's only criticism of himself and his own department was that some case studies were out of date. He argued that

> what makes geography unique is that what you're dealing with is what's going on in the world at the moment…the great joy about geography – and what distinguishes it from every other subject – is that freshness, is that need to look at real issues happening in real time. (Richard, interview 1:90-92)

In making an argument that geography should be about recent issues he described one purpose of geography education as giving 'kids the knowledge and skills and the understanding to actually interpret the world around them' (Richard, interview 1:92).

Based on the assumption that the world is changing at a rapid rate, and that ways of interpreting and understanding are similarly, and necessarily changing, Richard used 1980's Brazil as an example. Teaching students about 1980s Brazil, a popular geography case study, is not useful because students only develop the knowledge and skills to interpret 1980's Brazil, and not the world *around them*. Richard's conception of enquiry is framed in similar terms to Roberts' (2013; 2003) contrasting of traditional / contemporary, or enquiry / transmission, although Richard articulates a stronger sense of enquiry as situated: different space-times may require different kinds of enquiry to understand them. While Richard held that the 'more up to date the case study is, the better' (Richard, interview 1:92), this ideal was hard to realise amid the grind of daily life: 'you've then got to factor in preparation time…that's one of the biggest challenges' (Richard, interview 1:92). He found that being aware of recent events and more up-to-date case studies, but not having time to create the resources in order to teach about them, was highly frustrating.

7.2.2: Conceptions of knowledge in geography

As a geology graduate who had not studied geography at A Level Richard, described having taught himself human geography through an evolutionary process; 'over time you're building up that, that background of information' (Richard, interview 1:60), starting at a low level. When first teaching human geography at A Level

> you haven't got a clue – to be honest you're clinging to textbooks, um, so that initial build-up of knowledge is pretty much just reading one or two pages ahead of…the kids…then over the course of too many years…you have wider and wider reading, um, so y'know, I'm fairly confident now on my human – particularly

> economic geography – which has been an A Level area that I've been responsible for teaching. (Richard, interview 1:58)

In discussing subject knowledge Richard often made evaluative statements of himself, describing his subject knowledge as: patchy; bloody good; lukewarm; passable; damned good; inconsistent; and having depth. He attributed the evolution of his subject knowledge to his reading of some of the 'classic texts'; *White Man's Burden*, *Bottom Billion*, and 'Sachs' stuff'. He also described students' coursework as having played a role in his developing subject knowledge. 'The really good students – kids that went on to Cambridge or Oxford – they're doing some bloody good stuff …they're taking it far beyond your level of knowledge, so you're learning from that' (Richard, interview 1:60). He also drew on newspapers, Channel 4 news, Newsnight, the internet, magazines (such as the New Internationalist), and journal articles; a wide range of sources.

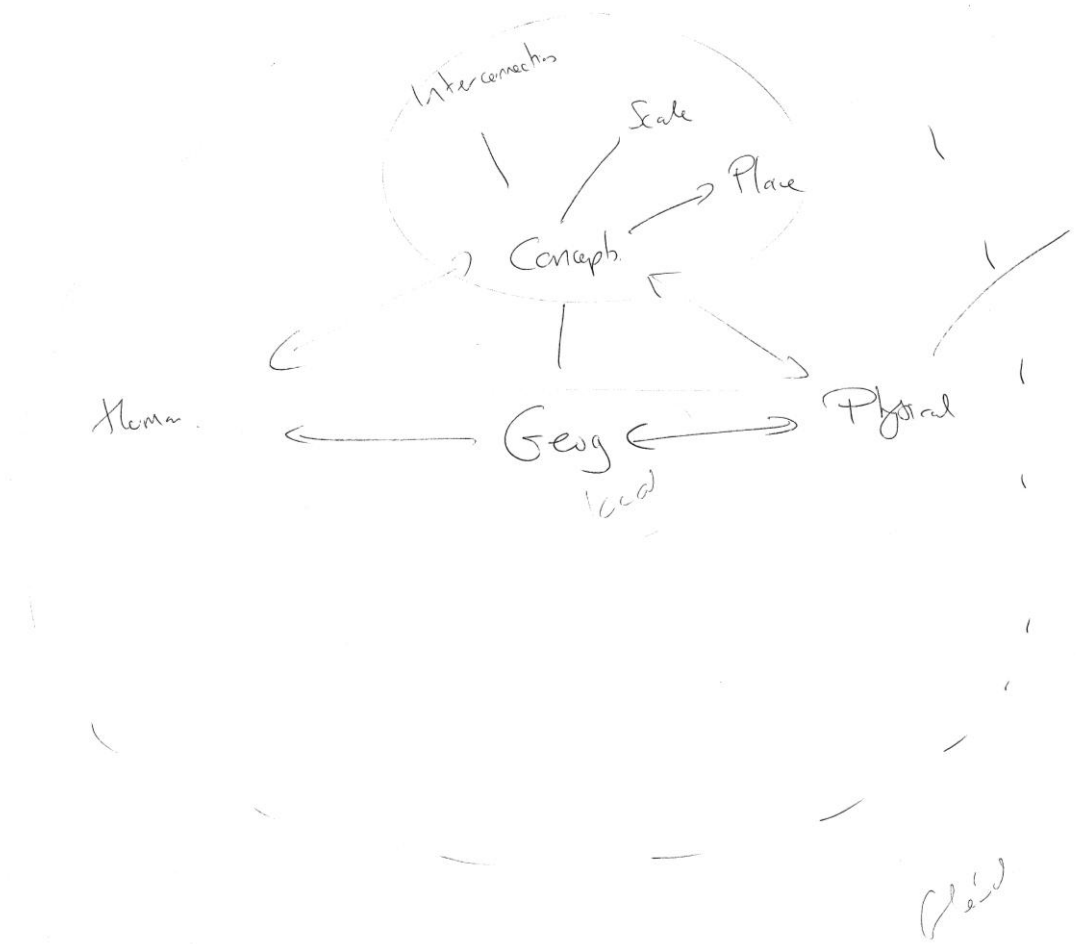


Figure 69. Richard's map of areas of subject knowledge

Richard's map of areas of subject knowledge has the lowest number of nodes (8) of any in the current study (Table 21). His map is unbounded, and includes scales of global and local, locating the latter near the centre of the map, and the former outside a dotted line on the edge of his map.

	Richard's Map
Nodes	8
Links	17
Linear connectivity	2.13
ASK	5
NCKC	4

Table 21. Numerical description of Richard's map

Richard's map provides a strong illustration of the methodological caution discussed above. That is, of not judging a teacher's subject knowledge as complex, or otherwise,

on the basis of the number of areas included in their map. Richard verbally discussed many areas of geographical knowledge and there would be good reasons, if this were an intention of the study, to judge his subject knowledge as 'excellent'. Comparing the linear connectivity of his map (2.13) against Gemma's (6.44) is interesting, because verbally they both articulate similar, strong beliefs in the complexity of geographical knowledge. Complexity, seen as making links and connections, was described by Richard as 'the whole point of geography…I don't think you can actually…teach geography…if you're not looking at those ideas of complex interactions' (Richard, interview 1:28). He identified interactions within physical and human topics, and 'obviously a combination of the two' (Richard, interview 1:28). For Richard, the interactions that are studied in geography are geographical because they are about places on the earth's surface. During the second interview with Richard he discussed a card sort activity (explored further in chapter eight), which illustrates some of the ways in which he conceptualised knowledge in geography as complex. Richard's card sort is included in appendix eleven. It is based on information from the Blacksmith institute (a North American NGO [Non-Governmental Organisation] interested in development), and the World Health Organisation (WHO). Intending to produce a simple summary, Richard described a process of research during which the issues seemed to get increasingly complex. Even as a summarised set of statements the card sort has over 1,200 words.

7.2.3: Views on relationship between school and academic geography

Richard described the 'substantial disadvantage' (Richard, interview 1:64) faced by geography teachers without geography degrees. He judged his own level of

geographical knowledge as now being similar to that of an undergraduate geographer, arguing that his knowledge is 'patchy', but 'probably damned good on those bits that I've been responsible for teaching and developing over the last 10 years' (Richard, interview 1:62), whereas those 'bits which fall outside the A Level specs' are 'far more inconsistent'. For example, he cited Cristaller's central place theory as being something about which he has a 'very lukewarm understanding' (Richard, interview 1:62). These judgements were made about specific areas of knowledge. They are not about a more general concern with grasping the broader senses in which a geography degree might develop particular sensibilities. Richard was noted earlier as having framed his decision between teaching science and geography as one between becoming a geographer or a scientist. Whether described as an ontological (*becoming*), or identity (*geographer*) change, it is believed by Richard to have happened. Areas of knowledge might then be described in terms of 'bits'; discrete chunks of information that he might find out. Peer-reviewed journals are seen by Richard as the most reliable, valid sources of knowledge with the least susceptibility to bias by which knowledge might be gained and judged.

7.3: Sophie

Sophie began her undergraduate degree reading geography and management. She chose geography because she liked it at school, adding management because she hoped to go into business. Splitting her time between the geography and business schools in the university was hard; she was spread across two different social scenes, and half of each degree seemed to add up to more than one single degree. Her optional module choices were restricted, and conflicts between courses prevented her from going on

some fieldtrips. At the end of her first year she changed to single honours geography: management had proved uninteresting, and geography had been enjoyable. At this point she had no intention of going into teaching, and during her third (and final) undergraduate year she began applying for graduate scheme jobs in industry. However, her parents had 'always said, "oh, you'd be a great teacher – be a teacher!" and [Sophie] just said "no, no, no – I'm not doing it"' (Sophie, interview 1:26). During her third year her parents then continued encouraging her to consider teaching. Sophie finally agreed, on the conditions that she get accepted onto the Fast Track programme (a government initiative to recruit graduates with more money, additional professional development, and rapid career progression), and got into Oxford. After considering teaching more closely she anticipated doing it for a year:

> looks ok…it's another year at University, and it's another qualification I can always fall back on…I'll just do it for a year and then see what happens…maybe do my NQT year so I've got it all sorted, then I'll go and do something else. (Sophie, interview 1:30)

During the fieldwork of the current study Sophie was in her ninth year of teaching. She described falling in love with teaching at the start of her PGCE: 'I came into school and like started the course and I just fell in love immediately - I absolutely loved it - absolutely loved it, and was like no, this is definitely what I'm going to do - and within like the first week' (Sophie, interview 1:30). She spent her first placement working in City Academy, and then taught in London for two years. The Assistant HoD position in City Academy was then advertised (following Richard's promotion to HoD), and she took up this position at the start of her third year of teaching. She was subsequently promoted to the Senior Leadership Team (SLT) as an Assistant Head Teacher. Until recently she had responsibility for the Design and Technology department, where her office is still located; a similar spatial dislocation from the geography department as

experienced by teachers promoted to SLT described by Childs et al. (2013, p.40). Sophie's physical separation from the geography department was one aspect of the distance she now has from the department. She described the KS3 schemes of work she had written for department as being really good,

> with really good kind of AfL (Assessment for Learning) and resources, and other bits and pieces and the whole department hasn't used that, cos they'd rather get geog.2 (the textbook) out and do page 10 and 11; double page spread and do the questions at the end, and that just…drives me nuts, but…I'm not involved with the geography department that much anymore, but anyway [laughs], I stay out! (Sophie, interview 1:80)

An example of the kind of PowerPoint instructions she disliked seeing (from City Academy's VSA) is shown in Figure 70.

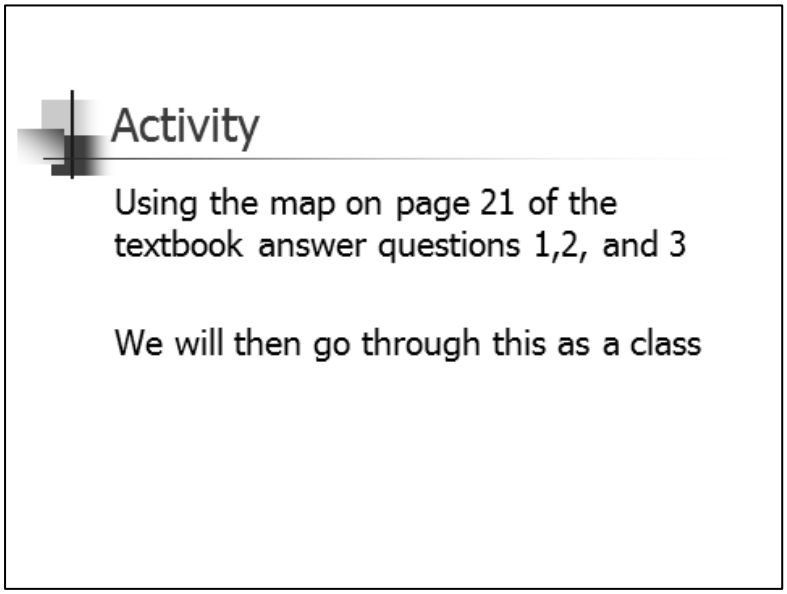


Figure 70. PowerPoint slide from City Academy's VSA

Sophie plays a less active role in the department than she did as Assistant HoD, and the inverse relationships between promotion and subject affiliation raised in the discussion of Town Comprehensive (4.1.2) are echoed in Sophie's experience.

7.3.1: Challenge and ambition

Staying out of the geography department was not literally true for Sophie; she taught there, was friends with some of the teachers, and saw them socially. She attended, and enthusiastically contributed to geography department meetings. However, her role in the school has changed, and her contributions to the meetings reflected that; she was sometimes asked about whole-school issues; about forthcoming SLT decisions and their implications for the geography department. She also promised to take forward suggestions from the departmental level to the SLT. The kind of department member Sophie positions herself as is one with a history of having been involved with the department, but whose future is no longer tied up with the fate of the department. She describes herself as being ambitious, often expressing dissatisfaction with the ways in which schools and departments have not responded to the needs of students and society. Increasingly, these broader issues are of greater concern to her than subject specific issues. She argued that, for her,

> it always goes back to students…what type of students do we want to be putting out in the world? What type of things do they need to know? What type of skills do they need to have for today's society? And that has changed; [the world of employment] doesn't need lots of robots, [it] needs people with lots of free thinking ideas, and I just think schools and departments haven't always adapted how they should. (Sophie, interview 1:84)

The VSA summarised above provides one example of Sophie's interactions with the department; there is a KS3 scheme of work with resources which has been labelled 'KS3 2011'. Sophie wrote this, describing it as a major undertaking, in which more thorough and in-depth recontextualising processes are used: you would not go to such lengths unless you were writing a new scheme of work. Normally, she would not 'go through as rigorous a process on planning a KS3 lesson as KS5 by any stretch of the imagination'

(Sophie, interview 2:66), however, when writing for a scheme of work, for example, 'when we wrote a unit on…human health and population, then I did go to these types of sources [pointing to WHO data] and simplify' (Sophie, interview 2:66).

As she moved to be on SLT the responsibility for KS3 has been elsewhere (that is, not formally with any particular teacher, until Claire was recently appointed). Staffing changes have implications for the types of geography that may be taught in a department.

7.3.2: Conceptions of knowledge in geography

Drawing her map of areas of subject knowledge in geography, Sophie began with the broad approach she takes with year seven students: geography as physical, human, and environmental. The number of links from each of these makes them all act as centres of interest on her map. 'Skills' also acts as a centre of interest, and Sophie describes these skills as future-oriented: what skills would you want people (*people* was the term she often used when referring to students) to leave school with? Knowledge was seen in the same way: 'key things that you would want people to leave school knowing' (Sophie, interview 1:90). One of the key things Sophie argued should be included in geography was a sense of interconnectedness, particularly between humans and the world. For example, what makes something

> geography rather than science is the kind of marriage of the physical and human world together. So, we've got weather and extreme weather. Ok, so how are humans impacting that? Or how is that impacting humans? Rather than just looking at the process. So all of these [areas on her map] are very much interlinked to me…I think it's really important that students have a clear idea of…kind of everything, to be honest. (Sophie, interview 1:92)

Geography has the potential for including 'kind of everything'; there are no topics or areas of knowledge that are excluded from that which geographers might study.

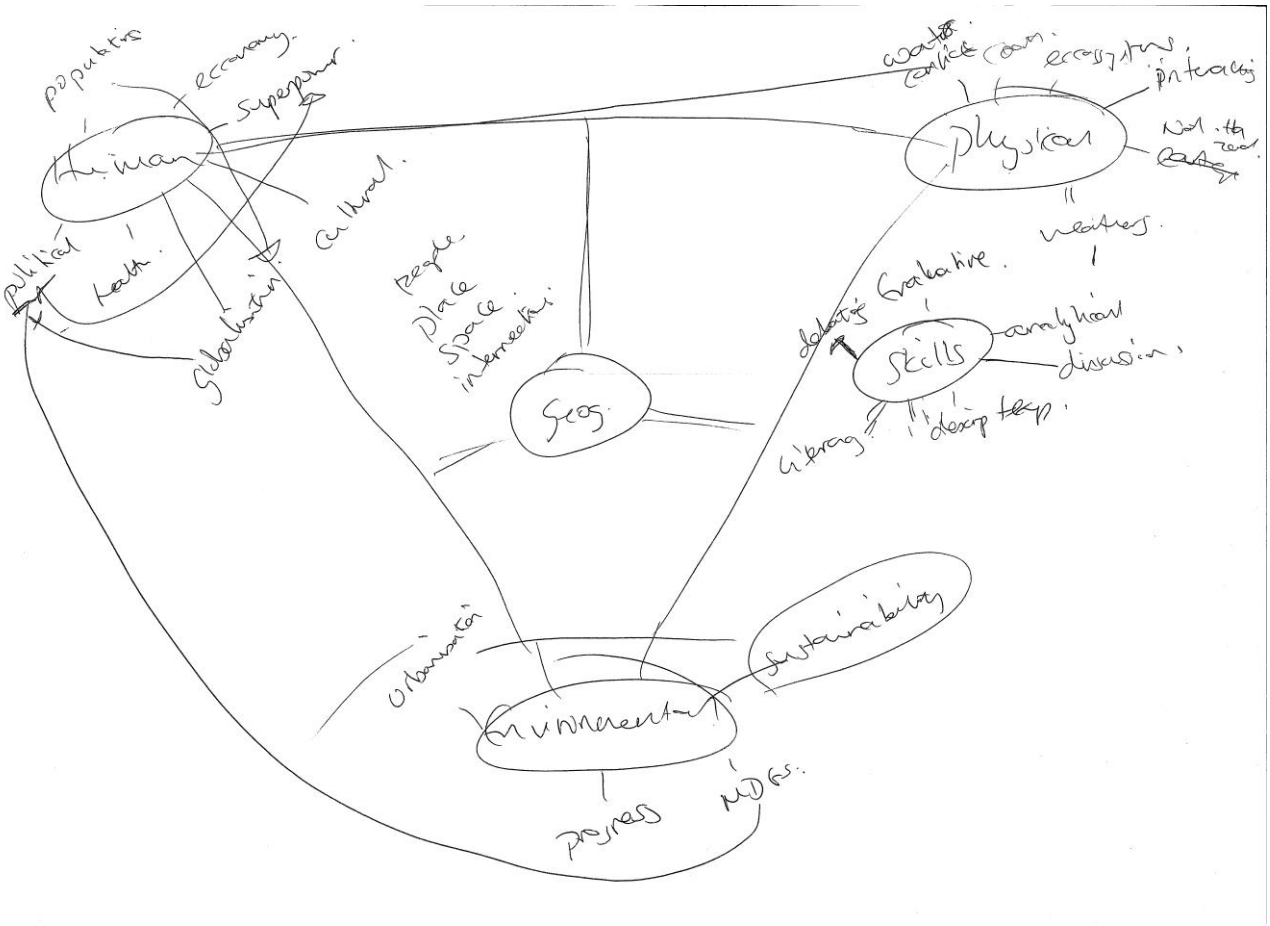


Figure 71. Sophie's map of areas of subject knowledge

	Sophie's Map
Nodes	33
Links	75
Linear connectivity	2.27
ASK	20
NCKC	7

Table 22. Numerical description of Sophie's map

For Sophie, study becomes geographical because objects are related to other things, and not (only) dissected and examined in a laboratory. Instead, they are studied along with other connected things (for example, people, places, systems). This expansive view of

geography leads Sophie to state that geography is 'a very content heavy subject but there's a massive skill base within it as well' (Sophie, interview 1:92). One skill that seemed very important to Sophie was something she termed PEE (Point, Evidence, Explanation). She often encouraged her students to use this framework to structure their writing, particularly in exam question responses. She had created a series of examples around her classroom (Figure 72).

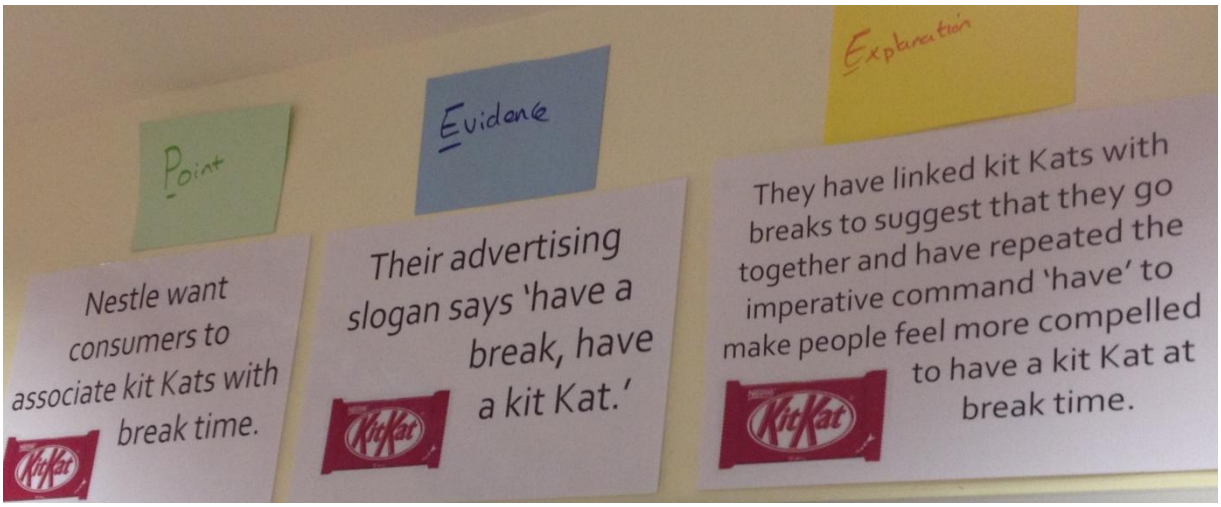


Figure 72. Sophie's classroom wall 'PEE+'

Sophie often emphasised general skills through her geography lessons, and regularly began her lessons with 'thinking' or 'stimulating' activities that might be otherwise unrelated to the lesson (Cf. Figure 73).

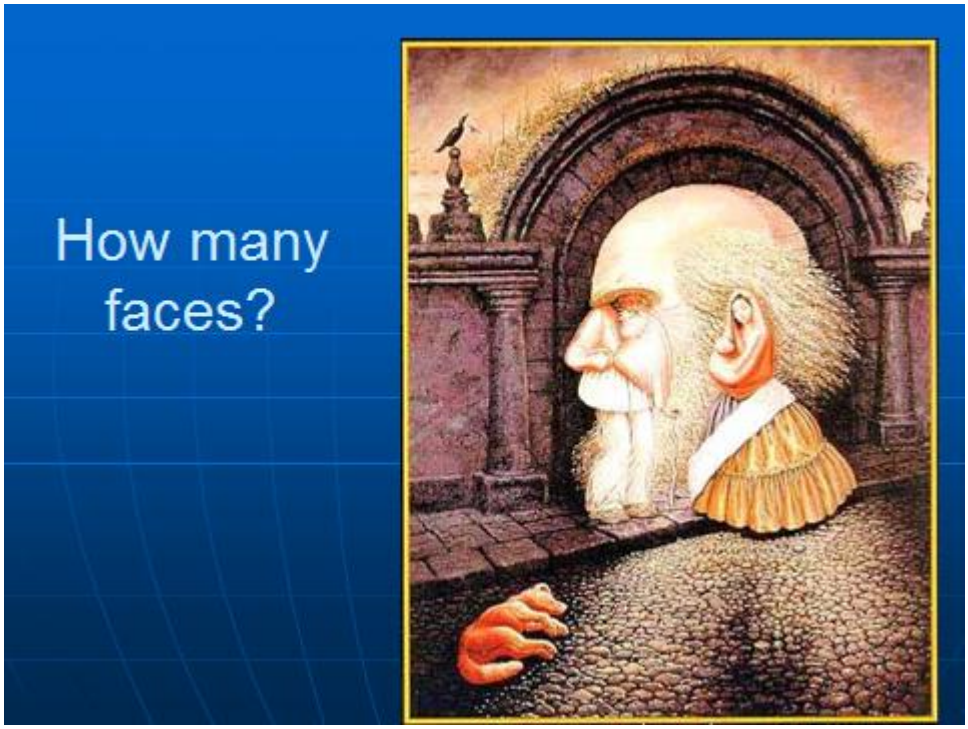


Figure 73. Example 'thinking' starter activity from Sophie

Sophie's map was the only one of those in the current study to include all seven areas of NCKC (National Curriculum Key Concepts). Richard's map included the second highest (three); the others in all departments ranged between one and three. When asked if the revised National Curriculum (in 2008) made a difference to the geography that was taught in the department, Sophie described variation within the department:

> to some of us it did, to some of us it didn't…for me it made a big difference because I saw it as an opportunity, particularly leading KS3 at the time, to get people out of their comfort zone and teach things that were, um, more up to date and relevant. (Sophie, interview 1:76)

Part of Sophie's use of *relevance* sees school geography as preparation for university.

7.3.3: Views on relationship between school and academic geography

Sophie described both school and academic geography as dynamic, with changes in both reflecting, at least ideally, changes in society. Sophie uses different names for the actors involved in education, designating academic geographers as experts:

> ...academic geographers are out and they're researching...I think it's really important they bring things into the education system, again that's relevant, that's up to date and geography has changed so much over time - it's changed so much over time in school and it's changed so much over time at university. (Sophie, interview 2:100)

Academic geographers are seen as authoritative because they are involved in producing knowledge, which Sophie argues needs to be regularly updated. She also hints here at the priority of empirical data; they are out and researching. However, academic geographers' involvement in education needs to be qualified, or enhanced by knowledge of other areas: 'the experts need to be in touch with what's happening in the world of industry, employment, etcetera' (Sophie, interview 2:108).

Sophie uses an industrial metaphor to describe education, shifting between terms to describe those going through educational systems. The point of experts knowing about the needs of industry is so that 'they're producing what we need as a country as the end product - the student, the person, the adult going into the big wide world' (Sophie, interview 2:108). She aligns school and academic geography together against, and spatially separated from, the big wide world. Preparing students for university involved discussing questions about how to find and judge knowledge:

> it's a researching unit - it's a preparation for university really, so a lot of the emphasis is on that - on them doing the work, so we're constantly talking to them

> about sources of research and information and where they can get bits and pieces, and the validity of resources. (Sophie, interview 2:26)

Using her own experiences of academic geography as an undergraduate, she then related these experiences to her teaching of school geography

> when I went to university some units had just changed - they were doing economy, society and space and that was all cool and new, and we do that type of thing now at school, where we do globalisation and other bits and pieces, so I think the two filter through, so I think it's really important that they speak to each other, particularly again A Level, because we need to make sure our kids are prepared for university if that's the route they're going to. (Sophie, interview 2:102)

Picturing school and academic geography as *speaking* together seems to be described as being other-than Sophie, and the context she provides of A Level students may be related to this; it is the examination specification, not Sophie, dictating that topics (in her example, economy, society and space) are studied. She enjoyed the module related to these issues (Superpower Geographies), but the power was in the examination specification, which she believed had drawn these topics from academic geographers. She did not personally have any on-going dialogue with academic geographers, and assumed that if they were asked about her resources, would reply with negative evaluative statements, although she repeated her uncertainty: 'I don't know, they might say that's a load of rubbish, they might say oh that's useful, or they might say oh...I don't, I genuinely don't know' (Sophie, interview 2:98).

7.4: Paul

Paul had taught geography for seven years, all in City Academy, after completing a geography PGCE course. Paul's first degree was a BSc in Human Geography. After

developing a 'love of the subject' (Paul, interview 1:6) through physical geography topics at school, he found these same topics 'dry and not particularly fun' at university. Whereas, the human geography topics he encountered at university had *depth* and were *interesting*; topics including political, economic and social geographies, and geo-politics.

7.4.1: In the moment and relevant

Agenda 21 was one example of geographical knowledge Paul passionately believed is essential: 'every child should know what it is by the time they leave school' (Paul, interview 1:7). He described geographical knowledge as being an armoury, and

> ...the thought of children growing up without any geographical literacy is just…! If only everyone had a degree in geography…Geography has become more and more relevant. The outside world has come inside…Geography's core areas are increasingly relevant and urgent. (Paul, interview 1:16)

Although geography is described here as being increasingly important, Paul saw changes to the school subject as being concerned with technology (such as accessing news and resources online) and pedagogy. The content had, for Paul, changed less than the new ways in which this content might be accessed and presented to students. He described a desire to try and get in the moment geography into his lessons. It is not that the 'core areas' of geography are changing, but that the world is changing and acknowledging their importance. Paul described using a range of sources of knowledge for his lessons, all of which were online: Guardian; Telegraph; BBC News; Met Office; Stormpulse. However, there was a tension between his desire to regularly teach about the most recent news in his lessons, the time pressures he faced, and his views on the divisions of labour within the department. When asked about how his KS3 had been affected by the changes to the National Curriculum, Paul said that he 'wouldn't know;

it's not my responsibility' (Paul, interview 1:13), attributing this responsibility to the Assistant HoD. Paul had applied for the Assistant HoD job, but the position had been awarded to Claire. The issue of who had responsibility for the KS3 curriculum in the department was a delicate one. Paul chronicles the department's history in terms of Richard's time, and now Claire's as Assistant HoD, and does not mention Sophie: 'since Richard was second in department nothing has changed, but now Claire is here the KS3 will change' (Paul, interview 1:13) . Claire had delegated some of this role, and they briefly discussed Paul's task during the department interview:

> Claire: …if you're doing a scheme of work someone's put together, then they've done all the back work for you, and they've just collated it into the PowerPoint... um...which is what you're going to do for coasts
>
> Paul: hmm
>
> Claire: it's going to be grand
>
> Paul: I want to go to the GA... GA website, yeah, take a bit of time
>
> Claire: I wouldn't. It's a nightmare

(CA department interview:94-98)

In practice, the KS3 curriculum that Paul taught was based on schemes of work that Richard had written as Assistant HoD, and occasionally supplementing these with a news article from one of the websites he mentioned. He also frequently used the Oxford University Press (OUP) Geog. series of textbooks, describing them as being *good* and *solid*, and storing class sets at the back of his classroom (Figure 74).



Figure 74. Back of Paul's classroom

Departmental politics are very important for the recontextualising principles that Paul uses at KS3 because of the strong attribution of authority he gives to the person with formal responsibility for KS3. The formal structure of the department, and the history surrounding these roles, is used by Paul to deny any personal responsibility for being aware of the National Curriculum. His detailed awareness of recent changes to exam specifications contrasted sharply against this.

7.4.2: Conceptions of knowledge in geography

Paul conceptualised knowledge in geography around four main nodes; physical, human, environmental, and sustainability. Several areas are linked with two-directional arrows, representing his view of the interrelated nature of geographical knowledge. Several of the terms he uses are normative, including responses (appreciation), or action (protection, preservation).

Paul's view of the links between areas studied in geography is a part of his rationale for demanding issues concerned with environmental change and sustainability, such as

Agenda 21, are understood by all students. Expressing his conception of geographical knowledge is not something done in the third person, or in an abstract way. It is quite deeply personal, and emotional. His map is left unfinished in a more explicit way than others. For example, Steve (HoD, TC) was one of many teachers expressing a belief in the expansive nature of geography and, consequently, in the impossibility of the task of mapping areas of subject knowledge in geography. Geography is about potentially *everything*, and so the task of mapping areas was only artificially 'finished'. Paul has lines connecting to unwritten nodes.

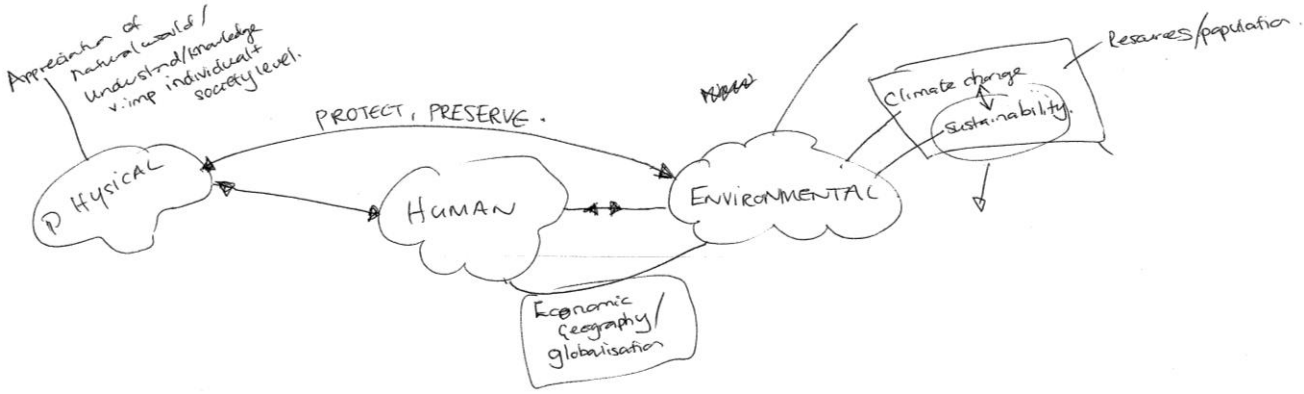


Figure 75. Paul's map of areas of subject knowledge

The comparatively low number of nodes and connectivity of Paul's map (Table 23) is similar to Richard's.

	Paul's Map
Nodes	9
Links	19
Linear connectivity	2.11
ASK	8
NCKC	3

Table 23. Numerical description of Paul's map

They have taught together for the whole of Paul's teaching career, jointly planning several modules (and the whole of the Travel and Tourism course). It seems reasonable to assume that something of their beliefs about geographical knowledge, and this broad way of conceptualising it might have developed between them. The importance of identity politics within the department seem most significant when considering the relationships between Paul and those who have held the Assistant HoD position, the most recent of whom is Claire.

7.5: Claire

City Academy was the second school Claire had worked in. She started at the beginning of the academic year during which the fieldwork for the current study took place. She was in her third year of teaching, and held the role of Assistant HoD. After this first year in the school she was then promoted to HoD, replacing Richard.

Claire attributed her love of geography to an inspiring year six teacher:

> she kind of instilled geography… we had a week long fieldtrip in year six, erm, it was a geography fieldtrip, erm, and I just loved it and...obviously I was going to pick it at GCSE, obviously I was going to pick it for A Level and obviously I was going to pick it for university. (Claire, interview 1:63)

Claire read geography at Oxford; a broad course covering human and physical geographies. She described her parents' ambitions for her to work in the City and fund their retirement. Having paid for an expensive education at a prestigious private school, 'they were expecting great returns' (Claire, interview 1:22):

> my mum's an immigrant from Egypt...her parents came over and they kind of left their whole life and started again from scratch...so they were really keen to make sure that we had all the opportunities there were, and I think she was expecting

> something greater (laughs), so I applied to lots of stuff, and looked, looked, looked, and couldn't find anything that actually I genuinely wanted to do. (Claire, interview 1:24)

She then decided to go straight into teaching, and applied for jobs in independent schools. After being rejected from these she applied for a PGCE, during which time she also developed beliefs about social justice and the purposes of education:

> for me - and I'm a bit of a socialist apparently - but for me education is almost entirely to better society, and so we don't study geography because we need to know about oxbow lakes. We study geography because it instils us to be a better citizen and…a better member of society. (Claire, interview 1:30)

Geographical knowledge has, for Claire, a moral dimension enabling the student to contribute to improving society. Not working in an independent school, but in an urban comprehensive school were part of Claire's outworking of this belief; she argued that students whose parents could pay for their education would *be alright* whether or not she taught them, but in City Academy she had an opportunity to make a positive difference.

7.5.1: Formats and accessibility of resources

The format in which knowledge was presented to students was felt by Claire to be an important part of its power and potential to effect change in her students; she describes inspiring, stimulating, and provoking them. Her comments on a set of commercial PowerPoint resources might be seen as representative of her general view: 'I like the interactive activities - I don't really like the, um, information pages' (CA department interview:75). The accessibility of these resources, in terms of how readily Claire is able to find them, is a significant factor in the likelihood of her using a resource; those suggested by other teachers (and for which she does not need to search for), or

available on the VSA (such as the commercial PowerPoints mentioned above) are far more likely to be used by her, and so her social network plays a key role in exposing her to particular types of resources. She often visits social media websites, such as an examination specification 'Ning' set up for teachers to share resources. On this site

> people were posting videos - a couple of videos we've watched from there that have been really powerful, um, that I would never have found...that aren't in a book anywhere. (CA department interview:61)

In common with teachers in all departments in the current study, Claire contrasted textbooks against other formats of resources. Although textbooks are accessible in the sense that they are held in the storage room opposite her classroom, she was reluctant to present students with information directly from them. There were also new textbooks in the department that Claire never uses because they do not 'follow' the examination specification: 'it also doesn't closely follow the spec...if you're going to be a textbook for the spec then you have to have everything the spec wants you to cover in it (laughs), so that I find annoying' (CA department interview:87). When she did use information from textbooks, it was often in a recontextualised format, such as on cards onto which she had copied statements from the book. Her recontextualisation of one particular resource is discussed further below in chapter eight.

The accessibility of websites was also mentioned by Claire as preventing her from using their resources, and her perception of the accessibility formed beliefs about a site that resulted in her not using it: she felt considerable pressures on her time, and described not having time to waste searching through websites. Despite being enthusiastic about the resources held on the GA website, she no longer uses it because she does not like its

organisational structure. Similarly, she was dissatisfied with changes to the search functions on the BBC website:

> you used to be able to search class clips and it gave you just class clips, and now you can't seem to filter to just get the clips, so you're stuck with like thousands of resources when all you want are the 4 clips in there, so I don't know what they're playing at (laughs), but it's such a shame, cos those clips I think are really good. (CA department interview:69)

The most accessible resource for Claire are the textbooks stored in, and near to her classroom. However, her beliefs about resource formats mean that she rarely uses them directly with students: 'I think regardless of how interesting the textbook is I think the fact that they're opening a textbook bores them' (Claire, interview 1:103). Instead, she uses resources she describes as more interactive, many of which are copied from the internet, and are ready to teach, although she finds that even resources shared with the intention of being ready to use, is that they are actually not. For example, her criticism of resources on the Geography Teaching Today website (copied to CA's VSA) is that they are not 'ready to teach lessons - I think they are somebody's resource that they've used with all their brain knowledge of how to use it, and so I'm not necessarily clear on what they did with that resource' (Claire, interview 2:42). Teachers come to sources of knowledge with their own subject knowledge; here, their brain knowledge, which Claire describes as important, and a potential barrier to the straightforward sharing of resources. Claire's own conceptions of geographical knowledge present an intensely complex, interconnected, and expansive subject.

7.5.2: Conceptions of knowledge in geography

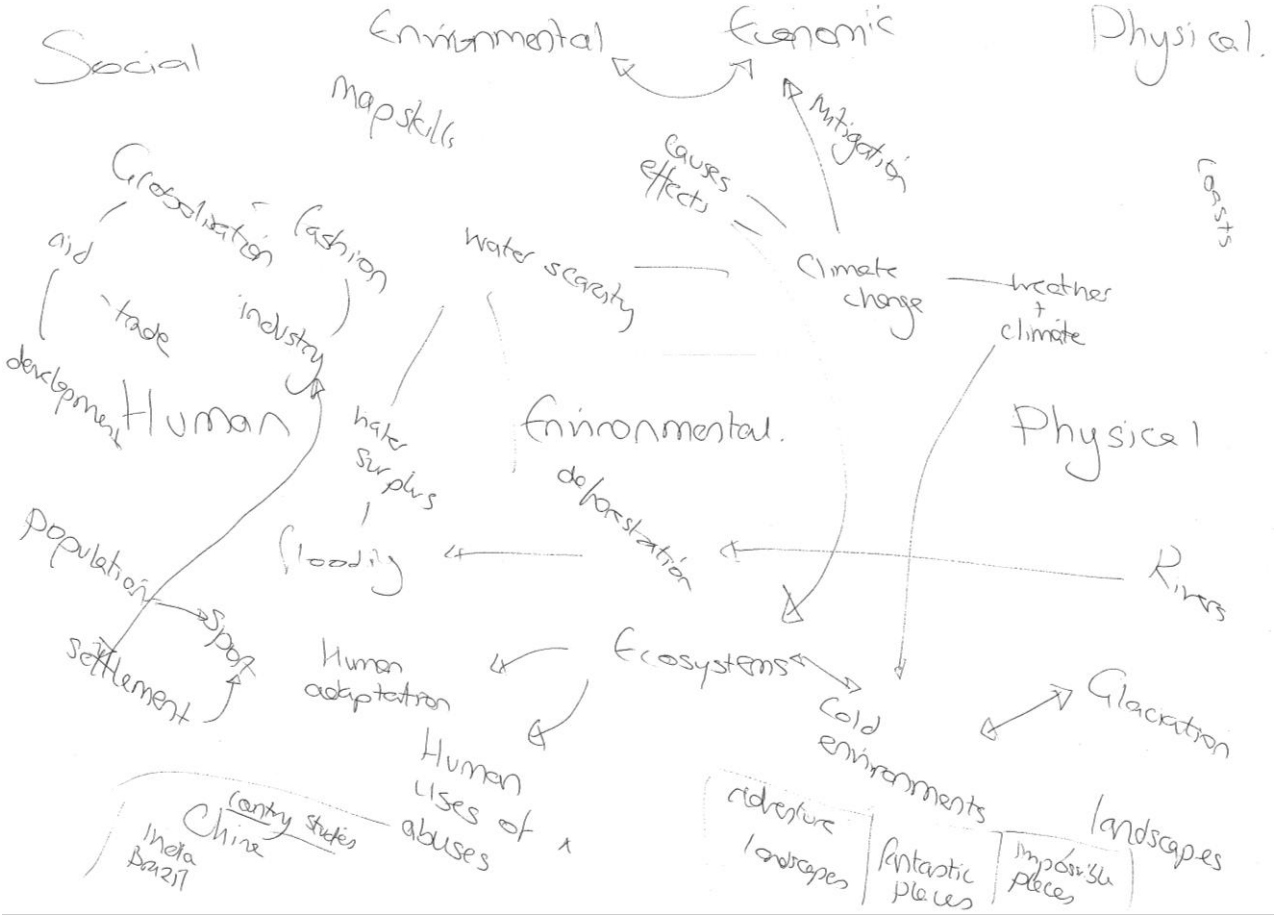


Figure 76. Claire's map of areas of subject knowledge

Concluding the activity of grouping resources during the department interview, Claire, who suggested the categories they used, then offered several alternatives, concluding that 'you could do it a million ways, couldn't you' (CA department interview:179). Drawing her map of areas of subject knowledge, she felt it could take 'all day…there's like an infinite amount of detail' (Claire, interview 1:137). She then started to re-think out loud the ways in which she might have represented areas of knowledge in geography, and then outlined a thematic approach. Some of the areas Claire includes are directly taken from schemes of work produced by the Royal Geographical Society with the Institute of British Geographers (RGS IBG), such as Adventure Landscapes and Fantastic Places. She includes country studies on the bottom left of her map, but emphasised that these were not seen by her as simply teaching facts about countries.

Instead, she was keen for students to develop a *sense of place*. Discussing one resource she created, she expressed her desire for 'students to have a sense of China - a sense of place about China, so it's not - it's not a piece of information I want them to learn' (Claire, interview 2:68). This kind knowledge was seen as potentially inexpressible: 'it would take somebody very skilled to be able to describe their sense of place of somewhere articulately...I think that it's an image inside your head and it's an understanding inside your head' (Claire, interview 2:76). In a similar way, the interdependence of different geographical topics, and the habits of looking for these kinds of links, was portrayed by Claire as something that is not reducible to propositions. They are skills that are developed through people *becoming* geographers, involving a change in ontology or identity:

> that understanding of links and interdependence, and your ability to look at something geographically and say ah well that must be because - or that inference you make - I think that's something that's very difficult to teach and write on a piece of paper…I think that's something that is difficult to put into words as an idea, but as a geographer you can make the link and see the link. (Claire, interview 2:80)

The relatively low linear connectivity of Claire's map (Table 24) might be seen as an illustration of this point; although she includes a high number of nodes, the lines she draws are indicative of the connectedness of geography, rather than being exhaustive.

	Claire's Map
Nodes	38
Links	49
Linear connectivity	1.29
ASK	27
NCKC	2

Table 24. Numerical description of Claire's map

Claire's description of her own journey through formal study of geography paint a coherent picture; the move from GCSE to A Level and undergraduate geography was marked by continuities, as she became through this journey more of a geographer.

7.5.3: Views on relationship between school and academic geography

It is hard to distinguish between the subject knowledge Claire gained from school and university, although together they play a considerable role in her *prioritising* and recontextualising of sources:

> your own knowledge plays a large part in you deciding what resources to use, so when you're looking at a textbook for example, or boardworks, you're selecting things that are - you're prioritising issues and you're prioritising facts, and that's based on your knowledge of it I think. (CA department interview:25)

Her experiences of geography at university were described in hugely positive terms, and at different times she positions the academic discipline as above and in front of the school subject.

> Being there [at Oxford], and being with these people and being like right in the mix of…all this happening stuff made me really, really interested...It was very much like, y'know, the forefront of discovery. (Claire, interview 1:85)

The shelves behind her desk (Figure 77) contain a wide range of books, from popular children's literature to academic reference books.



Figure 77. Books behind Claire's desk

She occasionally refers to academic texts, but the continuing influence of academic geography on her construction of the school subject is through her embodiment of this knowledge: 'academic journals…have influenced my understanding - but I would not refer to them in lessons… I might read a few of them for my knowledge, but I wouldn't use them in a classroom' (CA department interview:8). She described journals as being quite dense, evaluating them from her students' perspective, expecting students to find them time consuming, and linguistically inaccessible. Where she uses academic journals, it is to go 'a step above' her students:

> I don't just want to read the article I'm giving them. I'll do something so that I can explain it further...in order to refresh my memory to then be able to - dumb it down I suppose is the wrong word… (CA department interview:108)

Processes of recontextualising knowledge are discussed further in chapter eight.

7.6: Laura

Laura was a PGCE student, teaching in City Academy for her second school placement. After graduating from her geography degree at Durham, Laura moved straight to Oxford to start her PGCE course. She studied geography at GCSE and A Level, and chose to continue it to degree level because she felt she was good at it, had the potential to achieve a good grade, and found it interesting, being 'motivated to actually learn about it' (Laura, interview 1:32). She enjoyed the school teaching experiences offered during her undergraduate course. In particular, she described the excitement of pupils' understanding something new. She went to an independent school, and contrasted this against the comprehensive placement schools of her PGCE: her own school was 'much more calm and controlled, and it was…[laughs] you had more of a friendly relationship with the teachers…it just wasn't such a…' (Laura, interview 1:50). Thinking about behaviour

management occupied a considerable amount of Laura's time, with two classes making her particularly anxious. On days when she teaching one of these classes she came in with a set, serious expression, preparing herself for what was to come:

> I feel often...you come out the classroom and it's more a focus on the behaviour side of it, and not actually what they've learnt…behaviour issues I feel overpower the learning at times, especially in KS3… (Laura, interview 1:52)

Despite having continued to her PGCE directly from her undergraduate degree, and so having the shortest length of time between her own experiences of school geography as a student and a teacher, she described differences in the subject between these space-times:

> what we're taught [on the PGCE] is more enquiry, and students dictating their own learning…whereas I guess when I learnt it was more like factual; this is that, this is what you're going to learn…it was very exam based…whereas now it's all about students' dictating where they go, and [the] idea of mystery and enquiries and things. (Laura, interview 1:52)

She associates this distinction of enquiry against factual with geography as human and physical respectively.

7.6.1: Conceptions of knowledge in geography

Human geography is described by Laura as being 'a bit wishy-washy and rambling, and using your initiative and things', which she felt were 'all very well, but other people were much better at putting down their ideas on paper than me, so I wasn't as good - I was much better at learning things [laughs]' (Laura, interview 1:60). Laura began to map out areas of subject knowledge in geography by writing human on the left, and physical on the right.

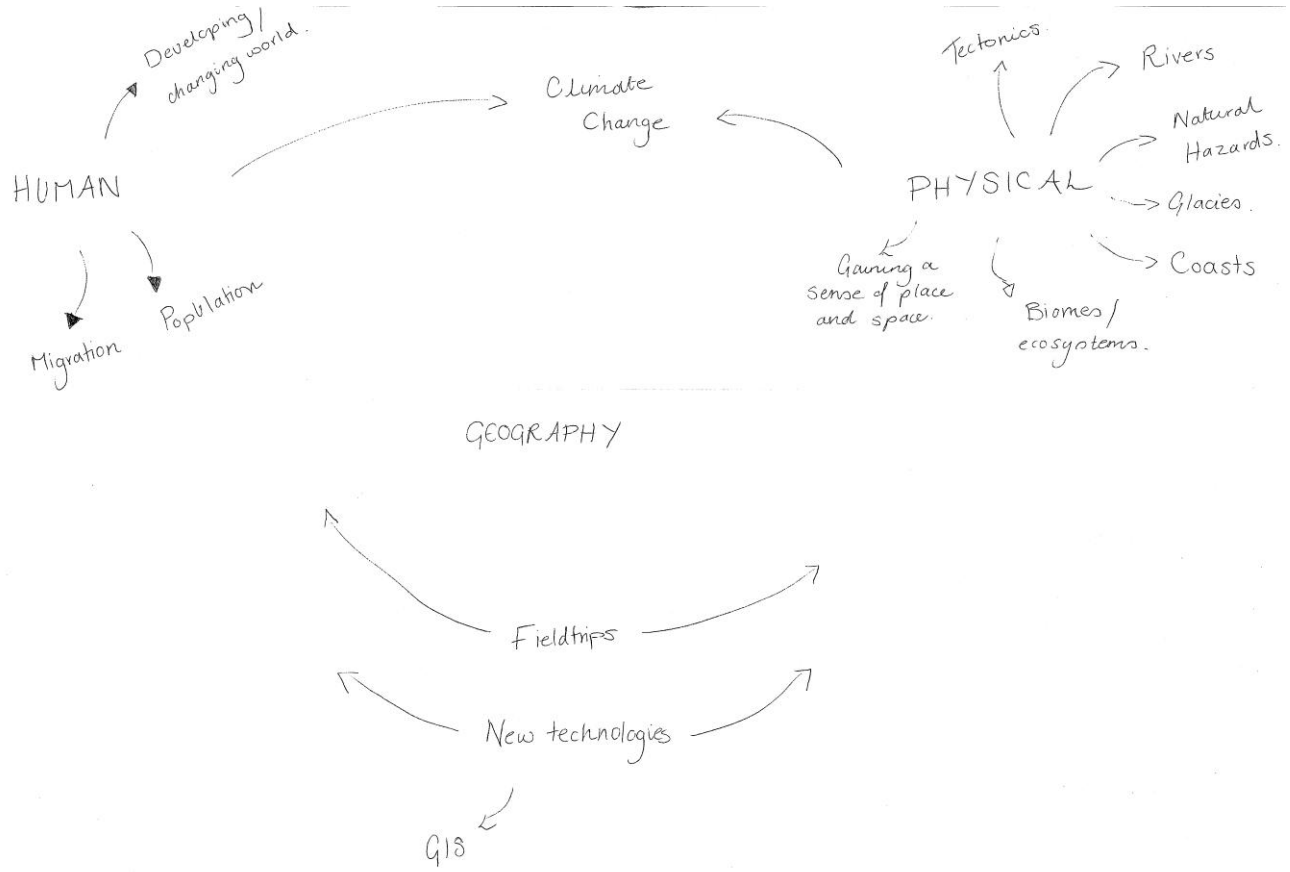


Figure 78. Laura's map of areas of subject knowledge

Both are capitalised, as is geography, which is written in the centre of the page. She links human and physical through a substantive area (climate change), and also through general dimensions (fieldtrips and new technologies).

	Laura's Map
Nodes	16
Links	30
Linear connectivity	1.89
ASK	12
NCKC	2

Table 25. Numerical description of Laura's map

The number of nodes (Table 25) are split unevenly between human and physical geography, possibly reflecting the greater interest she expressed for the latter. She associates 'gaining a sense of place and space' with physical geography, an aim which is

often attributed to cultural geography, rather than (in her terms, factual) physical geography. This is also the one skill included on her map, with most areas being broad substantive areas. However, she believed that an important part of having a geography degree was in the skills developed through it.

7.6.2: Views on relationship between school and academic geography

Having a geography degree meant, for Laura, knowing 'the skills which you're looking to pick up, which you're hoping students are going to pick up, um, much quicker in like the links and connections…' (Laura, interview 1:74). Her degree was useful and had helped her to develop geographical abilities, although these skills are generic, and so she did also feel that it was not essential for geography teachers to have a geography degree: 'lots of other subjects [are] kind of like analytical, that might use the same skills' (Laura, interview 1:76).

Laura positions school and academic geography in terms of levels and standards, with the university being higher. The skills developed through undergraduate study are useful, but 'the actual knowledge that you're teaching is never going to be university standard' (Laura, interview 1:76), which is 'too high a level...although you might need to know it later on - and they're not going to be asking those types of questions - not that I've come across anyway' (Laura, interview 1:90). She articulates a similar assumption of the future of her teaching career to Pam's (discussed above; 5.2.3), in that she expects to draw more heavily on her knowledge of academic geography over time. In her day to day work now, she is more likely to 'just type it into Google, yeah, type in my

question...probably just click on the ones that come up at the top [laughs], probably not the best thing to do' (Laura, interview 1:62-64). A degree of guilt was felt by teachers for their high usage of the internet, and in particular of Google searches and Wikipedia definitions. Many laughed after admitting they use these sources, or qualified their answer; in this case by saying it is probably not the best thing to do. Nevertheless, 'when it's just a quick question you kind of do go by Wikipedia - well I do - I do get, like a definition or something, I would kind of trust it' (Laura, interview 1:70). Often these online definitions were used to remind and recap, revisiting knowledge from her own experiences of school or academic geography:

> I have to do a bit of recap of my knowledge, and like read up on the internet on certain areas, but then like as soon as you just read like a little summary I can perfectly like link it together very quickly - probably just takes like 15 minutes longer for me to remember it and work out the links and thought processes. (Laura, interview 1:60)

The remembering of knowledge that Laura describes here as taking longer for some areas of knowledge (human geography) than others (physical geography) is explored alongside knowledge from testimony, deductive reason, introspection and perception in chapter eight.

7.7: Tanya

Tanya was a PGCE student teaching in City Academy for her first school placement. She read Human Geography at Durham, and then spent three years before her PGCE working in kitchens, doing a ski season in Verbier, and completing one year on the Waitrose graduate scheme, which she described as the 'worst thing I've ever done' (Tanya, interview 1:18):

> I just felt like I wasn't doing anything worthwhile with my life and strangely really missed geography which isn't something I thought I would, and just felt, yeah, I really enjoyed talking to people, I really enjoyed encouraging the younger people that worked under me in my depart- m area - like department, I quite enjoyed encouraging them to actually go and do something perhaps a little bit more than just I'm going to go and do this for the rest of my life, erm, and I just liked the idea of teaching - I've always liked working with kids. (Tanya, interview 1:24)

She combines negative aspects of her previous job (in Waitrose) with positive aspects of teaching, including the subject (she 'really missed geography'), and working with young people. Choosing to teach geography in order to continue her relationship with the subject is significant in the context of a supposed disconnect between school and academic geography. Her enthusiasm for geography came from her beliefs in its expansiveness: 'the one great thing about geography is that it is kind of linked to everything, and so I would want students to understand that' (Tanya, interview 1:125). Making links between areas was, for Tanya, an essential part of geographical thinking, which she also defined as being based on empirical evidence.

Tanya's decision to study geography at university was made after making a last-minute switch from English, *completely* because of the Global Futures A Level topic she was studying at the time: 'I really enjoyed human geography and it was kind of everything that I was interested in' (Tanya, interview 1:74). A distinction between human and physical geographies was important for Tanya, and she almost changed from geography to politics during her first year of university because she felt the geography course was 'too physical'. She believed that many of her fellow students also had a strong association with either human or physical geography:

> I didn't pay any attention to the physical geography – and I think it was the same with the physical geographers – lots of them really, unless they were kind of in the middle, lots of them just didn't care about the human side of it. (Tanya, interview 1:91)

During the first year compulsory modules included an introduction to physical geography, and an introduction to human geography. She described people turning up to a few of these lectures so that they would be able to pass their exams, but taking no more than the minimum interest. However, in hindsight she thought that 'now it probably would have been better to learn about both sides; would have really helped' (Tanya, interview 1:91). The term *sides* is a part of the distinction she makes between the areas.

7.7.1: Being right about facts

The most common approach from teachers in the current study towards lesson planning involved spending little time finding the content of the lesson (often quickly Googling), and then taking more time to recontextualise sources and plan activities. PGCE students, and teachers planning for a new topic (or writing a new scheme of work) often spent longer on the knowledge to teach. For example, Tanya's describes her use of time in these terms:

> I tend to do a lot of research for my topics - all of them - so my Britain in Europe - I like to know that what I'm telling them is right, and y'know often I'll do it and later I'll be researching more about it... (Tanya, interview 1:95)

The sense of wanting to tell students the right facts is similar to the descriptions of Gemma and others about their need to *be right*, and to be the ones *who know*. Representing oneself as someone who knows seems highly important for the more

experienced teachers, whereas PGCE students were granted license to admit to not knowing, and the distinctions between knowing / not-knowing are binary.

Tanya enjoyed discussions about politics with others in the geography department, and there were often broad ranging debates, particularly about social justice issues in relation to the purposes of schools. During an interview with Tanya, conducted in the geography office, Richard came in and worked at the computer. His presence led to a discussion about the difference between their perspectives: 'he's very liberal, I'm more towards the conservative' (Tanya, interview 1:147). She assumed a considerable level of knowledge was held *about her* by the department: 'they know what I'm good at and what I'm not good at' (Tanya, interview 1:147), and was happy with this situation which involved a public construction of her position in the department as a PGCE student with strengths in human geography, and weaknesses in physical topics. Assuming a stance of *not knowing* anything, or even *hating* certain (physical geography) topics meant that others offered support in these areas. She did not pretend to know about topics that she did not feel confident with, and often asked Claire (her PGCE mentor) for guidance.

> I like to check with Claire in terms of I'll go over; right, this is how I understand it and this is what I'm going to do - does this, is this, like obviously is this what they need? Or is it the level that they need? ... am I actually explaining it correctly? (Tanya, interview 1:101)

In contrast to her uncertainty with physical topics, Tanya conveys confidence in her knowledge of topics associated with human geography: 'I know about Britain in Europe. Yeah, I know about politics – I keep a reasonable eye on it' (Tanya, interview 1:105), including Politics as an area with several sub-sections on her map of areas of subject knowledge.

7.7.2: Conceptions of knowledge in geography

Tanya's map is one-centred, and unbounded. She includes explicitly normative dimensions, and writes that, for her, an aim of geography education is 'to try and think how we can have an equal + more sustainable world,' and geography ought to 'consider how we think about our society – what is just – how do we balance it' (Figure 79). The central node 'Geography' is enclosed in an oval, and is linked to centres of interest including environment, society, economics and politics. Her map turns a question back onto itself as a representation of areas of subject knowledge in geography, in that one area (politics) 'defines curriculum', and Tanya, like other teachers completing the task, commented on the position (as a school geography teacher) from which she now conceptualises the subject. Her conceptions of geographical knowledge seem, in a similar way to other PGCE students in the current study, to contrast against the great degree of balance constructed on the maps of more experienced teachers.



Figure 79. Tanya's map of areas of subject knowledge

More experienced teachers seemed to conceptualise geography, and represent it graphically, using the terms or structure of their department's schemes of work and examination specification. References to the National Curriculum were infrequent, and Tanya follows this pattern, only including two of a possible seven (Table 26).

	Tanya's Map
Nodes	27
Links	56
Linear connectivity	2.07
ASK	16
NCKC	2

Table 26. Numerical description of Tanya's map

Many of the teachers in the current study represented geography graphically through a distinction between physical and human. For Tanya, the distinction between the two,

and her strong affiliation with human geography, is outworked in the almost complete exclusion of areas commonly associated with physical geography.

> I hated rivers and I hated coasts and I hated weather, um, but I really did enjoy, which is what made me do geography at University, was we did something called global futures...trade barriers and like the development gap due to trade barriers, and it was like the best thing in the world because it completely fitted what I enjoy, which is politics, human geography, um, that kind of area. (Tanya, interview 1:68)

These are strong terms; from *hating*, to the *best thing in the world*. Tanya claimed to have 'never understood weather' (Tanya, interview 1:95), although she does set herself a high standard: 'I have to kind of know things fully – like completely – otherwise it annoys me' (Tanya, interview 1:97).

The one mention of 'physical processes' is Environment, which is linked to a main node, and boxed. Environment has two other named areas associated with it: hazard and risk; sustainability (which is also repeated on the right hand side of the map, and emphasised with a circle). Tanya discussed her use of the terms hazard and risk as being useful 'in taking areas of physical geography that I don't particularly enjoy, but putting a human spin on it so that I can kind of find a way of finding it relatively interesting' (Tanya, interview 1:117).

7.7.3: Views on relationship between school and academic geography

At the start of her career, Tanya's construction of school geography is heavily influenced by her experiences of (certain aspects of) academic geography. She explicitly attributes her ability to put a 'human spin' on topics she otherwise does not enjoy to her

experience of academic geography, which has enabled her to 'think more geographically - that's probably what it's taught me – so think to see how things link together across different, erm sectors' (Tanya, interview 1:117). For her, it is in this personal level – the development of her geographical skills, or knowledge-how – that her experiences of academic geography are now applied to the school subject, rather than through the recontextualisation of particular substantive knowledge. In part, she does not explicitly draw on academic journals or her undergraduate work because she felt that her university course was more specific than the school geography she teaches. There is also a problem of the quantity and accessibility of her notes, which she thinks may be a useful source of information for her lessons, however, 'there's so much information that if I went through all of it, it would take me forever to find the information I actually need, so at the moment it's probably not my best resource' (Tanya, interview 1:113). Her recontextualising principles are constructed in particular space-times, and pressures on the time available seemed to be a major part in her decisions to use some resources despite believing they 'might not be the best thing' (such as Wikipedia), and to not use others (such as undergraduate material) she holds in high regard. The judgement about what is 'my best resource' is personalised to her situation, and even as an PGCE student with a lighter timetable, and with formal support from her mentors, and the social context of the department, there is still an irreducibly individual dimension to the job; it is *her* subject knowledge, and she is using *her* resources.

7.8: Recontextualising principles and summary of City Academy

7.8.1: Identity politics

School subject departments are social in the sense that multiple people work in them, and must, to some extent, communicate and cooperate. City Academy is the largest department in the current study, and the only one to have an Assistant HoD position. The division of labour and descriptions of this division in relation to KS3 schemes of work were the most obvious expression of the identity politics in the department.

The career of one previous Assistant HoD, Claire, was outlined above; she is presented as an example of the inverse relationship between subject and promotion that was introduced in the discussion of Town Comprehensive. Her descriptions and physical location as away from the geography department reveal something of the complex social situations teachers navigate. Departments are dynamic, and Claire offers one example of the changing relation between teacher and department across space-times. Her first role in the department, as a PGCE intern, is quite different to the position she now has as an Assistant Head Teacher on the SLT. Richard described his own shifting relation over time to subject knowledge as a move from one who didn't know, to one who does know. The department's current PGCE students similarly presented dichotomous personal positions with regard to various areas of subject knowledge.

In one example, Tanya was described above as locating herself as knowing nothing about some topics. Articulating this kind of identity was permissible for PGCE students, resulting in the easy exchange of knowledge and advice from mentors and others, but

such admissions were not found among more experienced teachers, possibly only discussing questions about subject knowledge when first teaching a topic.

7.8.2: Recontextualising principles in space-times

As the largest department in the current study City Academy has the largest physical departmental spaces, and is the only department to have a kettle in the geography office. Coffee and kettle space-times were argued to facilitate conversations between teachers, conversations which changed throughout the day, and were often about what *just* happened in that lesson *I just* taught; very similar to the conversations around the photocopier in Town Comprehensive, although the products of the space-times (a stack of resources as opposed to a cup of coffee) lead to different actions; one often necessitating the teacher quickly returning to the classroom, the other occasionally resulting in the teacher sitting and continuing the conversation. Despite the identity politics surrounding promotion and division of labour in the department, conversations facilitated by coffee and kettle space-times seemed provide these teachers with their most significant form of discussions about subject knowledge, supporting the arguments made by Childs et al. (2013) that such interactions are 'fleeting and serendipitous – a long way from the more systematic inquiry and reflection by individuals and departments that have been suggested result in teacher learning' (p.51). They go on to argue that

> if the principal form of interaction, no matter how supportive and collaborative, is this briefer and apparently haphazard kind, this may pose serious challenges for the professional development of both beginning and experienced teachers should teacher education become entirely school-based. (p.52)

7.8.3: Regulation of recontextualising principles

Attributing responsibility of KS3 to the Assistant HoD (7.4.1) created a dynamic that was not found in the other departments. However, in all departments, whether the schemes are seen as being the shared responsibility of all teachers (TC and BA), or formally that of one person (CA), it is through the departmental scheme of work that authority for KS3 comes; the National Curriculum seems to play an insignificant role in these schools. At KS3 the PRF exerts considerable power over the recontextualising principles constructed. Richard describes the National Curriculum in 'auditing' terms, very similar to those used by Steve (HoD, TC):

> We audited what we were doing; checked that it pretty much met what we were expected to do - there was a couple of aspects about the EU that perhaps we weren't doing properly before, and that flagged up we weren't doing them properly, so perhaps we've included a little bit more on that. (Richard, interview 1:36)

Examination specifications played the most significant regulatory role at KS4 and 5:

> the spec says so…which I know is quite flippant…but at the end of the day the fundamental reason I'm doing this is cos it fits in with that – a number of key points highlighted by the spec. (Richard, interview 2:80-84)

GCSE geography was heavily regulated by examination boards, providing specifications listing content to be covered, authorising and approving textbooks, and assessing students. While textbooks were often described negatively by these teachers, for example, in Claire's terms as incredibly boring, they were, nevertheless, regularly used (even if their information was recontextualised). When deciding what sources of knowledge to draw on for a lesson Richard described the textbook as being the starting point, and 'if the textbook has got a particularly detailed case study, [and] there was enough information that they could answer any question on it…then to be honest I may

well stop there' (Richard, interview 1:82). The examination board functioning in this description in multiple ways, including as the author of the questions which are then used as the measure by which the textbook is judged. This power seems considerable.

7.9: Conclusion to chapter seven

More teachers were observed, interviewed, and spoken with in City Academy than in any of the other departments in the current study. The geography department is, in common with all departments studied, experiencing a time of considerable changes in various respects. Curricular changes are happening, including the cessation of a course (Btec Travel and Tourism), along with staffing changes; Richard has left, Claire has replaced him as HoD, and a new Assistant HoD is being appointed. The department as dynamic has been presented as contrasting against aspects of its stability; the displays and notices on the office walls are static, and the KS3 curriculum resists changing prescriptions of the NC. Identity politics, such as those surrounding the division of labour over the KS3 curriculum were discussed. Teachers' positions in relation to others in the department have significant consequences for their subject knowledge. In particular, the distinction teachers described and enacted between novice and more experienced teachers was argued to be binary (knowing / not knowing), with teachers only admitting they did not know when PGCE students, or when teaching a topic for the first time. Ongoing discussion of subject knowledge as something at least potentially uncertain and dynamic seems to happen infrequently; there are no formal opportunities for such discussions, and the tendency of informal discussions seems to be for questions about subject knowledge to not feature. These informal discussions, in this department largely facilitated by coffee and kettle space-times, are not restricted in other ways (for

example, they included reflections on the purposes of education, ideology, and social justice), yet subject knowledge does not seem to be something that is brought up, possibly because of identity politics, and assumptions about professionalism and what it means to be a *teacher*; to be one who *knows*.

8: Recontextualising principles and processes

Chapters five, six, and seven have, I hope, provided some sense of these teachers and departments. The data presented about each teacher has been argued to show they have individual, sometimes conflicting, and often deeply held conceptions of knowledge in school geography. Aspects of the teachers' day-to-day working lives have been discussed through presentations of the space-times experienced and constructed in these three departments. Rhythms of days and years have been alluded to, and teachers' personalisation of subject knowledge has been emphasised: these teachers are less concerned with epistemological issues in the abstract, and are more working out what *I* need to teach 9R *today*. Teachers' expressions of geographical knowledge seem to be strongly related to the experiences of teaching in these departments now. Each teacher brings a wide range of experiences and knowledge to bear on their work; decisions about what sources of knowledge to draw on, and what recontextualising principles to enact are multi-layered and complex, and (or, yet) are often made rapidly. For example, consider Hugh reading, sifting, curating articles from newsfeeds on his tablet at 6:30am over breakfast.

The analysis is now developed by drawing on the presentations of individual teachers and departments and focussing on teachers' recontextualising principles. The aim of this chapter is to analyse what teachers do with the sources of knowledge they use for their lessons by offering a model of degrees of recontextualisation.

Following the discussion of Bernstein's pedagogic device, and the epistemic-pedagogic device, teachers are seen here as operating in the field of recontextualisation and reproduction, emphasising the multi-directional arrows on Maton's representation of the fields (Figure 80)

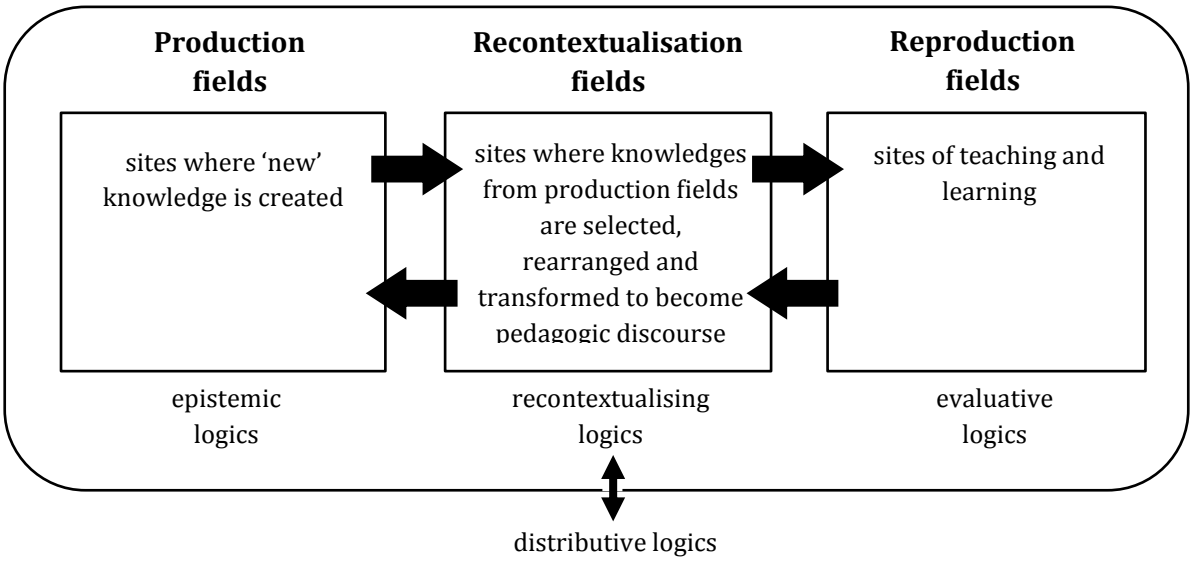


Figure 80. Arena created by the epistemic-pedagogic device. From Maton (2014), p.51

The recontextualising principles (or logics) informing these processes are a significant aspect of the PRF as it is enacted and constructed by these geography departments. In this discussion, teachers are described as *curators*, a metaphor which is explored alongside Bernstein's conception of the teacher as reproducer, and existing conceptions of teachers as curriculum makers.

Similarities between the recontextualising principles of these departments, and broader patterns across the departments, are then discussed. A range of factors associated with the similarities between departments are suggested, including: similarities between teachers' own education and qualifications; membership of professional associations; examination boards/specifications and their power; the prevalence of online searches,

and importance of search algorithms. An important distinction is suggested to exist between school geography at KS3, and KS4/5, with the PRF being more dominant at KS3, and the ORF powerfully influencing KS4/5. Dimensions of the PRF and ORF in both phases are explored through the analysis of degrees of recontextualisation.

8.1: Degrees of recontextualisation

The teachers in the current study teach a wide range of content. The knowledge taught to students is drawn from many areas, and recontextualised in different ways. Some of the origins of the content are easily identifiable in lessons, whereas others play a different role and are not obvious. A continuum of degrees of recontextualisation is now offered as one model through which teachers' recontextualising principles might be analysed (Figure 81). It forms part of the response to RQ2: What recontextualising principles do teachers enact? And is a specific response to RQ2.b: Through what processes do teachers recontextualise knowledge? The discussion also contributes to addressing RQ1: How do teachers describe the nature and scope of geographical knowledge?

The continuum presented (Figure 81) moves between less recontextualisation (one degree; content presented substantially unchanged in lessons), to more recontextualisation (five degrees; content now a part of teachers' embodied subject knowledge).

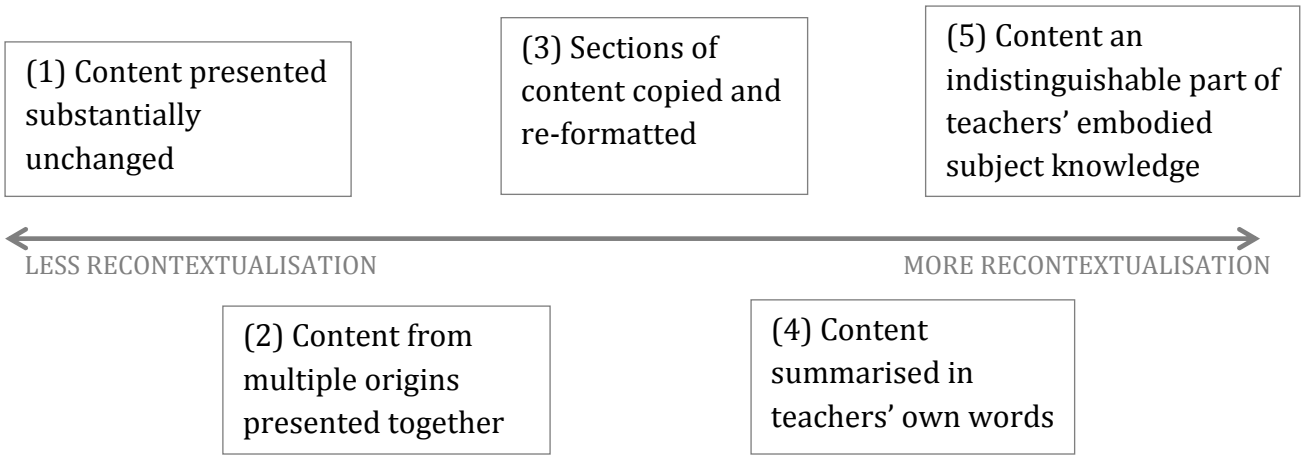


Figure 81. Degrees of recontextualisation

This model is an exploration, in the specific context of secondary school geography, of what Bernstein (2000) describes as the transformation of knowledge. He asserts that 'transformation takes place because every time a discourse moves from one position to another there is a space in which ideology can play' (p.32). This space may be associated with the notion of degrees presented here, with the implication that the greater the space (that is, the more recontextualisation knowledge undergoes), the greater the potential for play of ideology. I focus here on very specific examples of recontextualisation, following the position taken throughout this thesis of being primarily concerned with the 'practical reality' of teachers' work. Where Bernstein primarily considers the movement of knowledge in a broad sense – whole disciplines and subjects – I have 'zoomed in' to analyse specific, particular enactments of teachers' recontextualising.

By offering this model of degrees of recontextualisation, the current study differs with the conclusions drawn by those arguing that teachers' subject knowledge is, in Medwell et al.'s (1998) terms, 'totally embedded in their pedagogical practices' (p.24):

> it did not seem to be the case that [teachers] knew a body of knowledge (content) and then selected appropriate ways to represent it to their children

> (pedagogy). Rather, they appeared to know the material in the way they taught it to the children…The knowledge-base of these teachers thus *was* their pedagogical content knowledge. (p.24, italics theirs)

Medwell et al.'s position is supported by others (Cf. Brown & McIntyre 1993), including Poulson (2001), who argues that 'a model in which teachers' prior knowledge of subject matter and its structure was then transformed into pedagogical content knowledge to make it accessible to pupils appeared not to be applicable' (p.46). There are two important differences between the findings of the current study and the model of *totally embedded* subject knowledge suggested by this literature: firstly, knowledge taught by the teachers in the current study was, at times, unknown to them before researching and planning for a lesson (consequently, referring to a 'knowledge-base' these teachers *have* is misleading; they are frequently searching, often online, for new knowledge to teach in their lessons); secondly, there is a clear sense of teachers transforming subject matter into (at least more explicitly) pedagogical forms. Findings from the geography teachers in the current study suggest that it makes sense to speak about sources of knowledge these teachers access in less pedagogised forms, which they transform or recontextualise for their students.

Five degrees of recontextualisation are presented through a varying number of examples; for some there are important distinctions within the same degree of recontextualisation, whereas, for others within-degree variation is less significant. I begin with the left hand side of the continuum (one degree: less recontextualisation), and move right (to five degrees: more recontextualisation). Different knowledge types are found at each degree, with testimony, perception, deductive reason, introspection, and memory all drawn upon. I argue there are significant changes in testimonial

knowledge between degrees of recontextualisation, with greater testimonial burden on the source at one degree, shifting towards the teacher at five degrees.

8.1.1: One degree. Content presented substantially unchanged

The interactions between teachers, students, and the knowledge work done at one degree of recontextualisation were described by teachers in terms of *illustrating*, *showing, giving,* and *presenting*. Students might be told to watch a programme that illustrates something: 'remember when I was trying to describe what those zooplankton look like? Well go and watch that [documentary], cos it shows you…' (Ruth, interview 1:134). Teachers described *taking*, *copying*, *stealing,* and *robbing* material used at one degree, arguing that 'actually, it's the selection that is as relevant as anything else' (Claire, interview 2:36). At this degree of recontextualisation teachers might tweak or amend a resource; Tim (Beach Academy) described *slightly adapting* the resources from his placement school's VSA, for example, by adding a slide about homework to the end of a PowerPoint otherwise unchanged. Gemma (Town Comprehensive) often changed the backgrounds on slides that others made, leaving the content of the slides untouched. Teachers had other cosmetic preferences, such as favouring certain fonts and taking sides on the use of Comic Sans.

Any content might be presented directly to students, but PowerPoints (frequently made by other teachers), videos, and news articles were most often presented at one degree of recontextualisation (and so as substantially unchanged). The exam specification played a significant role in determining which articles teachers presented directly to students, with the best articles being 'like [they're] written for the syllabus' (Town

Comprehensive interview:224). Articles were found almost exclusively online, and students *picked out* statements and data from such articles, often about causes and effects of events. One example of Tim's (Beach Academy) use of a YouTube video, recontextualised to one degree is now presented; it was chosen because nearly all teachers in the current study echoed Sophie's description in their words and practice, using YouTube 'a massive amount' (interview 2:64).



Figure 82. YouTube 'Introduction to Volcanoes' video

Tim showed his year seven class an 'Introduction to Volcanoes' video from YouTube (Figure 82). When the video finished he said: 'Ok, so you can see there the power of the earth. Below our feet the earth is moving and the world is changing' (Tim, lesson observation 17/06/13). Tim's comments are descriptive, and repeat statements from the source. Material presented as it is can be seen as being given an authoritative status; they are used to *show* and *illustrate*, and teachers often directly repeat the information presented, whether a news report, PowerPoint, or video: *you can see…*

Textbooks were occasionally used in this way, although they held a contentious position among the geography teachers in the current study who were reluctant to use them unchanged. This reluctance about a specific format contrasted sharply against the enthusiastic use of YouTube videos. When textbooks were used unchanged, teachers pictured themselves (and others) negatively as *clinging* to the book (Cf. Richard, interview 2:58), echoing the 'deficit version of teacher identity – someone who needs to be led stepwise through a new and difficult terrain' (MacLure and Elliott, 1993, p.95). Textbooks provide a structure for courses, and the information in them was regularly used by teachers. However, teachers often expressed their dissatisfaction with textbooks, using them as a negative example: 'I really loathe "turn to page 92, and this is what we're doing today"' (Claire, interview 1:101). Teachers often justified their dislike of the direct use of textbooks by arguing that students were bored by them. At one degree of recontextualisation the material was seen as being able to speak for itself, and the format is related to the recontextualising processes teachers are likely to put it through. In part, the relationships between resource format and recontextualising processes are about pedagogy, but they are also about the nature of the geographical knowledge presented. In terms of pedagogy, that which is presented to students at one degree is believed to be accessible to students, and to stimulate their interest. Whereas that used in a more recontextualised format (degrees two to five) was often described as being boring, or inaccessible to students. Dichotomous notions of truth and authority were used across degrees one to five, but the source of authority shifts from the resource to the teacher (

Figure 83). I am using the term 'resource' here to refer to the content as it is presented to students.



Figure 83. Authority and degrees of recontextualisation

Authority is related to testimonial knowledge, illustrated by the language used; at (1) teachers often said 'listen to what *they* say…', with the resource or presenter acting as testifier, whereas at (5) teachers told students that '*I* saw…', or '*I'm* telling you that…'. The resource is trusted to testify truthfully. At one degree of recontextualisation the significant issues for teachers are about what to include, and what to exclude. Teachers' processes of selecting and showing are, at one degree of recontextualisation, particularly akin to a *curating* role. Having been shown by this teacher in this classroom to this class, the content is (at least for the people in this classroom) now different to what it was before. The time-spaces of geography departments are shot through with negotiations of power, control, and authority which means that being presented with, for example, a story on BBC News online by a teacher is different to coming across the same article at home.

It is appropriate to refer to this process of what I describe below as *curating* as involving a degree of recontextualising, even though the source is substantially unchanged, because the information is being presented in a different context to that in which it was created. It might be argued that this is true for all knowledge in all

situations; there are some senses in which knowledge is always received differently; the central contention of reception theorists (Cf. Hall 1997).

8.1.2: Two degrees. Multiple resources presented together

Moving to two degrees of recontextualisation, the processes are similar to those at one degree, but the content is made up from multiple origins. Multiple resources were used in two main ways; to compliment, and to contrast.

Multiple, complementary resources were often given by teachers directly to students who were expected to find out information from them, and then use this information to complete some kind of task (such as completing a table). One lesson in which Pam (Beach Academy) presented multiple resources about river processes, subsequently critiqued by Hugh, is revisited below (in chapter nine). Reasoning through a brief logical argument, and reading other texts (there, an A Level textbook) are approaches used by Hugh to substantiate his critique of the description of the processes on the commercial PowerPoint. The intention behind Pam's use of multiple resources was complementary; they were meant to agree, describing processes in the same way. The example of Pam's lesson was interesting because the expected agreement over the description of processes did not happen, which led Hugh to give a brief explanation with the intention of preserving the consistency of explanation.

Another example at two degrees of recontextualisation involved presenting multiple complementary resources about tectonic plate boundaries for students to read, and, using this information, complete a table (Figure 84).

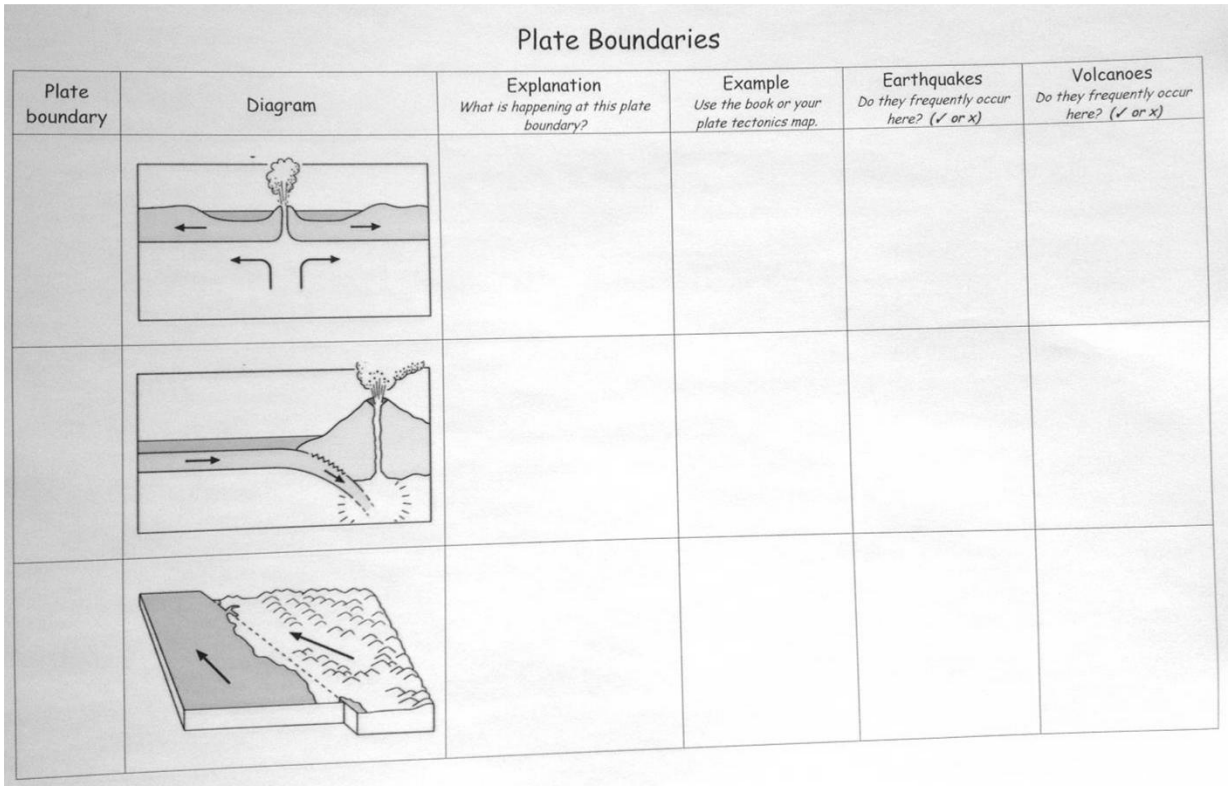


Plate Boundaries

Plate boundary	Diagram	Explanation *What is happening at this plate boundary?*	Example *Use the book or your plate tectonics map.*	Earthquakes *Do they frequently occur here? (✓ or x)*	Volcanoes *Do they frequently occur here? (✓ or x)*

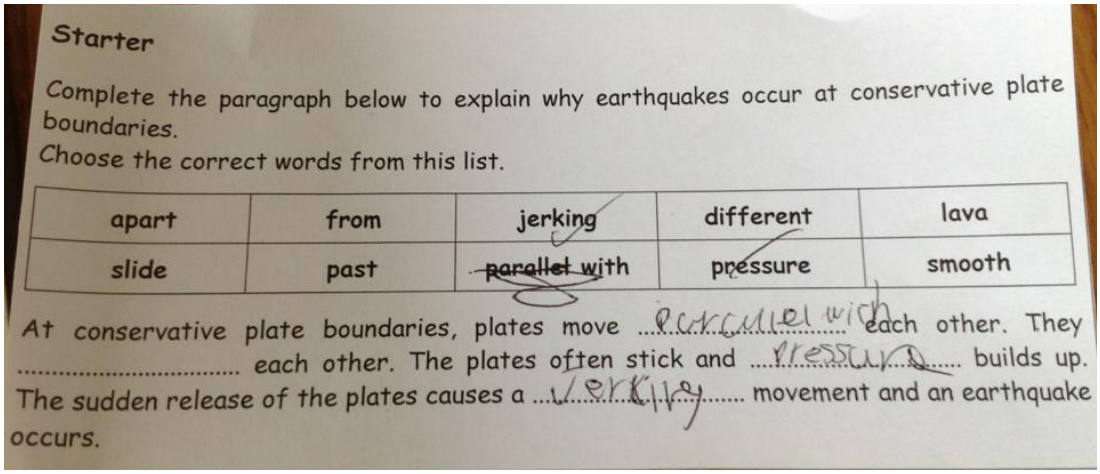
Figure 84. Table used by Tim (Beach Academy), for students to complete using complementary sources of information

In this example Tim gave students several texts and images, all of which described the tectonic processes in similar ways. The three main were:

- A Boardworks PowerPoint with animations of plate boundaries
- A Textbook (pages 10-11)
- A Map (showing names and directions of tectonic plates)

Some explanations were also given by the teacher (knowledge recontextualised to four degrees), the students had a starter activity (Figure 85) created by Tim (further example of four degrees of recontextualisation), their work from the previous lesson, their own knowledge, and that of their classmates. Our discussion here concentrates on the three main sources of information (textbook, PowerPoint, and tectonics map), although it is important to acknowledge the multiple additional sources of information because they were present to some extent in all lessons I observed. The implication of

this multiplicity for the current discussion is that the model of degrees of recontextualisation offered is useful for the analytic distinctions it makes, and not to imply that teachers or lessons include just one of these degrees at a time: multiple degrees of recontextualisation are used within single activities.



Starter

Complete the paragraph below to explain why earthquakes occur at conservative plate boundaries.
Choose the correct words from this list.

apart	from	jerking	different	lava
slide	past	~~parallel~~ with	pressure	smooth

At conservative plate boundaries, plates move ....parallel with..... each other. They ..... each other. The plates often stick and ....pressure..... builds up. The sudden release of the plates causes a ....jerking..... movement and an earthquake occurs.

Figure 85. Source of information used in Tim's lesson (19/06/13)

The three main resources were all presented by Tim substantially unchanged; the students were seeing the same things that Tim had seen when he found them. The students' task of copying statements and images and placing them into a different format might be described as creating a new resource at three degrees of recontextualisation. Using multiple complementary resources was described by teachers as being useful for increasing the breadth of information offered, and for the additional validity that teachers believed multiple, rather than single, sources gave: 'the fact that…the two sources don't contradict each other again adds credence to what they're saying' (Richard, interview 2:104).

Multiple resources, presented to students substantially unchanged were also used in quite a different way: contrasting and contradicting one another.



Figure 86. 'Photo-shopped' tsunami image in *Geographical* magazine

Hugh began one lesson with a year seven class by telling them he was slightly concerned about their use of the internet; he warned them of a tendency to sit and act like mirrors, just reflecting information on the screen. He continued, introducing the lesson:

> Hugh: I've got a whole pile of magazines there - it's a bit of a risk, but [noise from a student], are you a gambler Jack? I've seen what you get up to at break time! There are geographical magazines there…Just flick through – I want to get you looking for information; how do you gather it? I love the images – I think some of the photos are absolutely phenomenal. Take some time to just look at them. That's where some of my love for geography actually comes from. Jack, why are you laughing?
>
> Jack: I've seen a photo of a goat and it looks like it's got a beard.
>
> Hugh: Right, where is it?

Jack: In the Rocky Mountains.

Hugh: So there we go – Jack's already found something he's interested in – the bearded goat… I am going to let you use the iPads, I am going to let you use the computers – we're gathering information.

(Lesson observation 20/06/13)

The students flicked through the magazines, and one group became interested in the tsunami image shown in Figure 86. They then searched online for tsunamis, and on the first line of their google image search found the image shown in Figure 87.



Figure 87. 'Photoshopped' tsunami image found by students online

When Hugh saw the tsunami images he was shocked, and quickly presented the students with other contrasting sources of information (primarily Figure 88). His reaction to the students' images (one of which was in the *Geographical* magazine he had provided them with; his warning about reflecting information like a mirror only explicitly mentioned online dangers) was initiated by his knowledge of tsunamis. He looked at the images the students had found, and knew that they were wrong; the subsequent contrasting of different sources of information (that is, of showing Figure 88 against Figure 86 and Figure 87), presented here as an example of two degrees of recontextualisation, is framed by Hugh's own knowledge-how to interpret photographs (drawing on knowledge now at five degrees of recontextualisation).



Figure 88. 'Real' photograph of a tsunami

The *Geographical* article is published under an image of a city being engulfed by a huge wave (Figure 86). So huge that it is many times higher than the highest known tsunami wave. The text below the image emphasises wave height: 'In 1964, the Alaksan earthquake, the second-largest ever recorded, triggered tsunamis as high as 52 metres. The new research suggests that a more extensive earthquake may create even bigger tsunamis' (Yap 2009). The 'new research' cited is an article in *Quaternary Science Reviews* (Shennan et al. 2009). The image of the tall wave, combined with the text about wave heights and predicted increases in the size of tsunamis is highly dramatic. Shennan et al. argue that their evidence, which indicates widespread rupturing of the Yakutat microplate (a relatively small tectonic plate in southern Alaska), has 'significant implications for the tsunami potential and seismic hazards of the Gulf of Alaska' (p.12). They specifically mention wave height only to suggest that, even when earthquakes are larger, the specific conditions in these areas (in particular, large areas of uplift, and a relatively shallow sea floor) result in *similar* wave heights. The highest wave recorded in 1964 was confined to one inlet, and was caused by a localised landslide, and as such was a very specific event. Shennan et al. cite Nanayama et al. (2003) in support of their argument that the multi-segment earthquakes (related to the widespread rupturing of

the plate) may produce a tsunami 'with greater wavelength that penetrates farther inland, even though the height of the wave at the coast may be similar' (Shennan et al. 2009, p.12). The *Geographical* article's representation of this research might be seen as an example of the old story of journalistic sensationalising. What is interesting here is the way in which Hugh responded with particular kinds of recontextualising principles, working primarily at two degrees of recontextualisation. I wrote the above discussion of the photograph (Figure 86) whilst sitting at my desk. I spent two hours or more reading the journal articles mentioned, checking terms and concepts I was unfamiliar with, and a further hour writing the summary paragraph I have presented here. I did not have responsibility for 30 year seven students in my office. Hugh's critique of the photograph with the students took less than two minutes. Like the students, he did a Google image search, and then placed a photograph of a real tsunami (Figure 88) alongside the altered images they had found. He asked the students questions about the images, prompting them to compare and contrast the sources: how high is that wave up those trees? How high are skyscrapers? Is this a real wave? The discussion around the images was dichotomous; the students' task was to classify them as right / wrong, and real / fake.

Engagement with the images could have taken any number of different forms. One option might have been to consider the image in its context; that is, as published in this magazine, above this headline, and with this text, considering it on its own terms and following the references it cited (the approach I took above). Another option might have been for the teacher to do nothing; leave the students to be inspired and awed by the terrifying waves of destruction, and see where their subsequent online searches and

reflections on the images might lead them. Hugh's response was more interventionist, and more quickly corrective than either of these. As soon as a student (it may be significant that these were year seven students) makes a mistake like this (that is, believing something fake is real), they are given alternative evidence that might correct them. At this degree of recontextualisation it was the source that Hugh sought to use as the basis for the students' emerging beliefs about tsunamis; he did not directly testify to them. This geographical knowledge uses categories of right and wrong, and of true and false. It is concerned with notions of the real world, rather than with issues about construction, representation or performance: real and fake are maintained as distinct, dominant categories. Geographical knowledge is practiced in this exchange as something falsifiable, and based on empirical evidence. One effect of Hugh's approach is that *looking* is problematized, and he hopes the students might differentiate between *looking* and *being able to see*. This means not just reflecting, but critically assessing; in Stemhagen et al.'s (2013) terms, making disciplined judgements, with the teacher's role being to monitor and correct false information through the introduction of alternative (true) information.

8.1.3: Three degrees. Sections copied and re-formatted

The third degree of recontextualisation involves a more substantial change to the original information than in degrees one and two. Sections are copied and pasted, *re-presenting* and *re-formatting* the information. The copied content is preserved, but the context is changed. Teachers described this as *manipulating*, *arranging, taking out [the data]*, *getting [the information]*, and *cutting and pasting.* They also described the processes in terms that have slightly different connotations involving a greater extent of

authorship, as having *written*, *made*, and *created* resources that were recontextualised to three degrees. These kinds of terms were not used at one or two degrees. Ruth (Town Comprehensive) described creating a GCSE revision guide from a textbook in this way:

> I could choose how I want to manipulate that and I've just arranged it so that, y'know, we've got a bit of space at the side that they can put those notes, but then also that you can fold that over in their books and have the other bit of notes there, and then everything's on that one little sheet. (Ruth, interview 1:25)

In order to give students more space to make notes she omitted some of the original text and images. This manipulation is for practical and pedagogical aims: having everything on one page is seen as important, as is having space to write notes.

Three degrees of recontextualisation often involved copying text from online news articles and textbooks, then pasting statements onto a word document that might be printed and cut into cards to be used in mysteries and other card-sort activities. The information copied and represented in teaching resources was either in propositions or images. Three examples of these kinds of recontextualising processes are now discussed, including use of an image from an exam script and statements from one website.

Steve (Town Comprehensive) showed his GCSE class a PowerPoint slide with two images (one of which is shown in Figure 89), and posed the question: what are the geographic differences between the images? A student asked where the farm was, and

if Steve had been there. Steve replied that it was in the Lake District, that he had not been there, and that he had taken the images from a past exam paper.

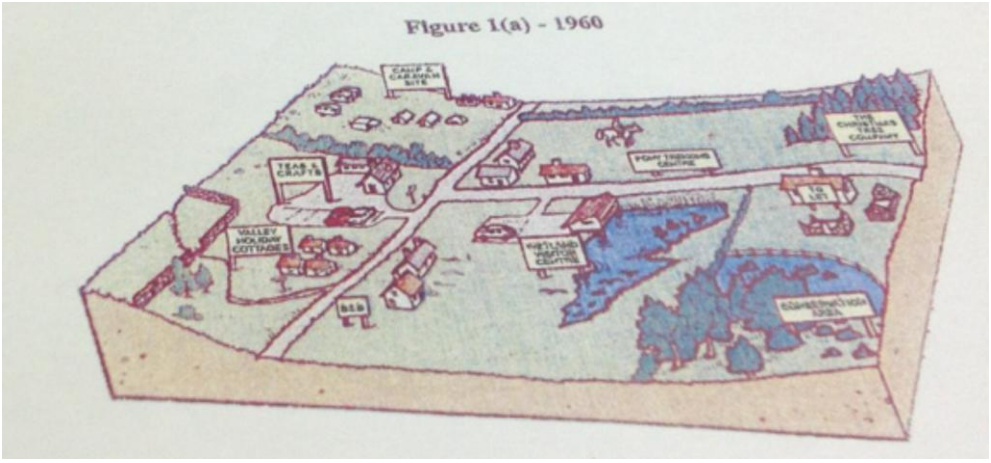


Figure 89. Image copied from exam resource book. Town Comprehensive, 17/4/13

The students' question about whether the teacher had been to the place about which he was teaching seemed to be stimulated in part by a testifying method the teachers sometimes used; *I've been there, I've seen it*. The question also assumed that the image would be about a real place. It is hard to tell anything more about the history and production of the image, because the material from exam boards carried considerable authority and if an image or statement was written by the exam board it was something to be learnt. The question posed by the teacher, about geographic differences, led to a discussion in which the teacher elicited responses about the substantive things mentioned on the drawings which led to conclusions about the diversification of economic activity, rather than, for example, a discussion about the representation of place constructed by the drawings. At this third degree of recontextualisation the image is presented to the students as it was found by the teacher, and in the current example the original label 'Figure 1(a) – 1960' is still included. However, the context and purpose of the image is quite different.

Gemma (Town Comprehensive) used a set of statements (Table 27), recontextualised to three degrees, in combination with other sources of information: Gemma's embodied knowledge, and a map (Figure 90; an example of two degrees of recontextualisation).

A small drainage basin	Steep valley sides
River Jordan passes through a 100m underground culvert	Boscastle is at the confluence of the Jordan and Valency
Building on the flood plain	Bridges
Low drainage density	Clearing vegetation from the valley

Water is not intercepted.	The river channel is narrowed.
Run-off and throughflow	Not enough channels to carry away the water.
Water cannot infiltrate.	Cannot cope with high discharge.
Large volume of water can collect quickly	Surface run-off travels very quickly

Table 27. Resource about Boscastle flooding used in Town Comprehensive

The statements were copied from materials provided by another teacher online, and can be found on various websites (including www.scribd.com). Gemma's resource omits some of the online statements, and re-arranges others. Gemma described the statements as being causes (the top half of the table) and explanations (the bottom half) that the students needed to match up, and then relate to the map (Figure 90). Introducing the task, Gemma thought aloud about the statements, and, consulting the map, commented to the class: 'building on the flood plain…not sure why I wrote that on there' (Gemma, lesson observation 24/4/13). She explained why she was questioning the statement by telling students to look at how close together the contour lines are; there are no large flat areas that might be described as flood plains.

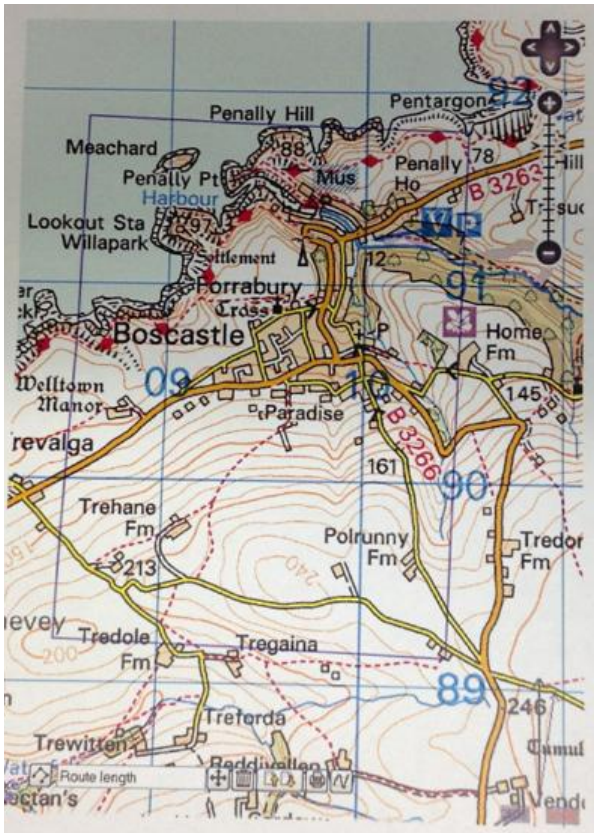


Figure 90. Map accompanying flooding statements

Gemma's reflection on the statements illustrates something about the speed at which teachers often carry out recontextualising work. In the current example time was probably not spent considering both the map and the statements together. Sosa (1991) makes a distinction between *animal knowledge* and *reflective knowledge*, defining the former as based only on direct responses, with little reflection. The latter is defined as also involving both the fact known and 'also understanding of its place in a wider whole that includes one's belief and knowledge of it and how these come about' (p.240). A sense of this distinction seems apparent in Gemma's recontextualisation; to begin, it is a resource she has made by copying statements found online and to which she has given little reflection. Later, when she engaged in this process of reflection in front of the class, she quickly drew the conclusion, based on her interpretation of the contour lines on the map, that there is no flood plain around Boscastle. Her knowledge-how to read

contour lines, drawing on knowledge now recontextualised to five degrees as a part of her embodied subject knowledge, led her to question at least one of the statements she had given to the class: understanding its place in a wider whole. This was a rapid process, with little discernible time between glancing at the statements and the map, and then commenting.

Recontextualisation at three degrees involves removing content from its original context. It is often not possible for students, without being told by the teacher (as Steve did above), to know where this knowledge came from, or how it was produced. In the current example, without being asked, Gemma told the class that she is not sure why *she wrote* the statement. The attribution of authorship to herself is interesting, and reflects the language of *creating*, *writing*, and *making* sometimes used by teachers at three degrees of recontextualisation. Possibly, Gemma is taking responsibility for the resource that she gave to the class because she is now critiquing it. Her actions might also (in a similar way to Hugh, discussed above) be seen as disciplined judgments, defined by Stemhagen et al. (2013) as 'the praxis of publicly explaining reasons for belief and then scrutinizing those reasons', which they argue will 'lead to a greater understanding and appreciation of the epistemological foundations of particular disciplines' (p.59). Gemma made explicit her reasoning about the lack of flood plain, a position she reached based on her reading of the map. Some epistemological foundations of the discipline that she is implying are that: maps are more authoritative than written description; and sources of information ought to be interrogated against one another. The priority given to the map suggests that the format of information is significant. In his discussion of the origins of trust in testimony, Harris (2002)

distinguishes between knowledge gained through first-hand observation and that gathered via testimony. He argues that the formats of sources of knowledge are important, with similar formats being received by students in similar ways: the format, rather than the content or origins, may be most important. In the current example, the priority given to maps emphasises, at least in this case, geography's concern with the empirical, and its trust in physical measurement and cartographic representation. The map is not something here to be deconstructed, for example, in the manner suggested by Kitchin et al. (2013), but something on which statements are to be located, and against which propositions might be judged.

The final example of three degrees of recontextualisation is taken from a resource that Richard (City Academy) chose to discuss during his second interview. His resource was designed for use in a lesson based around a question: why might Bajos De Haina, a town in the Dominican Republic, simultaneously be in the top 10 list of most polluted places, and the top 10 list of most successful pollution clean-ups? He decided to pursue this question because he felt students would find it interesting, although 'at the end of the day the fundamental reason I'm doing this is cos it fits in with that [exam specification]', featuring 'a number of key points highlighted by the spec' (Richard, interview 2:84). Richard copied statements from reports written by the Blacksmith Institute and the WHO (World Health Organisation) onto cards (a section is shown on Table 28), which he gave to students to read and classify.

In the last 5 years a coalition including government, academics and NGOs came together to design and fund a clean-up project-the first of its kind in the country. This has been funded by the original company and NGOs	**In 2001 The Dominican Republic passed the law on the environment and natural resources, which for the first time sets minimum standards and has a polluter pays principle.**
In conjunction with the Ministry of Environment, local crews and contractors were hired and trained, building capacity within the Dominican Republic to perform a hazardous waste removal operation - the first of its kind for the country.	**In time, lead can migrate and contaminate subsurface and surface water supplies. Airborne dust can also migrate and enter water supplies.**
Lead can enter the human body (pathways) in a number of ways, through breathing, food, water or absorption through skin	**Lead levels in soils throughout the community exceeded U.S. EPA limits for lead by over 10,000 times - some reaching 60 percent lead content.** **An initial report highlighted evacuation as the preferred option. This was rejected by both government (too expensive) and locals (too disruptive)**

Table 28. Section of Richard's Bajos De Haina card sort activity

Richard described recontextualising these two sources on his computer: 'I'll have the report on one half of the screen, I'll have the word document on the other – as I'm going through I'd be typing the cards up…with the key texts' (Richard, interview 2:32). He spent an hour or two writing the statements, which he copied directly from the reports. When he began to think about the lesson, and the creation of resources for it, he hoped that he might be able to give the students a research activity. That is, a task in which he recontextualises sources to two degrees (giving the reports to students substantially unchanged), and the students then summarise and discuss the sources in their own words (recontextualising them to four degrees). However,

> because of the volume of information...[I] ended up doing a card sort, again partly because the information I was taking...the World Health Organisation report is five or six pages - quite long...there wasn't a simple document that I could just give students for them to just analyse. (Richard, interview 2:42)

When asked about where the statements came from, Richard offered a numerical breakdown: 'It's probably somewhere between 80% 90% Blacksmith Institute, 10, 20% World Health Organisation' (Richard, interview 2:26). Describing origins of statements in percentages illustrates what three degrees of recontextualisation involves; these statements are still in their original format, and so the information would be identifiable on the original source. For Richard, the nature of the original sources of information was an important consideration; he described both the Blacksmith Institute and the WHO as *reputable* NGOs. Publishing their own peer reviewed journal distinguishes them from just 'some mate in his shed that's got a blog' (Richard, interview 2:104). For Richard, the consistency between these sources contributed to his belief in their reliability, and also allowed him to freely copy and mix statements. Once the criteria of reliability and validity are satisfied, the implication is that this kind of geographical knowledge is interchangeable; propositional and numerical data from different sources is presented together without information about authorship, origins, or method of creation. This position is similar to Derry's (2013) summary of contemporary approaches towards knowledge as sharing 'a common conception of facts without genesis or development' (p.227). At three degrees the teachers' role as curator involves a greater extent of editorial work than at one or two degrees, because information is selected and then also abstracted from the context in which it was written. Judgements are made that these statements make sense outside of their original context, for example, without the preceding or following sentences that may have qualified the statement or altered its meaning in another way.

8.1.4: Four degrees. Information summarised in teachers' own words

Moving to four degrees of recontextualisation, resources are here changed substantively. That is, the words or images used are not only re-presented in a different context, but are also internally changed. The process of recontextualising knowledge to this degree was described by teachers in terms of *summarising*, *simplifying*, *reducing*, and *making text accessible*. Primarily, this is a textual process of simplifying language and making it accessible to students. There were also a small number of instances where teachers summarised sources of information about processes into physical actions. For example, Ruth (Town Comprehensive) summarised statements about tectonic plate boundaries into hand actions for students to learn. She aimed to help students 'get their head around…the actual dynamics of what's going on at those boundaries' (Ruth, interview 1:43). Two main types of recontextualisation at four degrees are; summaries of a single source, and syntheses of multiple sources.

An example of a single source being recontextualised to four degrees is presented here from Claire (City Academy), who designed a card sort offering a 'very quick summary' of the history of China:

> it comes from this book - geog.3 that has a cartoon about the history of China, and instead of just sitting there and reading the cartoon I've kind of summarised the cartoon in the cards and they have to sort it into the right order. (Claire, interview 2:4)

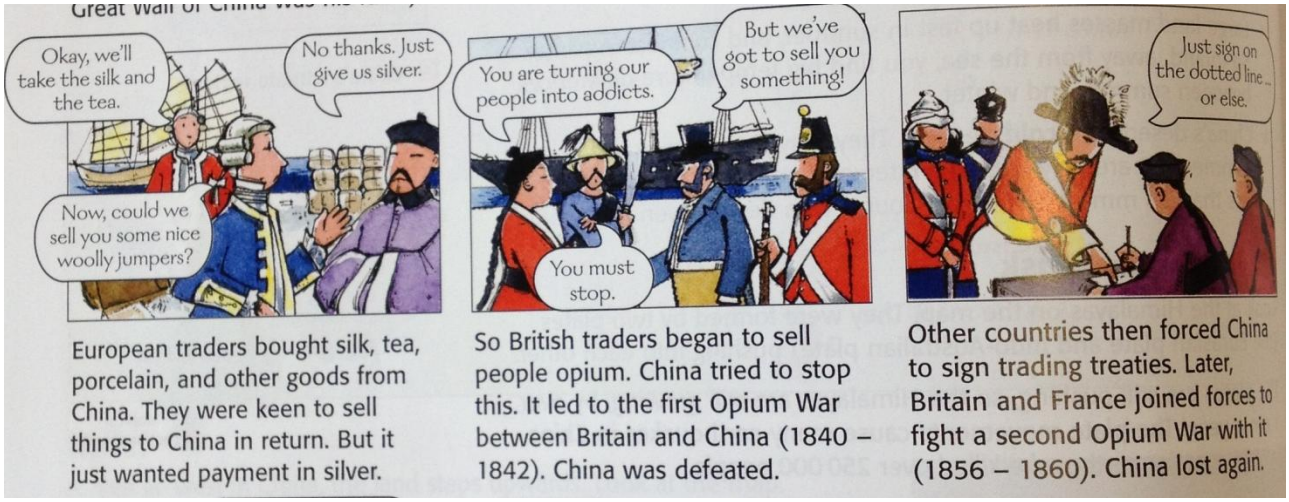


Figure 91. Section of geog.3 textbook used by Claire, City Academy

A section of the cartoon Claire refers to is shown in Figure 91, and one of her summary statements is shown in Figure 92.

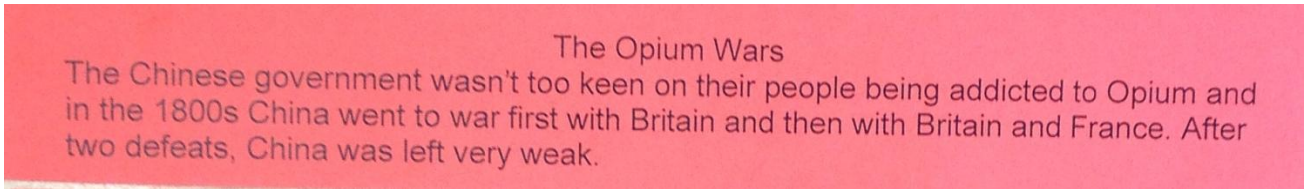


Figure 92. Example from Claire's card sorting task

Claire described using card sort activities and DARTs (Directed Activities Related to Texts)

> quite a bit, so it's not just read the text - you're actually trying to do something with it, which I think is more useful…if I'm gonna give them some information I'd rather they do something with the information, so one way is to sort them. (Claire, interview 2:22)

Claire trusted that textbook authors have done their research in a more rigorous way than she has time to do. She described trustworthiness, based on reliability and rigour, as important. Using the information from the textbook is time-saving, providing inspiration, and information to use and adapt. Her recontextualising processes involve summarising, selecting, re-wording and re-presenting the information in a different format (in this case a card sort). In the example offered here the text has only been

changed a little, and it is possible to trace some of the sentences Claire has transformed. At other times sources recontextualised to four degrees rephrased information to such an extent that it would not be possible to identify the original.

Steve (Town Comprehensive) chose to discuss a resource about Birmingham in his second interview. A section of the card sort activity he made is shown in Figure 93.

The Bullring shopping complex was redeveloped and opened in 2003.	Birmingham city council has pedestrianised much of the centre of the city.
Music festivals and conferences are often held at the ICC.	The World Indoor Athletics Championship was at the NIA in 2003.
The ICC has a capacity of 3,700 delegates.	The Bullring contains 140 stores, including an Apple and Selfridges.
Birmingham International Airport is 8 miles from the centre. Trains run to New Street.	Birmingham has 3 stations in the centre of the city, New Street, Snow Hill and Moor Street.
Birmingham has regular late night shopping.	Several fairs and markets have occurred in Birmingham's pedestrianised zone.
The Black Country Living Museum, focussing on the areas industrial past is in Dudley, on the outskirts of the city.	Cadbury World is a tourist attraction within the city. Located in the Bournville area of the city.
The winner of Big Brother 1 Craig Phillips, lived in a luxury apartment close to Broad Street.	Celebrity DJ Pat Sharpe, of funhouse fame, often drinks in Bars in the Mailbox.
The Mailbox is a converted sorting office used for shops, apartments, offices and restaurants.	Birmingham is often considered a nodal point for the country, with several motorways meeting there.

Figure 93. Section of Steve's Birmingham card sort

Steve described this resource as a mystery. The statements were cut up and given to students to explore how Birmingham has been regenerated. He had used it with two

different A Level exam specifications, having 'created [it] for the last Edexcel A Level' (Steve, interview 2:32), a description which illustrates the regulatory function played by examination specifications. The purpose of the cards was to 'try to bring together the way that they've changed Birmingham to try to give a new image and to try to improve its city centre' (Steve, interview 2:32). He listed several different sources of information that he had synthesised: a university lecturer in Birmingham who led walking tours of the city for Steve's students (Steve made notes during these tours); textbooks; Geographical Association guide to Birmingham; and, his own knowledge, mainly developed during visits to his brother (who was an undergraduate in Birmingham). I suggested above that increasing degrees of recontextualisation (moving towards five degrees) may relate to Bernstein's notion of space in which ideology plays. However, here at four degrees Steve argued that the resource he has created contains factual information which has not been subjected to ideological play, giving the example of stations in the city:

> there's not a lot of opinion based stuff within this source; this is very factual I think - y'know, Birmingham has 3 stations in the centre of the city: New Street, Snow Hill and Moor Street. There's not much arguing with those; the interpretation of this data and this information is up to the students… I think the majority of this stuff is actual factual stuff, yeah that does come from elsewhere, and I felt that I could trust those sources... (Steve, interview 2:48-50)

He later uses the term *interpretation* in a similar way to the use of *opinion* here, arguing that it is important that he has not done interpretive work, but instead has just presented the facts. He sees it as being the students' job to interpret this factual information. This position might be contrasted against Winter's (2011), which is highly critical of seeing names as purely factual:

> Conventions, signs and place names on maps are unstable – they have histories, their meanings twist and change through the play of the trace, and something else is always and already in progress in the background. (p.347)

Contrasting Winter's position against Steve's is not intended to function as a critique of either, but to suggest that significant differences exist between them. In Steve's account, geographical knowledge includes facts, about which disagreement is not possible: he has strong epistemological confidence in these facts. His intention is to build from a base of basic information and data, and have students use and interpret this information, with epistemological certainty being reduced with distance from the factual base. It is in this distance (the interpretation or opinion) that Steve might locate Bernstein's space for play of ideology. In Winter's account, there is little epistemological confidence in facts, and any base of basic information ought to be deconstructed rather than being accepted and interpreted.

8.1.5: Five degrees. Teachers' embodied knowledge

The fifth degree of recontextualisation is the most problematic to analyse: how might it be possible to know what has been assimilated into teachers' embodied knowledge? If information has moved beyond summaries of the original, and is now a part of the broader, more fundamental way in which the teacher conceptualises geographical knowledge, the original is no longer readily identifiable. Teachers described *absorbing* knowledge, using sources to *build up* their knowledge; sources and experiences which have developed *strongly held beliefs underneath*. They accessed this knowledge by mentally *going back, looking at*, and *remembering.*

The model of degrees of recontextualisation is a continuum, and this is particularly apparent in the transition between four, and five degrees: for both, teachers recontextualise by changing context and content. When asked where knowledge was from, with four the teacher would be able to identify specific things that have been synthesised, whereas, at five degrees this may not be possible. It is in many ways the same kind of recontextualising as four in that both are summarising of sources in the teachers' own words. An important difference between four and five is time. In five, the time between teachers' engagement with knowledge, and communication of it is longer than at four. In five the knowledge may be a more integral, deeper part of teachers' knowledge in that it plays a shaping role, informing the types of questions that are asked, and the kinds of evidence that is accepted in the answering of these questions. Hugh's use of contrasting images, rather than just his testimony is one example of this; Gemma's reasoning based on an interpretation of a map is another.

Recontextualising sources at degrees one to four involves using knowledge recontextualised to five degrees. At one degree the teachers' embodied knowledge is used to make (often rapid) decisions about selection, in some cases rejecting and choosing articles from a moving feed of tweets on a smart phone. At two degrees decisions are made about resources that either compliment or contradict one another. Again, assessments of these resources were made quickly, sometimes during lessons, and other resources were found and presented moments later: all these are examples of teachers' knowledge-how to judge and make arguments in geography. At three degrees teachers' embodied knowledge is used in making (primarily textual) selections; identifying key sentences and ignoring others, and creating reformatted resources to

present to students. Teachers' embodied knowledge is used here to understand the overall sense of an article or report, and attempt to preserve something of this in the reduced account. At four degrees teachers embodied knowledge plays an even more active role because this degree involved a first or second degree of recontextualisation (making selections of sources), then also substantively changing content. Words were replaced and sentences transformed, often with the intention of simplifying or differentiating the source to increase its accessibility for students. This fourth degree also involved a complex intellectual task of synthesising different sources of knowledge to create something potentially quite different from any of those original sources.

The development of knowledge recontextualised to five degrees happens across the teachers' whole life; examples were discussed above of teachers experiencing events as children that were formative for their conceptions of geographical knowledge. For example, Ruth's experiences of a weather front, and later a drumlin, continue to inform the preference she expresses for physical geography, and the emphasis she places on empirical verification and perceptual knowledge; of going and seeing. Ruth's journey to this Drumlin, and those she then made to university involved certain distances, and lasted for certain durations. They are journeys of very low frequencies, contrasting against the very high frequency journeys she now makes online.

Recontextualising principles, expressed here in terms of degrees of recontextualisation, have been discussed with reference to specific examples. From the particularity of these examples, the model of degrees of recontextualisation has been presented as applying across all departments in the current study, and possibly beyond. There are considerable similarities in the ways in which these teachers find, and recontextualise

sources of knowledge in their constructions of school geography. The similarities between the curating role enacted by these teachers, and other broader similarities across departments are now discussed.

8.2: Teachers as curators

Emphasising the processes through which teachers recontextualise sources of knowledge into resources (8.1) has presented teachers as dynamic and actively involved in the construction of school geography. Daily, these teachers make multiple journeys for new articles and resources to use with their students, suggesting that in many ways the PRF has dominance over the ORF. In particular, the influence of the NC on these teachers' conceptions of school geography is limited: their practices of selecting and recontextualising knowledge for students are conducted almost in isolation from the NC. Examination specifications play a very different role to the NC, and have been argued to exert considerable power over school geography. A range of factors associated with the similarities between departments are suggested, including: similarities between teachers' own education and qualifications; membership of professional associations; examination boards and their power; the prevalence of online searches, and importance of search algorithms. An important distinction is suggested to exist between school geography at KS3, and KS4/5, with the PRF being more dominant at KS3, and the ORF powerfully influencing KS4/5. Geography teachers' curating role is complex, being social (within-department, and online relations are discussed), active (considering aspects of the ORF enacted by these teachers as dominating the PRF), and also passive (in particular, through the power of exam specifications and their strong regulatory function).

8.2.1: Teachers as (social) curators: departmental and online interactions

In making journeys for knowledge to recontextualise into the content of lessons teachers interact with others. These interactions seem to be important for the kinds of information teachers access, and the beliefs about school geography they form. Historical journeys, such as those to university for undergraduate degrees, have been argued throughout this thesis to play a significant role in teachers' conceptions of geographical knowledge. Interactions with fellow geography teachers are more frequent, happening every day, in person, and mediated through VSAs. Engagement with teachers in other schools also happen regularly through online spaces; interactions based around the giving and (mainly) taking of resources. Teachers see and use presentations of other teachers' work, and their beliefs about school geography are constructed in relation to presentations of the work of others. Assertions about what other departments do were used to justify decisions and defend practices: *you'll see that everywhere; this is no different from anywhere else*. At KS3 there were significant differences between departments; Beach Academy's KS3 is taught over two years, whereas Town Comprehensive and City Academy take three years. Department VSAs hold very different quantities of resources at KS3, creating and modifying them in different ways (for example, the tight structure of Town Comprehensive contrasts against the open approach of City Academy). The topics at KS3 also varied, most significantly between Beach Academy's adoption of the IMYC and the topics taught at Town Comprehensive and City Academy, between whom there was greater similarity of KS3 topics. At KS4/ 5 there was a significant tendency towards homogeneity across the departments, making very similar arguments about the role examination specifications play in their construction of recontextualising principles.

Several types of connections exist between teachers in the current study: they are members of the same professional associations; they use the same social networks (in particular, exam specification specific 'Nings'); they have similar educational backgrounds, and hold similar qualifications; and they sometimes find the same news articles through similar online searches, with search algorithms working to offer them the same highly ranked articles, which they then use in similar ways.

There are organisations on which the departments are dependent. Power relations between the department and these other organisations are unequal, with power functioning uni-directionally from the latter over the former. Two organisations in particular relate to the departments in this way; examination boards, and Ofsted, and in both cases aspects of their coercion are mediated through the Senior Leadership Team (SLT).

Examination boards, and the grades they distribute, were emphasised by individual teachers, and school level practices, reinforcing the authority and legitimacy of these boards and grades. Teachers justified work set to a class by telling them it would be useful for the exam. One striking example of a teacher apologising to their class for teaching them the 'wrong' case study was discussed above, offering an explicitly articulated illustration of processes that would see geography departments teaching similar content to students. There may be good reasons for standardising such case studies. The point here is not to make an evaluative judgment about the practice, but to make the more limited argument that examination boards contribute to homogeneity of school geography departments through prescriptions of content.



Figure 94. Displaying performance in BA

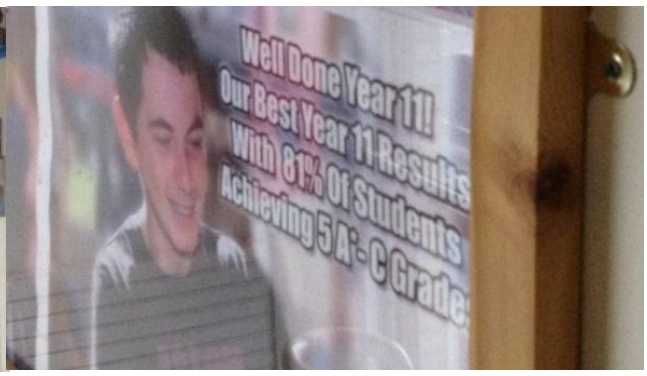


Figure 95. Displaying performance in CA

Public displays of examination grades were used by all schools in the current study (Figure 94 and Figure 95), although in Town Comprehensive these displays were removed after attracting critical media attention. These displays were constructed by the SLT, and were not initiated by the geography departments.

Photo boards of examination grades are technologies of displaying performance, presented in City Academy as congratulation ('well done!'), and in Beach Academy as motivation ('are you at altitude?'). In both cases, comparative evaluative judgements between students are made, ranking some as above, and others as below. Making visible these grades attributes importance to them. Accreditation, through gaining qualifications, is presented as an important purpose of school. Examination boards have been argued throughout this thesis to play a significant role in the school geography taught in the departments studied. All teachers in the current study described the grades their students achieved as being increasingly valued, both for their own career (with grades achieved being included as performance management targets and linked to salary for some), and the status of their department within school (high

grades bringing power and freedoms to departments, low grades limiting autonomy and reducing power). Examination boards also provided the content of lessons in the form of official, authorised textbooks. Despite the overwhelmingly negative description of textbooks by teachers throughout the current study, at KS4/5 they were, nevertheless, used regularly; structuring the course, providing key terms and data, and being used directly, with exercises being set from the textbook for homework, or when the teacher was away. Examination boards also provided guidance on how to deliver their specification, and some teachers in the current study attended INSET courses of this nature. The relationship between these departments and the examination boards was one of obedience, with the examination specification providing the 'fundamental reason' (Cf. Richard, interview 2:84) for teaching particular topics, concepts, case studies, and offering certain definitions of terms.

Existing studies have suggested that the NC exerts considerable power over school geography. Critiquing this assumption above, I argued that Bernstein's distinction between the ORF and the PRF reframes it, with evidence about the NC leading only to conclusions about the ORF, rather than school geography in general. While examination specifications do seem to determine the knowledge taught at KS4/5 across these departments, at KS3 the NC seems to have little influence. The findings show these geography teachers to be similar to the history teachers in Burn's (2007) study, who 'were much more aware of their existing departmental schemes of work and the impact of school assessment tasks' (p.459) than they were of the NC.

Ofsted inspections are an important aspect of performative examination regimes, with the type of Ofsted inspections being determined by school performance as measured by

examination grades. Talk about Ofsted was heard in all schools in the current study, with inspections shortly before, during and after my fieldwork. Teachers' beliefs about the expectations Ofsted inspectors have seemed to affect teachers' recontextualising principles, in terms of focusing on activities planned for lessons that might demonstrate progress. This language and focus was common in all schools, who all shared a desire to do well in Ofsted inspections, structuring their teaching with this in mind. Interpretations of Ofsted judgement criterion were strongly mediated through SLT, and in each school I heard Head Teachers addressing staff meetings by summarising what Ofsted are looking for. Tasks of writing lessons objectives on boards, having starter activities, and plenary sections during, and at the end of lessons aimed at *demonstrating progress* were all described similarly, and strongly encouraged by SLT across all schools. One example of a lesson observation was discussed above, highlighting some of the issues surrounding non-subject specialists applying generic criterion, and the power of Ofsted judgements made on lessons: terms such as 'Requires Improvement' are delivered with certainty, and the number three is recorded on a spreadsheet with no ambiguity. Examination grades function in a similar way with regard to certainty. Against the certainty of these factors, similarities between departments might also be seen as responses to uncertainty. That is, what to teach, and how to teach it, are inherently contestable questions, and so teachers described and justified their decisions and actions most often in relation to others. Other factors such as a lack of time, and the increased accessibility of teaching resources online also play a role, however, the uncertainty of knowledge (particularly knowledge that is right for use in school geography) seemed to lead teachers to model their work on that of others. The similarity between the types of resources held on VSAs in these departments is one aspect of this similarity (Figure 96).

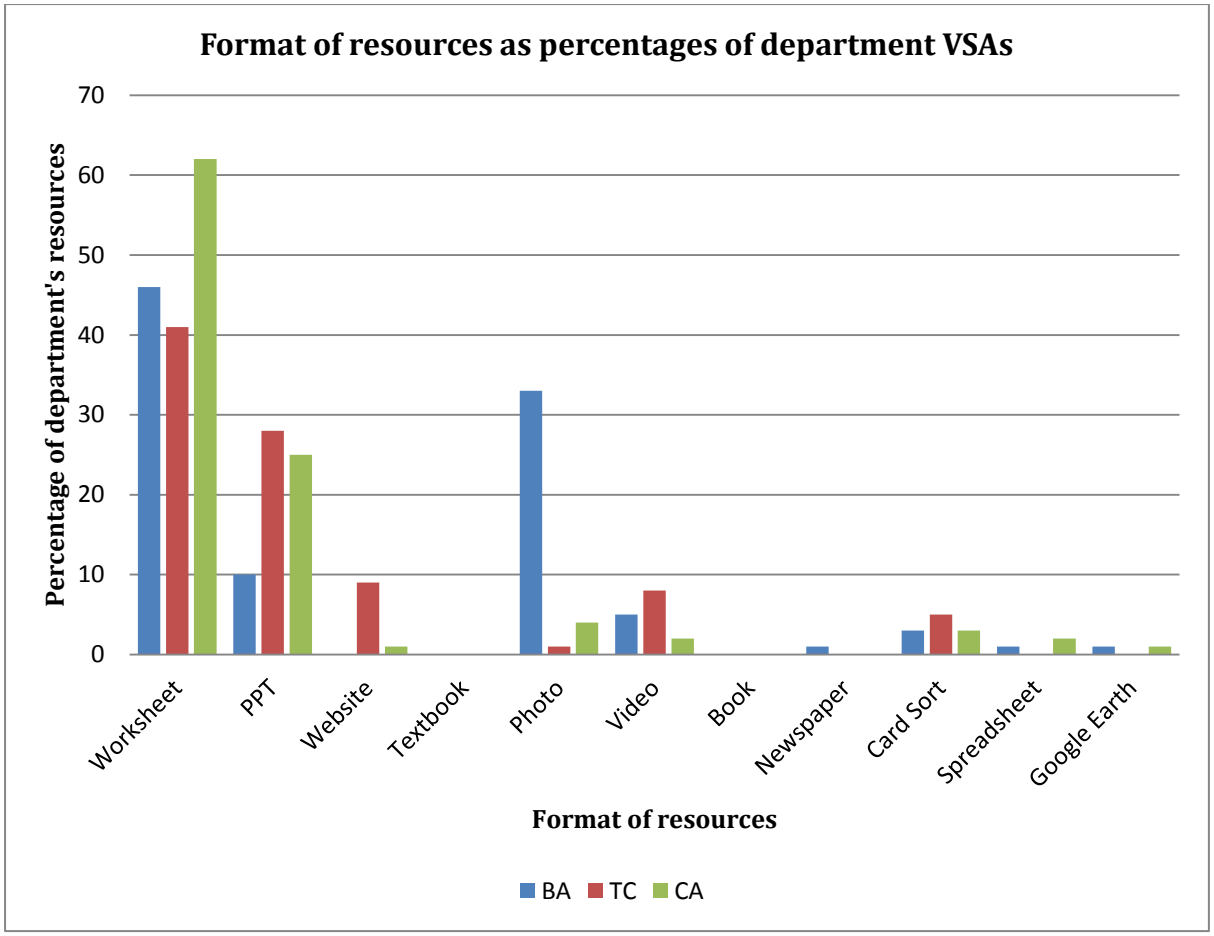


Figure 96. Comparison of VSA resource formats as percentages

In each department there is a similarly high use of worksheets; giving students information and activities on printed A4 sheets of paper is seen as the normal thing to do. PowerPoints were the second most frequent, with the exception of the large number of photos Beach Academy store on their VSA. In this department, Tim's organisation of the VSA was suggested above to be, based on his experiences in (and subsequent imitation of) other departments, anticipating a far higher percentage of PowerPoints in the future. It is interesting that the impacted department is the one in the current study in which the HoD's preferences for particular resources (such as his active rejection of widespread use of PPT, and love of photographs) are most strongly reflected in the formats held in the VSA. The absence, until very recently, of other staff

(and their experiences in other departments) might be seen as having partly insulated him.

Processes of becoming similar between teachers were most often observed in relations between PGCE students and more experienced teachers. One example was discussed above in relation to the concern Pam expressed: she felt she might be 'frowned on' for not using technology because *everyone else* used a great deal of technology. Similarly, George reduced his use of PowerPoint in direct response to observing Hugh's opinion and infrequent use of such resources. Examples of these kinds of individual mimicry did happen in all departments, but they were particularly apparent in the impacted department. Possibly, having only one full time geography teacher meant that interns observed only one person's way of teaching geography, which then exerted more obvious establishment of norms. Whereas, interns in the unitary department observed up to five different teachers, who taught in quite different ways, and with different resources.

In a similar way to the students Hopwood (2006) studied, these teachers' interpretations of their own school experiences seem to be related to pre-existing conceptions of geography, and their subsequent school experiences were then an important factor in choices of undergraduate geography courses. Decisions about universities, courses, and modules were made in reference to *all* of their experiences of geography; school experiences, therefore, are relevant to subsequent university experiences, and experiences of both are judged and interpreted in relation to one

another. Understanding current conceptions of geographical knowledge in terms of the journeys these teachers have made, and are making, seems important. Viewing the teachers as journeying through these space-times and interacting with these people and situations adds temporal and spatial dimensions, expanding an understanding of their conceptions of geographical knowledge from isolated things (such as propositions about a process or event), to inter-related, emergent, and dynamic processes. The differences between individual teachers' descriptions of the nature of geographical knowledge are significant, and in many cases can be seen to relate to their experiences of undergraduate geography.

The position suggested here also contrasts with contributions to the knowledge debate which imply that the discipline has embraced one particular view of knowledge, whether this is wholly critical/postmodern (Winter 2012) or one omitting mention of such geographies (Standish 2014; 2011). Bernsteinian accounts of academic disciplines as producers of knowledge are based on similar assumptions of the epistemological homogeneity of disciplines, referred to by Trowler (2014) as a position of strong essentialism. These accounts may under-appreciate the questioning nature of disciplines, and the associated role of undergraduate education as not simply (or even primarily) teaching knowledge produced by the discipline, but of disciplining students. Rather than being characterised by homogeneity, disciplines might instead be characterised by dispute and contestation. Viewing academic disciplines as fundamentally contested/contesting might lead to different purposes for school subjects than is suggested by summaries of them as 'bodies' of knowledge. Understanding disciplinary knowledge as inherently disputing makes sense of the

paradox between similarity of educational qualifications held by these teachers, and the differences in their conceptions of geographical knowledge.

This discussion of disciplines as inherently disputing might be relevant across subjects, but there may also be something more specific to geography; that is, the hybrid nature of the discipline, including social and natural sciences (explored further below in Bernstein's terms of horizontal and vertical discourses), may be particularly related to the considerable differences between teachers' beliefs about the nature (although not scope; teachers all expressed belief in an expansive and potentially all-encompassing view of the scope) of geographical knowledge.

All teachers find at least some of their knowledge 'literally from Googling' (Sophie, interview 2:8). In Gemma's terms, 'my first port of call – like most people – is the internet' (Gemma, interview 1:206). Her use of 'like most people' is particularly relevant; aligning oneself to what it is believed are examples of shared good practice serves rhetorical purposes. The use of 'most people' rather than 'most geography teachers' might also speak to the broader population, and wider changes in the way in which information is accessed. Heavy reliance on internet searches makes search engine rankings, and the algorithms driving them powerful. Teachers seemed to use the first one or two links on the first page of results, and so websites are found primarily when Google presents them. Further research is suggested below into teachers' use of the internet, the ways in which they search, and their selecting and curating of results.

8.3: Conclusion to chapter eight

This chapter began by presenting a model of degrees of recontextualisation, offered as a way of describing and analysing the recontextualising processes used by the teachers. In doing this, an aim of the study as an analysis of the 'practical reality' of the PRF is addressed: it provides a detailed description of the ways in which knowledge is recontextualised by these geography teachers in these departments.

The model moves along a continuum from sources recontextualised to one degree (presented unchanged), to those recontextualised to five degrees (a part of teachers' embodied subject knowledge). These processes were presented as being found consistently across all departments. The departments in the current study, amid considerable and important differences, display elements of homogeneity. Resources are searched for in similar ways, held in similar formats, and recontextualised in similar ways, often presenting similar expressions of geographical knowledge to students. This knowledge is conceived of by teachers quite differently at times (explored further in chapter nine), but these teachers have very similar beliefs about the expansive scope of geographical knowledge, its empirical basis, and expected correspondence with reality. The nature of geographical knowledge described by these teachers is now explored further through an analysis in relation to Bernsteinian knowledge structures, and the legitimation of their knowledge claims.

9: Geography teachers' subject knowledge

The discussion now directly addresses RQ1: how do teachers describe the nature and scope of geographical knowledge? This question was described above as understanding *descriptions* broadly, including stated propositions, and practical expressions of knowledge. The thesis began by introducing the geography education 'knowledge debate', and conceptualising the subject through social realist theorisations of the recontextualisation of knowledge across fields, by actors. Engaging with Maton's (2014) development of the epistemic-pedagogic device, questions were raised about the structures of knowledge and knowers, and the legitimation of knowledge claims.

An analysis of the nature of the recontextualised knowledge taught in school geography lessons is now presented through social realist concepts of knowledge structures, and the legitimation of knowledge claims. Knowledge-knower relations are considered through the specific example of chief examiners, and I argue that the role of accreditation as a purpose of geography education, particularly at KS4 and 5, may limit students' access to powerful knowledge, restricting the school subject to horizontal discourses.

Against the argument that awarding bodies may play a role in limiting knowledge to horizontal discourses, teachers' disciplined judgement is then suggested to be an important dimension in understanding geographical knowledge in school geography as powerful. Examples of disciplined judgement are also considered in relation to knower-structures, and argued to illustrate a horizontal knower structure, in contrast with the hierarchical relations between chief examiners and others.

9.1: Accreditation as a limit to powerful knowledge

A pair of Gemma's (Town Comprehensive) GCSE lessons were presented above as an example of the power of accreditation in school geography. The first of these lessons was about flooding in Boscastle, and the recontextualisation of knowledge for this lesson was discussed in relation to the model of degrees of recontextualisation, and teachers' disciplined judgement. During this lesson Gemma articulated her critique of statements, based on her reading of a map. I presented this example of disciplined judgement as illustrative of the knowledge-how that I observed teachers practicing; modelling to students aspects of what it means to *do* geography.

As we walked to the first of these lessons, Gemma joked that she had no idea what she was going to do; 'Year 10, right. What are we doing? No idea! I'm running on empty today!' I say she was joking because when we reached the classroom she had two PowerPoints ready, and resources photocopied. The room began to fill up with students; some sitting down and getting books out, others pausing to speak to one another and then being hurried along by Gemma; 'that's it, come in, let's get started. Jonny! Coat off please. Thank you, lovely – let's get started. Ready to start? We've got lots to get through so we've got to be quick'.

Once sat down a student raised his hand: 'Miss, why are we going so fast?' Gemma said they were 'a bit behind the other groups' and so she was pushing them harder than she normally would. The student who asked the question nodded at this, and Gemma continued: 'Today we're getting on to looking at examples, because in your exams you

will need to use examples in your answers' (lesson observation, TC p.3 24/4/14). She then continued, teaching the lesson outlined above (8.1.3).

The following day I nearly slept in, and the traffic getting into school was terrible, so I arrived later than normal. After signing in at reception and collecting my visitors badge I went to the humanities office, which was empty. Gemma was working on the computer in her classroom, Ruth was in her office, and Steve was probably in the staff room; most mornings he came into the humanities office on his way to the staff room, and asked if I wanted to come for a cup of tea. When the first bell sounded Gemma came into the humanities office, and began preparing for her first lesson: 'Year 10 – ahh!' another bell sounded shortly after this, and we went back to her classroom, followed shortly after by her year 10 students. She began this lesson by apologising for yesterday's lesson, which she told them they did not need to have done, because the examination board have changed the case study: 'you do not need to know that information, because you will not be examined on it' (lesson observation, TC p.1 25/4/14). She then continued with the lesson, explaining the new case study that they do need to learn, because they will be examined on it.

The bell went again to signal the end of the lesson, and we went back into the humanities office. Steve came in: 'get in later this morning?!' Um yes, I did... He had come in to the office to see Gemma: 'Right, come and look at this – it's interesting, and it's not flooding in Tewksbury, I promise!' They both left for his classroom (fieldnotes, 25/4/14).

Bernstein defines horizontal knowledge discourses as

> contextually specific and context dependent, embedded in on-going practices, usually with strong affective loading, and directed towards specific, immediate goals, highly relevant to the acquirer in the context of his/her life. (p.159)

For each of these dimensions I now suggest that the powerful role of accreditation in school geography restricts knowledge to primarily horizontal discourses, drawing on evidence gathered throughout the current study, and illustrating the argument using the episode presented above.

Contextually specific and context dependent; the choice of case studies were presented in Gemma's lessons as being dictated by the examination specification, making the knowledge specific to the specification, and primarily dependent on the specification for its legitimacy. This knowledge might also be seen as contextually specific, because many of the sources of this knowledge are specifically designed for this specification. For example: online search terms often used by teachers include the specification (for example, searching for 'edexcel geography Boscatle flooding', rather than the more general 'Boscastle flooding'). Concepts included in examination specifications also seem in some instances to be, if not particular to the specification, then overwhelmingly used in this context (Cf. discussion of the Clark-Fisher model above, and the high instance of school geography specific results from Google searches of the term). There was also a considerable usage of examination specification social media sites, on which teachers share resources they have made specifically for this specification. All of these departments use examination board approved textbooks, in which the definitions of terms provide the standards by which examiners will make judgements. One example of a context-specific term is the defining of 'soft' and 'hard' coastlines at GCSE by the

examination board AQA. The terms soft and hard are used in a general sense by academic geographers, and I have been unable to find any of their references to coastlines as hard or soft. AQA use the terms to refer to hard and soft *rock types*. Students responding to a question about landforms found on 'soft coastlines' in an AQA GCSE geography examination with reference to features made of sand (such as spits) are not awarded any marks. The examination specification's definition of soft/hard is contextually specific and context dependent; it is not transferable to other contexts (even other GCSE geography examination specifications), and so teachers often spoke about the best resources being those that are made for their specification.

Embedded in on-going practices, usually with strong affective loading; Bernstein seems to suggest that the 'on-going' aspect of practices should be considered in contrast to the more objective, and timeless characterisation of vertical discourses. As on-going, horizontal knowledge is needed for tasks, and is a part of these tasks, rather than being independent of these particular uses. The way in which knowledge in school geography is viewed in terms of its use in an examination situation is explored further below. Here, I want to emphasise the strong affective loading that is particularly associated with examinations. For both students and teachers, examinations, and the teaching and learning of knowledge for them might be described as having strong affective loading. On several occasions students were brought into the departmental staff areas (such as the geography office) because they were crying or upset about their performance in an examination, including mock examinations that are only internally marked. Teachers only wished one another 'good luck' when facing a lesson observation, or when students were sitting an examination. An important reason behind Richard's decision to leave

City Academy was the pressure he faced over managing examination entries for multiple subjects.

Directed towards specific, immediate goals, highly relevant to the acquirer in the context of his/her life. Framing knowledge in terms of its use value in an examination may make knowledge specific to that context, and dependent upon it. In the example discussed above, Gemma's year 10 class are told they need to know about this case study because it is on the examination specification; they are told they do not need the other example – and are apologised to for having been taught it – because they will not be examined on it. In another lesson, students were told they 'need to be really quiet and concentrate to understand this – the chances of you getting a question on it are extremely high' (Lesson observation, TC, 19/4/13, period 5), a rationale which all teachers in the current study used at some point, and throughout the year. Examinations and accreditation were used as important justifications of knowledge not only in the revision period preceding the examinations, but throughout KS4/5. Reinforcing performances in examinations were argued above to involve public displays of grades achieved (that is, A*-C) for whole year groups, and for individual students, which also included levels at KS3. The goal of an examination may not be 'immediate', but it is very specific, and has a set date. The extent to which the grades achieved in examinations by students might be said to be 'highly relevant' for their lives may be contended. However, the evidence from the current study is that as a justification of what students needed to do or learn it was highly effective. In all cases where teachers justified lessons or tasks in terms of needing to be done or learnt for an exam, I did not hear a single objection from a student. Instead, they also seemed committed to this narrative, and would themselves

often ask teachers *if we need this for the exam.* Similarly, Tim introduced his observed lesson as being about learning how to answer exam questions; a lesson objective his observer endorsed, with concern only being expressed about how to do this most effectively. Through performance management procedures the high relevance of particular knowledge specific to examination specifications may also be applied to teachers, whose pay and status can be directly linked to the grades achieved by their students.

In the three dimensions of horizontal discourses outlined here (contextually specific, affectively loaded, and aiming at specific goals relevant to individuals' lives), the strong role played by accreditation (examination boards/ specifications) may characterise geographical knowledge in school geography (particularly at KS4/5) as horizontal discourse, limiting access to vertical discourses or powerful knowledge.

9.2: Human/physical as both horizontal and vertical

Having presented an argument that the nature of the role of accreditation (examination boards/ specifications) in school geography may restrict knowledge taught to primarily horizontal discourses, the relationships between human and physical geographies, and vertical and horizontal discourses, are now explored further. In discussing Bernstein's knowledge typologies above I suggested that physical geography, normally associated with the natural sciences, would be expected to have characteristics of vertical discourses, and human geography, normally associated with the social sciences, would be expected to have characteristics of horizontal discourses. I now want to argue that

the geographical knowledge described by the teachers in the current study presents human and physical geographies as having characteristics of both horizontal and vertical knowledges. A simple association of human with horizontal, and physical with vertical does not seem to apply. For example, in the argument made above a topic associated with both physical geography (flooding), and human geography (impacts and responses to flooding) was argued to satisfy Bernstein's description of horizontal discourses because of the role played by accreditation/examination specifications. The argument made here also broadly agrees with Roberts' (2014) analysis of Young's conception of powerful knowledge. Her argument is that human geography in both the school subject and academic discipline includes some aspects of what might be described as powerful knowledge, but that knowledge characterised as 'everyday' is also an integral part of both.

I now argue that a common conception of 'objective facts and definitions' shared by all teachers in the current study includes some characteristics of vertical discourses, which might be seen running across human and physical topics, and is related to the ways in which knowledge claims are legitimated through appeals to empirical evidence.

9.2.1: Vertical discourses / powerful knowledge

Vertical discourses are those which attempt 'to create very general propositions and theories, which integrate knowledge at lower levels...motivated towards greater and greater integrating propositions, operating at more and more abstract levels' (Bernstein 2000, p.161). This knowledge has been equated with powerful knowledge, four

properties of which (systematically revisable; emergent; real; material and social), were discussed above (2.3.1). I now argue that teachers' descriptions of geographical knowledge across human and physical geographies share two of these characteristics; knowledge as emergent, and real. Teachers' practicing of disciplined judgement has at least the potential to introduce students to dimensions of powerful knowledge as systematically revisable, material and social. Aspects of the disconnection between school and academic geography reduce the potential for knowledge in school geography to be systematically revisable in the sense described by Young and Muller because of the type of actors who write examination specifications, resources, and textbooks (that is, people not normally a part of the disciplinary community). The nature of the disconnect between fields in this sense may be found across other subjects/disciplines. For example, in his discussion of Bernstein, Moore (2013) argues that

> teaching physics is not the same thing as *doing* physics - in order to *be* a physicist one must first *become* a physicist and the practice of the former does not necessarily provide the pedagogic paradigm for the latter. The way of *becoming* a something is not the same way as *being* that something when having become it. There are extremely important issues beneath the surface here that Bernstein himself did not address. More generally, and in terms of current debates in the UK, this issue is reflected in the separation between universities and school examination boards with knowledge producers distanced from the reproducers. (p.164)

This statement has the potential to open significant debates, and Moore acknowledges the issues 'beneath the surface' that are not explored by Bernstein. A particularly important issue considered further below is the potential for teachers' disciplined judgements to model powerful knowledge to students. In considering the dichotomy presented by Bernstein (here, in Moore's terms) between *teaching* and *doing* a subject, I argue that the teachers in the current study, at times, offer counter examples. My contention is that teachers' practicing of their subject challenges Bernstein's distinction

between teaching and doing. This argument is discussed after considering the use of 'objective facts and definitions' in relation to the legitimation of knowledge claims through perception and deductive reason.

9.2.2: Objective facts and definitions

The use of objective facts and definitions runs throughout the discussions of teachers and departments in the current study, and might be most obvious in the recontextualisation of knowledge to three or four degrees: facts and propositions removed from their original context and transplanted into a new one. They are inserted into a new context (often a card sort or PowerPoint slide) with no information about their production or previous context. Steve's (HoD, TC) resources for a study of Birmingham illustrate this position, in which the term 'facts' has an important discursive role. He described the resource being not opinion-based, but instead 'very factual I think - y'know, Birmingham has 3 stations in the centre of the city: New Street, Snow Hill and Moor Street. There's not much arguing with those' (Steve, interview 2:48-50). 'Facts' was often prefixed with 'basic', which seems to be associated with the belief in them as unproblematic. Tanya (City Academy) described 'trying to find basic facts' for her students, which seemed to be either numerical data or definitions of key terms; she described finding it 'easier to give them an actual figure'. At times, particularly for A Level lessons she was concerned about sources being biased, but even in these situations she stated that 'if I just need to know what the definition of something is then it doesn't really matter' (Tanya, interview 1:105-109).

Two characteristics of Young and Muller's (2013) definition of powerful knowledge seem to be satisfied by the approaches towards objective facts and definitions of teachers in the current study: knowledge as *emergent,* and *real*. Young and Muller emphasise a notion of 'objective' knowledge as that which is not reducible to its conditions of production. The emergence of powerful knowledge means it is 'produced by social conditions and contexts but cannot be reduced to them' (p.237). Importantly for the present discussion this means such knowledge might be transferred to different contexts, because of the assumption that it transcends them: 'for example, physics is the same everywhere' (p.232). Their use of the term 'real' follows others in critical and social realism, using it against constructivist epistemological accounts which, they argue, are characterised by a scepticism (or 'denial') of reality external to their conceptualisations, leading inevitably to relativism. Young and Muller argue that powerful knowledge is *real*, and the 'test of this reality [is] whether 'the world' answers to knowledge claims' (p.238). The nature of this answering prioritises empirical evidence. There is a strong sense in which the use of objective facts and definitions by teachers in the current study might be described in Young and Muller's terms as emergent and real. Ruth's beliefs in a 'river always being a river,' or in tsunamis being 'the same' at different times are very similar to Young and Muller's conflation of knowledge of processes with the processes themselves; the view that *physics* is the same everywhere. A strong empiricism runs throughout human and physical topics, and in the example of Ruth, physical examples of rivers and tsunamis cited here might be complimented with reference to her characterisation of the Clark-Fisher model – a human geography topic – in 'emergent' terms as existing objectively, and also as being 'real'. That is, it is presented as based on – and answerable to – knowledge from perception. Her characterisation of a human geography topic in these terms is

particularly significant because of the sharp distinction she makes between the areas, and the beliefs she states at other times about the superior objectivity and reliability of physical geography. The strong empiricism is now discussed in terms of perception as legitimation of knowledge claims.

9.3: Perception as legitimation

Perceptual knowledge is that which comes through the senses, and is now argued to act as the most authoritative justification of knowledge in school geography. The teachers in the current study placed considerable importance on empirical evidence, primarily through seeing. Touch, hearing, smelling, and tasting were rarely described as sources or justification of geographical knowledge: similar to Crang's (2003) summary of academic geographers' prioritising of *look-see* methods over those he calls *touchy-feely*. The one exception to this is the use of modelling, either using materials (such as playdough or lego), or physical actions (for example, acting-out tectonic plate boundaries and rainforest canopy structures). In this use of tactile experiences, these teachers offered a similar perspective to Mandy, a teacher in Brooks' (2007) study:

> I like using anything that is touchy or feely...like cutting up oranges and I like making models, because kids get really excited...they tend to reach higher levels of understanding without realising that they're learning. (p.164)

Brooks describes this as an active learning approach, arguing that the teacher is 'able to make examples of abstract concepts accessible to her students' (p.164), which is further explained by Mandy as involving 'always re-lay[ing] things back to the most basic level of their own experience: the knowledge like – let's go and look at the soil erosion on the school field' (p.166). Brooks' focus in analysing this description is on pedagogy, rather

than knowledge; Brooks describes the episode as a 'constructivist approach that builds on what the child already knows and scaffolds his/her learning' (p.166). The categories applied in the current chapter offer a different perspective on their exchange, and reveal the importance of perception as legitimation of knowledge claims. *Looking* at the soil erosion is an interesting phrase, and the knowledge that comes directly from, and is justified by the seeing seems to be based on a correspondence theory of truth, from a position of direct realism. This perspective, with a substantive conception of truth, is very similar to that held by teachers in the current study. Considering the significance of perception (here, *looking*) compliments Brooks' account of pedagogy, but may also create tensions between the epistemological assumptions of direct realism and this constructivist pedagogy. Experiences of students acquiring knowledge through perception first hand were relatively limited; most came either through testimonial accounts or photographs.

9.3.1: Seeing through photographs

Towards the end of one lesson about population distribution in China several photographs were given to students, and projected on the large screen. Gemma asked 'what effect is this?' and then offered several suggestions herself. Student responses and teacher explanations framed the whole-class exchange about these photographs:

> Student: Overcrowding
> Teacher: Yes. How does he look?
> Student: Lonely
> Teacher: Does he look like he's at home?
> Student: No
> Teacher: So, he's in a hospital – lots of children being adopted. What's this one?
> Student: A riot

Teacher: To do with global warming. This man here – what can you tell about the land behind him?
Student: Dry
Teacher: Good word
Student: Pollution
Teacher: Possibly because of the pollution
Student: Maybe a farmer
Teacher: And the land's not good so it's hard to grow crops. What's this big picture here? What might this be showing?
Student: Big buildings
Teacher: The population's growing, so they're having to build more...
(Lesson observation, TC, 16/4/13)

Gemma then gave students two sentence starters to copy and complete:

This picture shows...

This is an effect of overpopulation because...

As the students began, Gemma walked around the room and was asked what one of the photos showed. She responded 'obviously his parents can't afford to look after him, because they've got too many children, and so he's been adopted'. The move from 'possibly because' explanations in the whole class discussion to 'obviously' in the individual setting happened quickly, and may be less to do with the shift in setting ('obviously' and other statements of confidence were also regularly used in whole class discussions), than the progression of the argument imagined by the teacher. The task students worked on positions the photograph as *showing,* in an unqualified way, effects of overpopulation. Several photographs have been discussed, and have been *shown* to also contribute to a culmination of evidence creating a narrative about overpopulation in China. The photographs have *shown* this to be the case. The level of inference from the photographs is considerable, and they are treated as rich sources of information

that *show* places and situations. The eyewitness is an important source of knowledge (Figure 97).

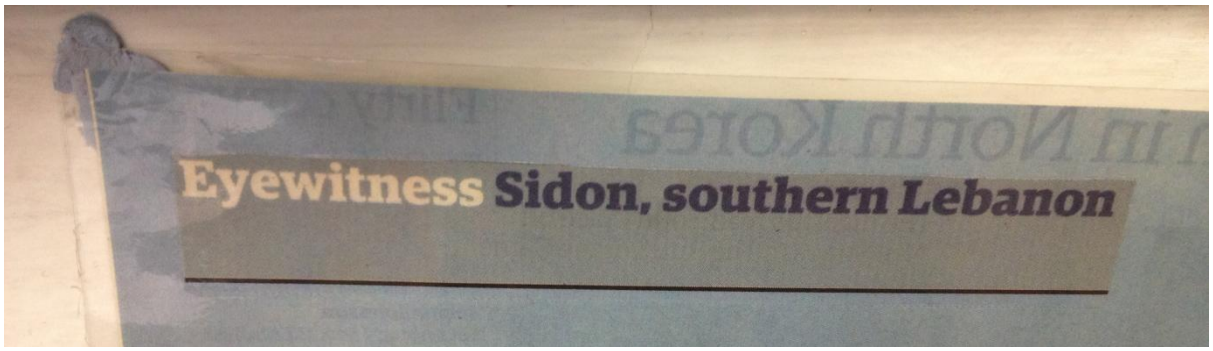


Figure 97. 'Eyewitness' A3 photograph from a national newspaper displayed on a classroom wall in Town Comprehensive

Debates over realism, and scepticism about the extent to which our senses can be trusted are not raised by these teachers, who instead assume a position of direct realism, or possibly a theory of *appearing* (Alston 1990). A position of direct correspondence between what is seen and what is known rejects externalist theories of perception which require additional conditions outside of the subject in order to gain knowledge from the experience. Across all lessons observed the questions asked of photographs were primarily about what they showed, rather than anything from other possible positions, such as critical perspectives (whose stance does this photograph reveal?). The ways in which questions were publicly asked by teachers of the resources they presented to students is now considered as a part of their disciplined judgement.

9.4: Disciplined judgement

I have drawn on Stemhagen et al.'s (2013) use of the term disciplined judgement, which they associate with Young's notion of powerful knowledge, arguing that

> rather than seeing [powerful] knowledge as a static entity that the learner acquires, or fails to acquire, we believe that disciplined judgement can be a tool to aid educators whose goal is to help prepare their students for a place at the table of reasoned debate. (p.58)

I now present the ways in which disciplined judgement might be understood in relation to dimensions of vertical/powerful knowledge (as systematically revisable, material and social). I also argue that practicing disciplined judgement might be seen as an important site for understanding (and developing) the relationship between academic and school geography.

Recontextualisation is an important context for considering teachers' disciplined judgements. In seeking to develop research through their concept of disciplined judgement, Stemhagen et al. might find that recontextualisation expands the area of interest from the classroom (the source of their current data) to also include judgements made prior to lessons. In the current study these judgements might be seen in the terms used by the HoD in Town Comprehensive: 'skills of enquiry, and the skills of finding out information and then using that information then I think that those skills are as important - if not more important - than geographical knowledge' (Steve, interview 1:89). While an argument might be made that the skills Steve describes are an important aspect of subject knowledge (knowledge-how), he is cited here to emphasise the importance that these teachers also believe should be placed on their recontextualising knowledge work.

Examples of teachers' disciplined judgements during lessons were offered above, including Hugh's critique of tsunami images (8.1.2), and Gemma's critique of

propositions in relation to a map (8.1.3; 9.1). Many other acts of these teachers also evidence disciplined judgements, including; questions asked of students, the structure of courses, wall displays, and many other interactions during and outside of formal lessons. These regularly-made judgements, such as choosing between the wide range of information available (for example, Steve's rapidly changing twitter feed offering a moving selection of articles he either includes or excludes) were often seen as legitimate by these teachers because of their identity or status; they felt able to make such choices based on having *become* geographers. There are some senses in which this becoming seems similar to the development of 'gaze', associated with hierarchical knower structures. However, it is significant that teachers explained their reasoning about resources out-loud to students, often with the effect of rejecting purely testimonial accounts, and thus prioritising empirically legitimated claims against those legitimated by appeals to particular knowers.

In the most explicit examples (tsunamis, rivers, and maps) presented above, the judgements teachers make revise claims that were previously accepted as true. In the case of the tsunamis, the students previously accepted its scale; Hugh previously accepted the summary of river processes; and Gemma's statements had been used and accepted previously by her, other classes, and other teachers. In each situation at least some of the disciplined judging was publicly done, through which students might be introduced to the ways in which geographical knowledge is revisable, material and social (Young & Muller 2013). For these teachers, the geographical knowledge that students are being introduced to through these judgements uses deductive reason as legitimation, and while the teachers' testimony plays an important role, the students are

encouraged to see perception as the most authoritative legitimation of knowledge. Empirical evidence, whether communicated through photographs (which have not been 'photoshopped'), maps, or their own first hand perception (such as their local river), is shown through these teachers' disciplined judgements as having the potential to revise claims even they, or other authoritative figures (such as textbook and commercial geography resource authors) have previously legitimated through testimony.

9.5: Testimony

Testimonial knowledge has been suggested to be widespread (Moran 2013; Harris 2002), and this was true of the geography teachers and departments analysed in the current study, for whom testimony was a vital source and justification of subject knowledge. Different testifiers construct geographical knowledge for the school subject, functioning in different ways at different degrees of recontextualisation. Testimonial knowledge might be understood from the perspective of testimonial chains outlined by Goldberg (2011), who places particular emphasis on the monitoring and policing of such chains, arguing that lively and robust debate about testimonial knowledge is important. An argument is made below that Chief Examiners play multiple roles in the testimonial chain, expressed in terms of the rules, fields and agents of Bernstein's pedagogic device: chief examiners as Prophet and Priest. Before exploring this argument further, the unknown testifier is considered.

9.5.1: The unknown testifier

During a lesson in Town Comprehensive four options were given to students. Option one is shown in Figure 98.

Option 1 – **Move People out of the populated areas**
"We know that China's river valleys and coastal regions have a high population density, so why not take pressure off those areas by moving people away? We could move them to the more remote parts of the country like the deserts or the mountains. Here they could have a new start and receive some money and facilities to help them from the government. This would mean less stress on the busy areas, and more development of other areas of the country."

Figure 98. Card presented to students, Lesson observation, TC, 23/4/13, period 3.

In this example, the 'we' is an unknown testifier; a common character in the lessons I observed. In presenting students with information about 'The Smiths', one teacher explained to the class that they had 'chosen the name Smiths not because they're a real family but because it's a typical, everyday family' (lesson observation, 26/4/13, TC, period 4). Students read statements about the Smiths, written in the first person. The unknown testifier is an intriguing source and justification of knowledge because of the importance these teachers placed on the authorship or origins of knowledge: ideally they want knowledge from reputable sources, rather than, in Richard's (HoD CA) terms, just something from a guy in his shed with a blog. In the case of the Smiths, their testimony about life in their town was explicitly presented as being a construction of a 'typical, everyday family'. What this might mean, or how typical/everyday are judged are issues that deserve attention, although there is not space to do so here. In the example of options to manage China's population, the testifier is more ambiguous; some statements were explicitly identified with potentially real people (such as a representative from the Chinese government). The speech marks around the text, and the association with real places, issues, and roles, may lead to a potential blurring of

distinctions between testifiers as real or 'made-up' people. Photographs of real people were often used, with speech bubbles attributing a testimony to them (Figure 99).



Figure 99. PowerPoint slide, Beach Academy VSA

Here, the discipline of geography offers considerable theoretical resources through which to consider construction and representation; concepts that seem unfamiliar to the school subject. The unproblematic presentation of unknown testifiers (whose views are frequently contrasted against one another, but whose individual constructions are themselves untouched) stands in considerable tension against the views strongly articulated by all the teachers in the current study that geographical knowledge is about the real world, and reflects reality; a concept considered above in relation to Bernsteinian vertical knowledge structures.

9.5.2: The Clark-Fisher model

After joking with Steve (TC) in the humanities office about having to teach 'more boring human geography crap', Ruth went to teach a GCSE lesson (19/4/13) about the Clark-Fisher model. I watched her Google 'Clark Fisher Model' before this lesson. Eight of the ten links on the first page of results were either school websites, or those designed specifically for GCSE geography (including BBC Bitesize, and TC's examination board website). She chose to use a PowerPoint (Figure 100) downloaded from the examination board website, showing the class a graph of percentages of industrial types (primary, secondary, tertiary, and quaternary).

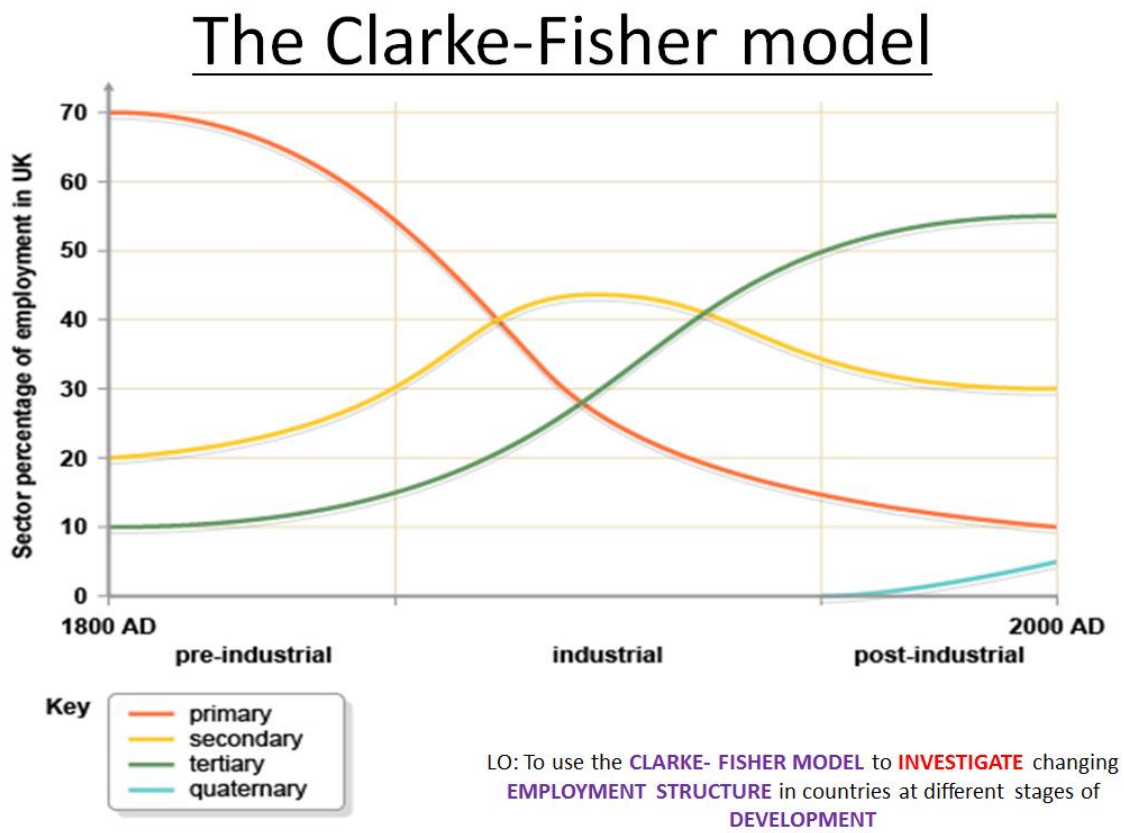


Figure 100. Clark-Fisher model PowerPoint slide

Ruth displayed the PowerPoint, then told (testified to) the students 'I'm not making up new ideas in geography; I'm telling you things that already exist, that I know and you don't know'. Fascinatingly, this was to illustrate the type of industry she classifies herself as working in; '[teaching's] not quaternary, as quaternary would be making up new ideas (lesson observation, Ruth, TC, 19/4/13, p.1).

The testimonial chain here moves from Clark and Fisher, to the author of the examination specification PowerPoint, and from them, through Ruth, to the students. There is also a sense in which the testimony is passed from the author straight to the students. In the case of Clark and Fisher, reviews of their work at the time of original publication raise relevant questions. For example, Rothbarth (1941) argued that

> Mr Clark feels very strongly the limitations of long chains of abstract reasoning, but it is doubtful whether he is aware to the same extent of the great inherent difficulties of inductive inference in a subject like economics where one's only experiments are the substitute experiments of statistical analysis and where statistical analysis cannot be a very powerful tool owing to the great heterogeneity – in space and time – of our material. (p.120)

Rothbarth opens a discussion about the relationship between abstract (which I have referred to as deductive) reason and perception, and the uncertainty of the conclusions that might be drawn from either deductive reason – a point he believes Clark agrees with – or statistical analysis. His description of Clark's text (amid considerable praise) as 'very annoying' (p.120) comes from what he argues to be an under-explained jump from empirical data about national income and expenditure to wide ranging conclusions on a global scale. The Clark-Fisher model utilises the division of economic activity (primary, secondary, tertiary) suggested by Clark. The Clark-Fisher model develops from, and utilises, these categories through deductive (from principles about the nature of development in terms of employment structure), and inductive reasoning (from

empirical data offering comparisons within and between countries across time). The purpose of discussing the construction of their model is to illustrate: the contested nature of disciplinary knowledge (the categories may 'exist', but not un-problematically); the use of multiple sources of knowledge in the model's production, which might then be contrasted against its more 'objective' usage – free from discussion of its origin/production – in the geography classroom; and the reliance in school geography on disciplines other than geography (here, economics).

Ruth's presentation of the model and its categories as something that already exists *out there* adds additional authority to it; the 'teacher as testifier' (Moran 2013, p.233), stating things about the resource that students are encouraged to believe. She is also testifying alongside others; to Clark and Fisher, whose names are canonised in the examination specification textbook and PowerPoint, and to the testimony of the textbook author. If the class were to test the model against empirical data, they would still be relying on the testimony of other sources (often Wikipedia or the CIA World Factbook): the testimonial chain may be added to, but it does not seem possible, at least in terms of this type of model, to avoid. Although much of the literature about testimonial knowledge involves consideration of the character of the testifier, this issue was rarely raised by teachers or students. The teachers seemed to be believed by the students, and the teachers seemed to believe (although one important exception is discussed below) the sources they present to students. Teachers cosmetically alter resources held on the VSAs, but I did not see the substantive content of the resources being critiqued or changed. A considerable degree of trust exists between teachers, both within departments and also to those posting in online communities such as Nings. Resources provided by the examination board were similarly used with the pragmatic

judgement that the information provided by them was, by definition, right for that situation. Students will be judged by the examination board's terms and definitions, and so (assuming the consistent application of criterion provided from examination specifications, approved textbooks, and through to mark schemes) there are no questions to be raised about either their framing of problems in *these* terms, or their definitions of these terms. Chief examiners thus hold multiple, powerful roles.

9.6: Chief examiners as Prophet and Priest

Chief examiners were widely believed to be geographers, who are *probably* involved in geographical research, and are *certainly* experts. The teachers in the current study believed these things about the chief examiners based almost exclusively on their status as chief examiners; when pushed they *hoped* and *assumed* these things.

Bernstein's pedagogic device was presented above as involving rules, fields, agents, and sites. Rules (or logics) move from distributive, to recontextualising (the main focus of the current study), and evaluative. Relations between these rules are foregrounded by the importance attributed to chief examiners. Agents involved in the pedagogic device are positioned by Bernstein in relation to those in the religious field: Prophet / Producers; Priest / Reproducers; Laity / Acquirers (Bernstein 2000, p.37). I want to suggest here that chief examiners in school geography assume the positions of both Prophet and Priest, being actively involved in the construction of distributive, recontextualising, and evaluative rules (Table 29). Their power may result in something of a collapsing of the distinction between the ORF and the PRF at KS4/5, providing a striking counter-example to the argument made above that knowledge in

school geography is primarily characterised by a horizontal knower structure. The dominance of one agent in the device is significant in addressing Bernstein's question: whose regulator, what consciousness and for whom? (p.37).

Rules	Agents	Processes
Distributive	Chief examiner	Examination specification list of content. Approved textbook, PowerPoints, and resources.
Recontextualising	Chief examiner (school teachers)	Examination specification list of content displayed in department. Approved textbook, PowerPoint and resources delivered.
Evaluative	Chief examiner (school teachers, school students)	Examination specification content and definitions examined by examiners standardised and monitored by chief examiners.

Table 29. Chief Examiners and the pedagogic device

Arguing that chief examiners, as representatives of examination specifications/boards, play a significant role in the pedagogic device also offers a revision to Bernstein's (2000) suggestion that

> the dominant perspective within any transmission may be a function of the power relations among the teachers, or of pressure from groups of acquirers, or, particularly today, a function of indirect and direct pressures of the market or the state itself. (p.164)

The evidence offered through analysis of the departments in the current study would place examination boards in addition to (or replacing) the state in Bernstein's account; their relation to the market is complex (Ball 2012).

Testimonial accounts – whether from chief examiners or others – were subsequently legitimated by teachers through deductive reason. Discussing the role of deductive reason as legitimation of knowledge claims adds to the analysis presented above of testimony, and serves to illustrate something of the complexity of knowledge in school

geography: considering it from different perspectives (in this thesis, primarily knowers, knowledge structures and legitimation of knowledge claims) reveals different dimensions, and areas of tension.

9.7: Deductive reason

Geography often self-defines itself according to its respect for empirical evidence, arguing for the

> Fundamental importance of real-world experience over against the 'authority' of the Greeks. Whether or not there was a southern landmass, or whether the earth was flat, or whether the Atlantic was navigable were questions that could not be resolved by rereading Aristotle; they could only be answered by honest-to-goodness experience. The fact that geography has always been a *practical* science is thus of central significance in its history. (Livingstone 1992, p.33)

There are examples throughout this thesis of teachers *showing*, and inducting students into disciplines of *looking* and *seeing* what is there. Perception takes priority in the legitimation of knowledge for these geography teachers, who seem to agree with Livingstone's summary of early geographers: their questions are answered by 'honest-to-goodness experience', rather than by 'rereading Aristotle'. However, data generated through observations alongside more formal interviews presents a tension within teachers' conceptions of knowledge at this point. Deductive reason is not described by them as source of knowledge, or as a mode of legitimation; but it is often used by them to make and substantiate knowledge claims to students. Deductive reason plays an important role in these teachers' explanation and justification of concepts, based on what might be described in Weber's (1949) terms as ideal types. For Weber,

> whatever the content of the ideal-type…it has only one function in an empirical investigation. Its function is the comparison with empirical reality in order to establish its divergences or similarities, to describe them with the most unambiguously intelligible concepts, and to understand and explain them causally. (p.43)

Teachers disagreed on the relationship between models and the processes they describe; for some teachers the model and the processes the model describes are collapsed into the same thing, whereas for others they are kept distinct because the model can never actually be found empirically. This latter position is most similar to Weber's:

> An ideal type is formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sided emphasized viewpoints into a unified analytical construct (Gedankenbild). In its conceptual purity, this mental construct (Gedankenbild) can-not be found empirically anywhere in reality. It is a utopia. (p.43)

Hugh's critique of a model of river processes offers one example of a teacher's public deliberation about the relationship between a model and the processes it attempts to describe.

9.7.1: River processes

Hugh's year nine class were beginning their revision of 'Water on the Land'. Pam (a PGCE student) planned part of the lesson, and Hugh began by writing the title and aims of the lesson on a white board (Figure 101; right hand board).

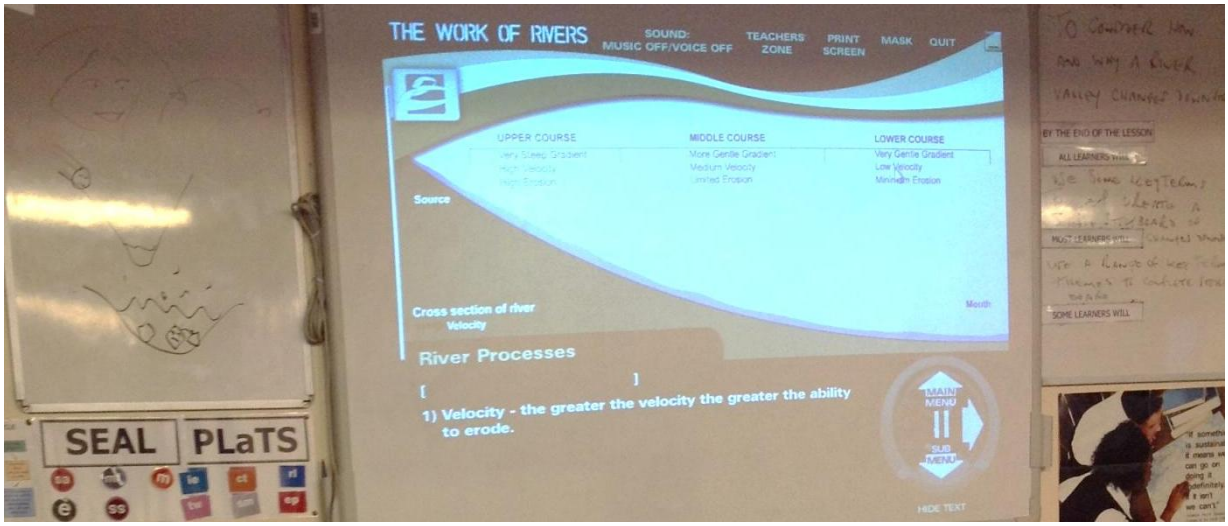


Figure 101. Boards at the front on Hugh's classroom

As Hugh wrote on the board he sent Pam to photocopy A3 sheets with a mind map summarising the topic (the mind maps were a hand-drawn commercial resource). The students were then given these A3 sheets, read them, and identified areas to work on. Photocopied pages from a textbook (Figure 102) were then passed around the class, and students were asked to divide a double page in their exercise books into three. These sections were to be used to illustrate and explain three sections of a river course ('upper', 'middle', and 'lower'). Pam used the commercial software (previously purchased by Hugh) to explain some of the key concepts.

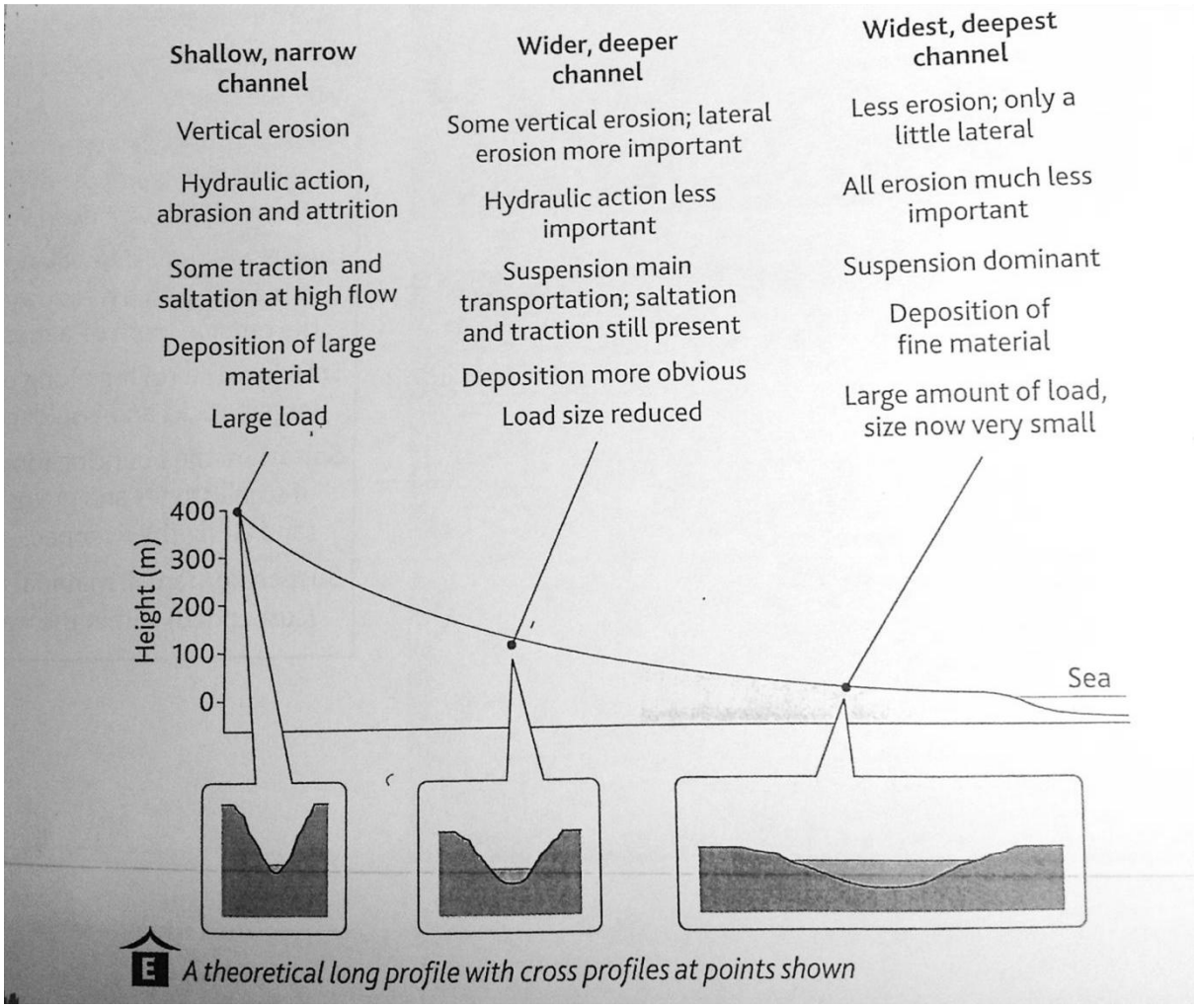


Figure 102. Section of photocopied textbook page

During Pam's explanation she emphasised a proposition stated on the PowerPoint:

Velocity: the greater the velocity, the greater the ability to erode.

Hugh looked perplexed. He had shown this slide to many classes. On this occasion, with Pam presenting it, he looked unsure. Not seeing his expression, she continued by recalling a brief deductive argument. The argument was about changes in river courses, and was drawn from the information presented on the PowerPoint, and textbook:

1. Steeper gradient = higher velocity

2. Higher velocity = higher erosion

3. Rivers are steepest in the upper course

4. Therefore, erosion is greatest in the upper course.

She stated the argument as being that as (1), (2), and (3) are true, then (4) is a necessary conclusion. The internal logic of the argument seems to be strong, and the concept it presents seemed to be a relatively easy one for the students to grasp. Their neatly divided pages could then move through changes in river course, showing the gradient reducing, leading to a lower velocity of discharge, and the resultant lower rates of erosion.

Hugh still appeared to be deep in thought. 'That's not right, is it?' He repeated the argument a few times (to me, at the side of the room, out of earshot of Pam and the students). 'It can't be right, can it, that the biggest part of the river – at the mouth – causes the lowest levels of erosion'. I said that it didn't sound right, and I also tried to recall the undergraduate fluvial geography I had studied. Hugh then exclaimed *hydraulic radius!* This time a little louder, attracting Pam's attention. The students seemed less interested. Hugh found an old A Level text book (Figure 103), and quickly confirmed that the argument of the GCSE textbook, and PowerPoint, was incorrect. Neither mentions hydraulic radius, a term referring to the amount of water in contact with the sides and bed of the river relative to the volume of water carried. A lower hydraulic radius (found in the upper course) means that friction is higher, and, therefore, velocity is lower.

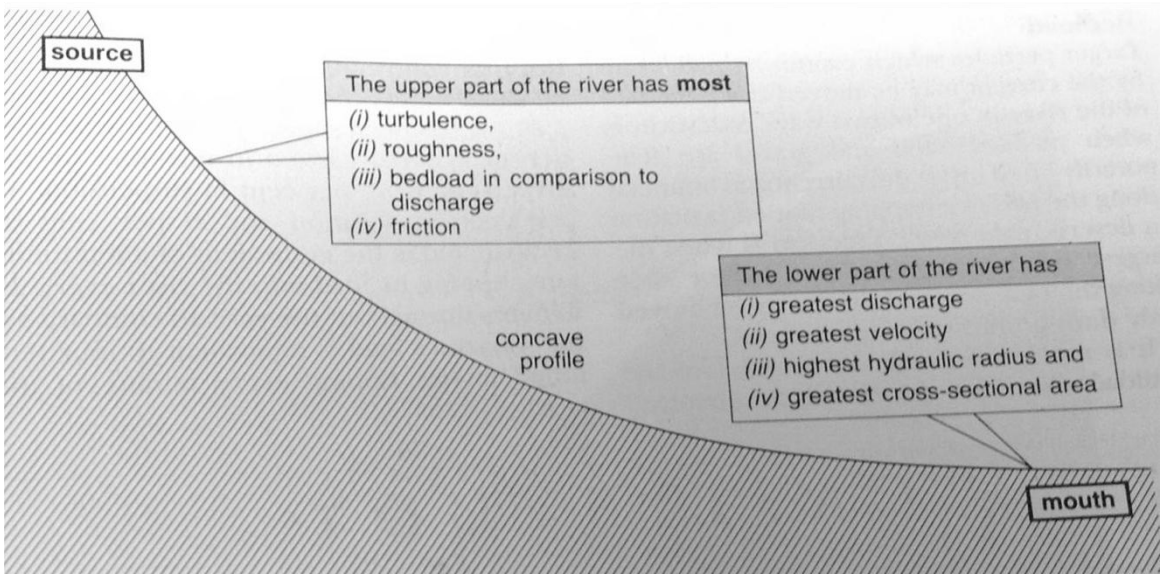


Figure 103. Diagram from A Level textbook

The argument presented by Pam (and previously, using the same resources, by Hugh) was then qualified by Hugh:

1. (All other things being equal) Steeper gradient = higher velocity

2. (All other things being equal) Higher velocity = higher erosion

4. Lower hydraulic radius = lower velocity

5. Rivers are steepest in the upper course

6. Hydraulic radius has a greater effect on velocity than gradient

7. Although (5), because of (6), rivers (normally) have a higher velocity in the lower course

8. Erosion is, therefore, often highest in the lower course

However, as soon as this qualified and extended argument had been made, Hugh further questioned it. Thinking aloud, he asked if erosion really was directly related to velocity. He questioned his qualification of (2): in describing three different sections of a river all

other things are by definition not equal. Hydraulic radius always changes between sections. Still thinking out-loud, he asked what the relationship between hydraulic radius and erosion might be. So, we needed to know the effect sizes of hydraulic radius and gradient in relation to velocity and erosion. The beginnings of an investigation emerged as Hugh outlined the different data that would need to be gathered. His experiences of designing and carrying out research, derived from the academic discipline, were quickly put to work.

'What are you going to tell the students?' I asked. 'Um, not sure – probably just mention that it's a simplification or something'. Hugh went to the front of the class and got the students' attention. He told them it was just a model – like a simplification – and in reality we know that rivers aren't like this. 'They're more complex than this, and friction is a big thing that we've left out here'. He then elicited empirical evidence from the students about the river near the school, asking where they thought it was fastest, and slowest; where it caused most erosion, and least. He summarised the students' answers, using them to question their models. 'Anyway, carry on', and he came and sat down.

Hugh's questioning of these resources, and his thinking out-loud about them have been presented here in some detail in order to provide an example of the kinds of ongoing, situated judgements and reasoning teachers carried out. This example shows Hugh drawing on his understandings of the academic discipline of geography substantively, and methodologically. His substantive knowledge of academic geography was used to question the tight logic of the explanation that had been given to students. He knew the conclusion was wrong because of the research he had carried out on fluvial processes.

As he reasoned through the argument he recalled other aspects of his knowledge, and introduced a new term (hydraulic radius). In order to explore the argument further, Hugh drew on his knowledge of the methodological approaches of academic geography. Listing the kinds of data that would need to be gathered, in very little time he had outlined an empirical study that might answer the questions raised.

Perception, testimony, and deductive reason seem most relevant to the current discussion of knowers, knowledge structures, and legitimation of knowledge claims. In addition, two further categories of legitimation also arose from the analysis: memory, and introspection. For the benefit of future research, possibly with a more specific interest in the legitimation of knowledge claims, a summary of these two further modes are included in appendix 12.

9.8 Conclusion to chapter nine

This chapter has offered a discussion of teachers' descriptions of the nature and scope of knowledge in secondary school geography lessons. This recontextualised knowledge has been analysed in social realist terms of knowledge and knower structures, and the legitimation of knowledge claims. The picture of knowledge in secondary school geography presented in these accounts is complex. It is also important to acknowledge the extent to which multiple and overlapping sources and justifications are used, similar to Harris's (2002) discussion which focuses on trust in testimonial accounts:

> the temptation to dichotomise the two sources – to assume that information comes either from first-hand observation or from testimony may be a misleading

> idealisation. In practice, information about a given event may be taken from both sources and mentally intertwined. (p.325)

Mentally intertwined is significant. Attributions of authorship have been shown to shift, and teachers emphasise testimony, deductive reason, and perception in various ways; canonical models (such as the Clark-Fisher) being an example of something assumed to have an empirical basis, but which may actually rely on testimony, or be derived from a priori positions. Similarly, propositions stated on PowerPoints and in textbooks are in part testimonial, rather than from deductive reason, because of the claim that these things have been seen; these statements represent what has been gained through perception. Who originally gathered the empirical evidence is not stated, and there is ambiguity about the relations between such conceptual models and empirical data. The frequent use of unknown testifiers further complicates these issues.

There are tensions within the views held by each teacher, including the importance given to – and hierarchy of - testimony, deductive reason, and perception: testimonial accounts are less authoritative than those from deductive reason or perception, and knowledge from perception is most authoritative. An important tension within teachers' descriptions of knowledge is the widespread belief in a strong empiricism, which is held against a background of widespread reliance on testimony, the most problematic aspects of which have been argued to be the unknown testifier, and the chief examiner as testifier. One function of accreditation may, in these situations, be to limit the knowledge taught in school geography from being, in Young's terms, powerful knowledge.

I suggested that the making-public of teachers' decision making processes – their disciplined judgements – has the potential to introduce students to powerful knowledge. Dimensions of powerful knowledge were analysed against examples of disciplined judgement; practices that have the potential to give students access to powerful knowledge which is intrinsically linked to the discipline, even if the resources they are presented with (such as textbooks) may be rightly criticised as disconnected from the discipline.

10: Conclusions, limitations and recommendations

I began this thesis by describing Richard and Claire's journeys from City Academy's geography office to their classrooms, where they faced the question *what knowledge should I teach?* Positioning the current study as a part of the geography education research knowledge debate, I introduced literature surrounding teachers' conceptions of geography, and argued that the geography education knowledge debate is at an emergent stage. A broad discussion of geography teachers' subject knowledge was presented, and an argument was made that an exploratory, descriptive account was appropriate for researching subject knowledge. Rich, descriptive accounts of three secondary school geography departments were then presented (chapters five, six, and seven). These accounts were presented in the spirit suggested by Stenhouse (1980), providing cases with enough detail to be useful for others to consider, reflect on, and draw their own conclusions from. I tried to avoid stating, particularly at that point, evaluative conclusions about departmental cultures, so that the portrayals of them might preserve something of the complexity, contradictions, and uncertainties of both departmental space-times, and the ways individual teachers describe geographical knowledge. Chapters five, six, and seven thus provide an account that acts as a basis for, and adds detail to, the more theoretical discussions developed in chapters eight and nine. The following concluding discussion provides responses to each of the research questions, considers limitations to the study, and then offers suggestions for further research.

10.1: RQ1. How do teachers describe the nature and scope of geographical knowledge?

The teachers in the current study describe geographical knowledge in multiple and complex ways. This conclusion stands against the conclusions of some existing research on geography teachers' conceptions of the subject. By multiple and complex I mean that there are differences within and between individuals, and departments, and also that analysis of knowledge might be undertaken from different perspectives (such as its legitimation, structure, and relations to different actors).

Individual teachers have strongly held beliefs about geographical knowledge, which are in many cases related to earlier experiences, including those as a child, a student at school, and university. These perspectives on geography are an important part of teachers' location within departments; teachers position themselves, and are positioned in relation to others in the department. Areas of subject knowledge 'strength' are reinforced, and within-department identity politics may be an important aspect of teachers' continuing engagements with geographical knowledge. It is significant that in Town Comprehensive, the one department where teachers are intentionally allocated areas of 'weakness' to write schemes of work as part of their CPD, very strong self- and other- designations of identities (as human/physical) continued to exist. This is significant because the policy has been enacted for the past five years, and so might have been expected to reduce teachers' strong identification with particular areas. Although this study offers contrary evidence to some of Alkis' (2009) and Alexandre's (2009) claims, including their conclusion that teachers contribute to the disconnect between school and academic geography, it also supports their basic contention that

teachers' experiences when they were students in school acts as a strong influence on their current teaching of the subject.

Teachers' descriptions of geographical knowledge are complex in that the same presentation of knowledge may be interpreted in very different ways. For example, Gemma's year 10 lesson on flooding was considered in relation to the regulative function of examination specifications; as an example of two degrees of recontextualisation; as part of the argument that the role of accreditation may limit geographical knowledge to horizontal discourses, restricting students from accessing powerful knowledge; but then also as an example of teachers' disciplined judgement, which was argued to share characteristics of vertical discourses / powerful knowledge. From any of these positions, making an evaluative judgement about the teacher's subject knowledge would be highly contestable. A methodological implication of the complexity of analysing teachers' knowledge work is similar to Hopwood's (2006) argument that, in his case, pupils' conceptions of geography were more complex than existing literature suggested. He argues that critiques of pupils' conceptions as shallow ought to be redirected towards the methodologies of the studies on which the judgements are based. Similarly, the multiple perspectives the teachers in the current study offer on geographical knowledge, including areas in which they have considerable expertise, suggests that further research is needed into geography teachers' subject knowledge. It does not seem possible, on the basis of the relatively in-depth research I have presented, to draw the conclusion that teachers' conceptions of the subject are 'a concern' (Cf. Walford, 1996). Areas have been suggested around which further discussion might be stimulated, such as the lack of attention to critical perspectives, and

the problematic dichotomy between fact and opinion. However, the teachers in the current study have been shown to have highly complex conceptions of geographical knowledge. Methodologically, the exercise of mapping areas of subject knowledge also provides a powerful argument against judging teachers' conceptions on the basis of one relatively short data generation method. The differences between maps were significant, but when compared with these teachers' lessons, and their verbal and other explanations of geographical knowledge, it is apparent that a simple map cannot be equated with simplistic understanding. These maps did, however, reveal interesting aspects of these teachers' descriptions of geographical knowledge, relating in various ways with their geographical experiences and other descriptions of the subject. That all maps were unbounded also presented an interesting contrast against the English teachers presented by Ellis (many of whom enclosed their map), and may illustrate the geography teachers' shared beliefs in the expansiveness of geographical knowledge; as something unrestricted, and potentially including any topics of inquiry. Identity politics, including within-school competition for students to choose optional subjects forms a part of this discourse, with similarities to the geography department described by Childs et al. (2013).

How different topics might be studied in geography, or on what basis knowledge claims are legitimated, were shown to be contested issues. The discussion of deductive reason, testimony, and perception suggests that, amid significant epistemological differences, these teachers share striking commonalities in their beliefs about hierarchically related functions of sources and justifications of knowledge. Geographical knowledge is described by all of these teachers as based on and justified by a strong empiricism.

Secondary to perceptual knowledge are justifications using deductive reason, and, below that, knowledge from testimony, although in practice testimonial knowledge has been argued to play a very important role that is perhaps largely unappreciated (and unproblematised; I gave attention to the unknown testifier and the nature of Chief Examiners' testimony). Memory and introspection had a different function to these other sources and justifications, although they did still play a role in the teachers' descriptions of geographical knowledge, and students were often asked to remember new information, recall knowledge previously learnt (most lessons started in this way), or to reflect on their own introspective responses to stimuli.

The most significant findings in relation to on-going discussion about powerful knowledge (Bernstein's vertical discourses) have been suggested to be the role played by examination specifications, and the importance of teachers' disciplined judgements. Accreditation was argued to restrict knowledge taught to students as horizontal discourse, limiting the extent to which it might be considered to be powerful knowledge (Young & Muller 2013). Disciplined judgements are considered further below, and are argued to be an important aspect of the relationship between school and academic geography, including dimensions of powerful knowledge as, in particular, something systematically revisable.

10.2: RQ2: What recontextualising principles do teachers enact?

Findings from the departments studied suggest that recontextualising principles are differentiated according to Key Stage. The NC (ORF) seems to be of little importance to

these departments, whose implementation of it supports Ball and Rowe's (1992, p.99) position that KS3 provision is 'driven by serendipity, ad hocery, chaos and the minimum planning that such circumstances allow'. The findings of the current study might also, in relation to the NC, go a step further than Ball and Rowe. They argue for a view of the National Curriculum not as a text implemented uniformly, but as a working document with multiple interpretations. The further step suggested here is to question the extent to which it is working or being interpreted; in the case of these departments at least, it might be described as a sleeping document. There was evidence of its occasional use in auditing, where it was described in static terms as something given, against which content might be checked; the response to such audits in these particular departments being to 'add in' three to four lessons about the EU (an area of study these teachers then omitted from their own maps of areas of subject knowledge). There were significant differences between the schemes of work (SoW) held by each department. At Town Comprehensive teachers' recontextualising principles were tightly controlled by the SoW, with all teachers seeming to teach very similar lessons using the same resources for the same tasks at the same time of the year. The high regularity and temporal clustering of editing times shown through analysis of their VSA was striking, and stands in sharp contrast to the VSAs and SoW of City or Beach Academy. In both of these schools teachers had considerable autonomy at KS3, described by them both positively and negatively. There are moves in both of these departments by newer members to impose structures similar to that seem in Town Comprehensive; structures that seem to be examples of practices brought in from other similar schools.

The contrast between the role played by the NC at KS3 and the regulatory function of examination specifications at KS4/5 has been argued to be substantial. At KS4/5 examination specifications play an important role in teachers' recontextualising principles, with topics being studied, specific case studies being chosen, and resources used because they are on the examination board's detailed content list, have been written or approved by Chief Examiners, or by other teachers teaching to the same specification.

10.2.1: RQ2a: What do teachers recontextualise into the content of their school geography lessons?

Teachers' enactments of recontextualising principles have been presented as situated, being carried out in the space-times of working in these departments, with significant dimensions including the busyness of these teachers' working days, and the importance of the convenience with which resources might be accessed; the extent to which resources need to be recontextualised (one degree is preferable; again, this takes less time); their relevance to the scheme of work or examination specification; and their potential to stimulate *these* students in *this* class.

Considerable use was made by teachers of departmental VSAs, and Google searches. Both play important roles in these teachers' journeys for knowledge. In relation to Google, terms were often used to narrow searches to 'school geography' or their examination specification, resulting in teachers often accessing resources already recontextualised for the school subject. In these cases teachers often found PowerPoints ready to present to their students, or worksheets and card sorts ready to use with their classes (even more so in the case of VSAs), which were occasionally

complemented with articles from news media outlets. The extent to which teachers used news sources varies considerably (although all news sources were accessed online), with some occasionally accessing articles when teaching a new topic, and others curating articles from news apps on their smart phones every morning before school.

Teachers discussed the role of different types of online sources, citing agreement between websites as a factor enhancing their trustworthiness. Dichotomous notions of biased / unbiased were applied to websites, and there was considerable engagement with and reflection upon more participatory media such as Wikipedia and Twitter. Social media sites such as a Nings were also used; teachers joined groups specifically established for their examination specification.

Textbooks held a contentious position, reflecting tensions between these teachers' desires for accessibility and relevance - the textbooks are right on their desks, and are directly relevant to their specification - and their highly negative descriptions of textbooks. Identity politics surround the use of textbooks, which are seen as old-fashioned and boring: these teachers have problems with the *image* of textbooks, and not with the substantive content, on which they place considerable trust.

10.2.2: RQ2b: Through what processes do teachers recontextualise knowledge?

Each of the teachers recontextualise knowledge in different ways, with different approaches often related to perceptions about what is relevant and accessible to

students. Recontextualising processes are multi-layered, partly because teachers recontextualise knowledge by applying other knowledge that is now heavily recontextualised (at five degrees), and a part of their embodied subject knowledge. That is, teachers' subject knowledge is, in part, knowledge-how to recontextualise knowledge. A model of degrees of recontextualisation was offered in chapter eight, presenting a continuum between one (less) to five (more) degrees of recontextualisation (Figure 104).

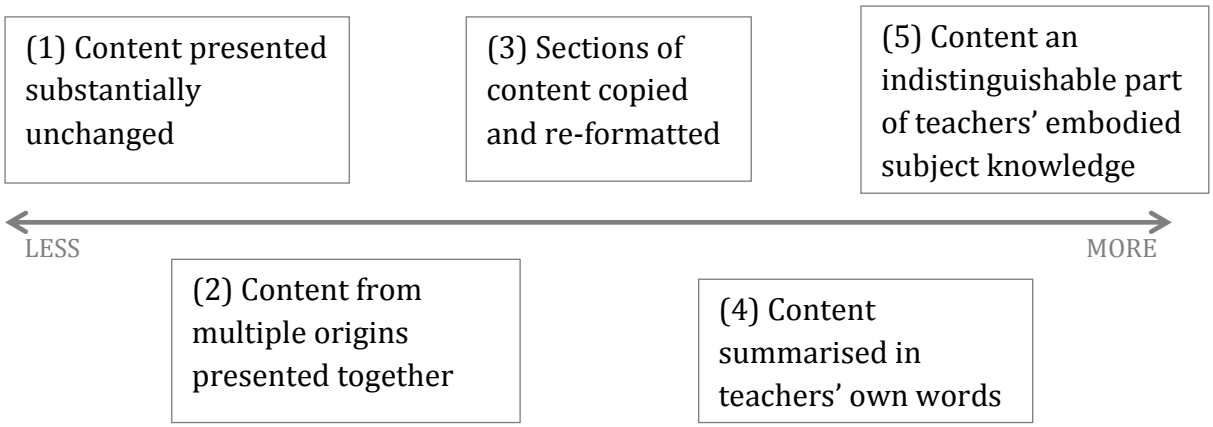


Figure 104. Degrees of recontextualisation

A strength of the model is the foregrounding of questions about where knowledge is from, and what has been done to it. This seems to be a relatively concrete way of opening up issues surrounding knowledge, which others have suggested are hard to initiate discussion around. That is, the model offers a way to begin from the highly personalised ways in which the teachers in the current study spoke about their subject knowledge, both as something that was personal to them, and through applied, specific examples. Further exploration of teachers' intentions at different degrees of recontextualisation, and further analysis of possible relations between degrees of

recontextualisation and teachers' length of career, topics of study, and age of students being taught may be worthwhile.

At many times teachers, in one sense, did nothing to the knowledge they used in their lessons: YouTube videos, news articles, and textbooks are presented to students just as the teacher found them. I argued that this curating role played by teachers is a form of recontextualising; selections are made, and the students are shown these resources, rather than others. At other times teachers presented multiple resources together in different ways, cut and pasting sections and transplanting them in a new context (such as inserting a fact from Wikipedia onto a PowerPoint); at other times single and multiple resources were summarised in the teachers' own words, and beyond this I argued that knowledge may be considered to have become assimilated into the teachers' embodied subject knowledge. Considering teachers as curators engaging in journeys for sources of knowledge was argued to present a dynamic perspective; how teachers recontextualise knowledge now is related to the ways they have in the past, the ways they see others recontextualising (which increasingly, through online interactions, involves those teaching in other schools), and their own experiences of geography throughout their lives. Teachers justified their belief that students find textbooks boring by citing the boredom they experienced when they were taught that way as a student. There may be something intrinsically boring about textbooks, or maybe it is an example of social reproduction: possibly their students who go on to be geography teachers will later describe never using PowerPoints, never doing card sorts, nor showing YouTube videos because they remember being bored by these things when they were at school.

10.3: RQ3: How do teachers describe the relationship between school and academic geography?

The (disconnected) nature of the relationship between school and academic geography was argued above to be the premise on which critiques of school geography have been made. This literature offers a strong argument that the fields might be seen as disconnected, however, I argued that evidence of a disconnection is primarily based on analysis of official representations (ORF) of school geography. Evidence gathered through the current study was positioned as offering a view of the PRF; specifically, about roles geography teachers may play in the relationship between these fields. There are clear senses in which these teachers do show the fields to be disconnected, and arguments I have made about the highly regulative function of examination boards/specifications – as organisations largely separate from academic geographers – further strengthen the contention that school and academic geography are disconnected. Analysis of VSAs also indicates that teachers do not often directly use sources of knowledge from the discipline: only one of the 2749 resources analysed was produced by an academic geographer. However, I have also offered a counter argument about the role that teachers themselves play at the interface between school and academic geography: there is evidence that experiences of undergraduate geography continue to play an important role in teachers' curating (or recontextualising) of knowledge for the school subject, and, related to this, their disciplined judgements might be understood as demonstrating disciplinary procedures to students. I offered specific examples of disciplined judgements (Stemhagen et al. 2013), illustrating teachers making-public their reasoning and critiquing of geographical knowledge.

Individual examples of personal connections between teachers and academic geographers have also been found. For example, work on Birmingham in Town Comprehensive includes a fieldtrip run by an academic geographer working at the university: teaching resources about the city have been developed from, among other things, joint discussions and fieldwork. These resources are used by the department, and represent an important example of the personal connections between fields that are not considered by analyses of official representations alone. Similarly, Jess' lectures for, and discussions with her mum, who is a development economist (a field drawn upon by geography; illustrated in the discussion of the Rostow model above) represent on-going participation in, and conversation between school and academic fields. They may be isolated examples, although their presence in such a small sample of departments does present a challenge to the widespread characterisation of the fields as completely disconnected.

Through the individual teacher descriptions I explored some of the identity politics surrounding teachers and academics. Spatial metaphors of one field (academic geography) being above, or higher than the other (school geography) were related to the authority and status teachers attributed to academic geographers. When asked what comments academic geographers might make on the teachers' resources, nearly all assumed they would make negative judgements. No teachers expected the academic geographers to be able to learn anything from the teachers' resources. Academics were also described as being producers of knowledge, and there was an assumption that textbook content and examination specifications ultimately come from academic geographers, even if they are now largely absent from the on-going engagements with

this knowledge. Descriptions of academics as experts were strongly qualified by these teachers as being restricted to productive functions; recontextualising knowledge was retained as the teachers' particular area of expertise. Negative descriptions of academic geographers as over-specialised formed part of this identity negotiation: 'if you were just an academic who had never taught children, you might not necessarily think about some of the things that you have to do in order to break things down and make things more accessible to kids' (Gemma, interview 1:226).

10.4: Limitations

This thesis was introduced as an exploratory, descriptive account of secondary school geography teachers' subject knowledge. The exploratory nature of the study was prompted by the emerging knowledge debate in geography education research. In particular, the absence of established concepts meant it was important not to narrow the focus of the research. One limitation of this exploratory approach is felt on reading the whole thesis; it is a whole, and through each stage in the research presented I have constructed something of a narrative to argue it is all connected, necessarily following one another. This linear argument is a limitation of the thesis, as it obscures something of the non-linear development of the research. The final research questions were not developed immediately upon finishing the literature review, but after all data had been collected and analysed; the review of the literature was being updated until soon before the thesis was submitted; concepts of central importance to the analysis (such as degrees of recontextualisation) were developed after all data were analysed. I have attempted to balance the demands of making the arguments through a 'clear' (or linear) presentation of the study, whilst also finding 'ways of holding onto [an] edgy sense of

not knowing where I was heading from the start – an indeterminacy too often "written out" of the research process' (Whatmore 2005, pp.842–843).

In addition to this general limitation – that is, of writing out something of the indeterminacy of the process – I recognise two other limitations; researcher positioning (including the differences between departments), and the negotiation between breadth and depth (which has implications for, in particular, descriptions of departments).

10.4.1: Researcher positioning

As a participant-observer I offered my time for each to department to use as they wished. The different uses they made of my time, and their various approaches towards managing this time were interesting, and have been discussed in relation to my positioning within the departments. I learnt things about the departments through the way they were described to me, and the kinds of things they wanted me to do. The research was designed to provide a situated account; this is foremost a strength of the approach, rather than a limitation. However, I now want to suggest one potential limitation on which, in hindsight, I gave insufficient consideration to; the ways in which the sequencing of departments influenced teachers' perceptions of me. When I first entered City Academy, Paul's first words to me were that I must know a huge amount about geography departments because of the time I had already spent observing and researching other departments. Although it is hard to draw any relations between the sequencing of departments and the ways in which they perceived me as expert / non-expert, I would suggest that, in a time-recurrent mode of ethnography such as the current study, it may be worth considering whether or not to make explicit other

experiences during the fieldwork in other places. What tasks departments gave me, and how they chose what to speak about with me were all co-constructed in relation to my representations of these things. While I thoroughly appreciated Steve (HoD, TC) making explicit, during whole-class teaching where certain sources of knowledge came from, it seemed (at least in part) to be for my benefit: *Mr Puttick will love this; I got this from...* One implication, and limitation, was that I did not include analysis of such explanations in the discussion of disciplined judgement, although they may have offered interesting examples. I did not include them because I was concerned of them being explanations just for me.

Related to these concerns are other possible implications of the ways in which my communications with teachers before fieldwork might be interpreted. In particular, my descriptions of the research as being about subject knowledge. That the purpose of the study was not to evaluate or judge subject knowledge was made explicit (Cf. appendix eight), however, such connotations seemed impossible to avoid. While in this case evidence of enduring associations between subject knowledge and measuring and judging may be argued to support arguments made about subject knowledge being bound up with notions of performativity and identity politics, I would suggest that pre-fieldwork research description is an important issue for further research to consider. In the case of the current topic of study, research might be described to potential participants as being about 'departmental cultures', or similarly general areas, avoiding the more obviously loaded term 'subject knowledge'.

10.4.2: Breadth / depth

Consideration was given to the sampling of teachers and departments, and to the duration of fieldwork. Ethnographic research presents a particular dilemma in the balancing of breadth and depth. These decisions are faced by all researchers, but are keenly felt in ethnography because of the centrality of the researcher as research tool; a finite person, who is only able to be in one place at one time. This is quite different to surveys, cameras, research assistants, and recorders that might be found in multiple places concurrently. As a single ethnographer, given a finite duration of time, do you visit fewer sites for longer periods, or more sites for shorter periods? The argument I made for visiting three sites split over multiple visits followed from the emergent, open design in which I hoped reflection on data would stimulate further enquiry. Sampling was also based on a typology of departmental structures, and, again, the limited existing research meant that exploring a range was particularly worthwhile.

The main limitation that I want to suggest has followed from these design issues is that the departmental unit of analysis has received less attention than it may have done. Presenting all teachers from the same department alongside one another in chapters five to seven does, I believe, offer a useful collection of case studies for others to reflect on. The detailed descriptions in these chapters also made explicit a greater amount of the data that underpins the arguments of chapters eight and nine. Issues about departmental norms, and accepted practices, particularly in relation to homogenising tendencies were also explored, and these were made possible through the study of multiple departments. However, a weakness of the study as it is presented here is in the limited in-depth analysis of within-department discussion of subject knowledge. In order to generate more data about the ways in which subject knowledge might be

understood socially, further research may benefit from studying individual departments for longer periods.

10.5: Recommendations for further research

Further research exploring the ways in which departments conceive of, develop, share, and critique geographical knowledge is particularly important in the current context of policy moves to locate ITE increasingly within schools (even on current arrangements in which the majority of time is already spent in schools). I have suggested further research explore the model of degrees of recontextualisation in relation to other school subjects, and further discuss more basic sources and justifications of geographical knowledge. I now discuss two other areas of particular importance: the development of geographical research on geography education, and research into the space-times of geography teachers' online decision making.

10.5.1: Geography of geography education

Research on the geography of education has been conducted at the macro level, including analysis of distribution and inequality of access to schools (Cf. Taylor, 2009), however, the geography of education at the level of the classroom has received less attention. While there is an increasing amount of research in geography education, it seems to be (in a similar way to its descriptions of the relationship between school and academic fields) largely disconnected from academic geography. One example of this disconnect is evidenced in publishing; amid important exceptions (Winter 2012; Castree et al. 2007), researchers in geography education rarely publish in academic

geography journals. The current study draws, in a small way, on cultural geographers' investigations and conceptualisations (Cf. Crang & Cook 2007; Thrift 1983), and the direction of the project has been shaped in part by geographical interest in the space-times of decision making (McCormack & Schwanen 2011). Research with teachers, developing analyses of a geography of work may act as a significant development in the relationship between the fields. Suggesting this kind of geographical research involving teachers is based on a belief in the importance of teachers as active participants, at least to some extent, in their discipline.

Research might also seek to explore the ways in which academic geographers could facilitate the development of teachers' disciplined judgement: a different aim to producing content. Such a position is counter to the dominant conception of the relationship described by teachers in the current study, and as presented in the literature. For example, in Segall's (2004, p.490) terms those engaged in academic research are content specialists, and between them and school teachers 'there is an apparent division of labor whereby scholars in the discipline provide content while teachers provide pedagogy' (p.493). The notion of disciplined judgement which might be developed through further geographical research on geography education is quite different, and offers the potential to play with some of the metaphors that have been used to characterise the fields. For example, Marsden (1997) pictures school geography consuming academic geography straight from the oven. My argument is that it might be better for school geography (or at least geography education research) to get in the kitchen and help with the cooking, even if the actors are positioned as sous chefs working under head chefs. This gives a sense of co-working or co-producing, and

creates a different image to Marsden's. Similarly, metaphors of racing and 'keeping up' with the academic discipline might be reconfigured by focusing on a shared concern with developing disciplined judgments. In this example, the 'racing' metaphor might be replaced by one focusing on journeying. There is considerable scope for geographical research to explore a variety of themes through this image, including the space-times of teachers' journeys; possibly longitudinal research into the types of journeys teachers make for knowledge, and the changes in these journeys (and themselves) over the course of their careers, and as they move between departments. Related explorations of the space-time journeys of sources of knowledge might also be interesting (particular suggestions about online aspects of this are outlined below).

10.5.2: Space-times of teachers' online decision making

The conclusions I have been able to draw in relation to teachers' use of the internet might be summarised by three main points; firstly, I have argued that the teachers in the current study use the internet a considerable amount in their journeys for knowledge to teach in their lessons, frequently using the internet in general, and Google searches in particular. Secondly, the use of the internet seems to be very specific; either scanning news feeds for specific topics that are directly relevant to their examination board's specification, or Googling terms that include the topic or case study, and more specific references to either the Key Stage, field (that is, school geography), or examination specification. For example, searching *AQA geography A GCSE flooding case study*. Thirdly, the top few links on the first page of Google results seemed to be used most frequently by these teachers. These three findings offer only a broad picture. Departmental VSAs have been described in some detail, although it is important to

recognise that they are only one part of the teachers' engagement with ICT. Other uses also seem significant in teachers' knowledge work. In particular, smart phones are used to check email at the breakfast table, twitter accounts are scanned, and news articles relevant to the day's lessons are chosen. Exploring teachers' engagement with ICT, and the rapid, on-going judgements of information in the construction and reconstruction of their subject knowledge is an important area for future research to explore. Possibly, such research might consider observing what teachers do on their computers (and smart phones / tablets), investigating the ways in which teachers make decisions about what articles to include or exclude. In particular, I suggest this research might focus on issues of legitimacy and trust in the use of sites, and the selection of particular articles, possibly focusing on the headlines that geography teachers accept or reject. I also suggest that the physical boundaries of the current study, being based in school geography departments, conceives of them in ways that may under-represent the blurring between home and school for teachers. School subject departments are constituted by individual teachers who are working, and thereby constructing the department in different space-times, only some of which include physical locations in school. Further research on teachers' online journeys and decision making might consider the benefits of also 'being online' and participating these space-times.

Teachers' curriculum making has continued to be identified as an area in need of further research (Cf. Roberts, 2015). I hope this thesis offers a useful contribution through the detailed descriptions of teachers and departments, which has reframed some existing critiques of school geography that were based on the ORF. In particular, differences have been revealed between the limited influence of the NC at KS3, against the powerful

role of accreditation and chief examiners at KS4/5. Pressures associated with performativity bear heavily on these teachers, and often seem to work against the teachers' own desires to reflect more deeply on the geographical knowledge they teach. There is evidence of their ongoing engagements with the academic discipline of geography, and the personal relationships with academic geographers I described offer a counter-argument to descriptions of the fields as simply disconnected. Again, it seems the role teachers play in the enactment of school geography may have been underestimated. I feel hugely privileged to have been allowed into these departments, and I am grateful to the teachers I have described here for the time and energy they have spent engaging with me and this research. Their dedication to teaching geography, which for many takes up a possibly unhealthy proportion of their waking life, has been a massive inspiration. I hope that I have portrayed them fairly. I also hope that the questions I have raised about the nature of geographical knowledge – including the tensions between these teachers' strong empiricism, and under-appreciated reliance on testimonial knowledge – may aid reflection on and articulation of their professional knowledge. Finally, I hope the analysis and making explicit of recontextualising principles and processes might contribute something to teachers engaged in the tough intellectual work of recontextualising knowledge through disciplined judgements as they seek to give more of the young people they teach access to powerful disciplinary knowledge.

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Appendices

1. Teacher log

2. First semi-structured individual interview schedule

3. Second semi-structured individual interview schedule

4. Department focus group schedule

5. Example sources of information used in focus groups

6. Note on transcribing focus groups

7. Approved CUREC form

8. Invitation letter and consent form

9. PLTS learning language

10. Town Comprehensive's department bulletin

11. Richard's card sort

12. Legitimation of knowledge claims: memory and introspection

Appendix One: Teacher log of sources of knowledge (Steve, HoD Town Comprehensive)

Name:	**Steve**	**School:**	**1**	**Log start date: 8/10/12**
Day	**Class (inc. year)**	**Topic**	**All sources of information you used for the content of the lesson.**	

WEEK 1

		E.g. Tectonic Activity - Earthquakes	Relevant text book	Internet	Pre-existing Powerpoint	Photograph(s)	Teacher knowledge	Software package	Exam Board website	W/sheets with textbook
Mon										
Mon										
Mon	10C	Climate Change								
Mon										
Mon	12	Recap & test								
Tues	9Y	Kobe E/Q								
Tues	11A	Cont. Assessment								
Tues	10X	Contraception								
Tues	11X	Divorce								
Tues	9V	Kobe E/Q								
Wed	11A	Cont. Assessment								
Wed	13	Water confict intro								
Wed	8V	Brazil NE v SE								
Wed	9V	Kobe E/Q								
Wed										
Thurs	9A	Kobe E/Q								
Thurs	8V	Brazil NE v SE								
Thurs	13	Water confict Calif.								
Thurs	12	GW Probs for Arctic								
Thurs	7A	Weather forecasting								
Fri	11A	Cont. Assessment								
Fri										

Appendix One: Teacher log of sources of knowledge (Steve, HoD Town Comprehensive)

Fri										
Fri	9A	Kobe E/Q								
Fri	10C	Climate Change								

WEEK 2

Mon	9Y	Hazard M'ment								
Mon	10C	Climate Change cont.								
Mon	11A	Cont. Assessment								
Mon										
Mon	12	GW Probs for th Arctic cont.								

Tues										
Tues	10X	Sex before Marriage								
Tues										
Tues										
Tues										

Wed	12	GW Probs for Africa								
Wed	13	Water Conflict cont.								
Wed	10C	Climate Change cont.								
Wed	9V	Hazard M'ment								
Wed										

Thurs	10C	Impact of GW on UK								
Thurs	7A	UK weather patterns								
Thurs	13	Salton Sea								
Thurs	12	GW Probs for Africa								
Thurs	11A	Cont. Assessment								

Fri	8V	Inequalities in Brazil								
Fri										
Fri										
Fri	9Y	Hazard m'ment								
Fri	9A	Hazard m'ment								

INTERNET-amongst the most frequently used websites are: BBC News(esp Sci/Environment), BBC iplayer ,
YouTube, Met Office, Wikipedia, USGS, Google images etc, but for some topics I would just do a random internet search to find relevant info.

Appendix Two: first semi-structured individual interview

A. Teacher's background

1. How long have you been a teacher for?
2. What route did you take into teaching? (including degree)
3. Could you describe the kinds of geography you studied at university?
4. Do you now teach any of this geography to your students?
5. Why did you decide to become a geography teacher?
6. Has the school subject has changed since you studied geography at school?
7. Do you think geography teachers need to have studied geography at university?

B. The department

8. How would you describe this geography department?
9. Do you have schemes of work in place? If so, who has responsibility for them?
10. Do you share the sources of knowledge you use within the department?
11. Do you think the different teachers here have particular areas of geography they are specialists in?

C. Subject knowledge mapping exercise

12. Draw a map of the different areas of geography subject knowledge and how they might be connected.

Appendix Three: second semi-structured individual interview

Discussion of a resource provided by the teacher (request to the teacher: Please bring a source of knowledge you have used in a lesson to the interview. The only criteria are that you have used it with students, and you think it's good. It can be from any (geography) topic, for any age range, in any media.)

1. Please could you talk me through the resource?

2. Why did you choose this particular resource?

3. Is it typical of resources you use?

4. When and how did you come across it?

5. Why do you think it is geographical?

6. How sure are you that the information on it is true?

7. What one thing do you most want students to learn from it?

8. Why do you think it is important for students to learn that?

9. If we gave this resource to an academic geographer working in a university, what kind of comments do you think they might make about it?

Appendix Four: department focus group

Please look through these cards. They show different resources that have been mentioned during this research. As you look at them could you 'think aloud' about them and comment on them – Do you use them? How often? Why / why not? How would you describe them? What are their strengths / weaknesses?

As you do this, together either rank them, or group them into categories.

Resources:

Academic journal

BBC news online

Guardian newspaper

Daily Mail newspaper

Teaching Geography Journal

Geographical Association website

RGS-IBG website

Wikipedia

University text book

A Level text book

GCSE text book

Key Stage 3 text book

PowerPoint made by you (or another teacher)

PowerPoint from BoardWorks (or similar)

Activities from Thinking Through Geography (or similar)

+ Blanks to write more

These cards show different (re)sources that have been mentioned by teachers during this research.

As you look at them please 'think aloud' about them. For example:

- Describe them.
- Do you use them? Why / why not?
- What are their strengths / weaknesses?
- Where are they produced / who produces them?
- What makes them geographical? (Or not geographical)?
- How confidently should we hold the knowledge they might give?

As you discuss the resources, either rank them, or sort them into categories.

Appendix Six: transcribing multiple voices

The turn-taking, and tactics used to take the floor seemed to be important aspects of the focus group conversation that needed to be translated into the typed version of the text. I aimed to find a way of representing a conversation that included moments of up to three people speaking all at the same time. I wanted to show these multiple voices in a way that preserved the 'flow' of the conversation, and did not unnecessarily break the main speaker's text. When the new speaker only said up to three words then I inserted these words, in rounded brackets, into the body of the current speech. For example, (S: yeah, that's right). When the new speaker continued to talk for more than three words, I adopted the use of brackets, in the similar way to their use in HTML. That is, I inserted a bracketed initial to show that someone else had begun to talk, for example, (S), and then a later bracket with the initial prefixed by a backslash to show when they had finished talking. For example; (/S). If the initial speaker finished before the new speaker then the closing symbol was not inserted. The words spoken by the new speaker between these instances were then typed on the following row, and were bracketed to indicate that they were not a discrete event, but had occurred previously, and concurrently with the last passage of speech. A short illustration of this is shown below (G: Gemma, S: Steve, R: Ruth):

> G: I think that's also the same thing - year 7s and 8s always go straight to Wikipedia, and it's (R: yeah) like what are you on Wikipedia for? Well, it tells you everything (R: no it doesn't) and they're reading like, er, a document that's god knows how long, that they've got no idea who's written it, and then when I say to them, well you can edit that - people can just go in and edit them, cos what was the [laughs] who (R: yeah) was I teaching, it was ages ago, and they'd gone onto Wikipedia and, um it was something, I can't remember - I think it was 6th form lesson and they were doing about energy - I can't remember what it was, but it, (S: hmmm) basically someone had written in the middle of a, a Wikipedia article 'Tony Blair is a twat' (R: yeah) and they were like 'Miss, someone's written this! Like, oh my god, this is on like a website' - I said like yeah, cos people can go in and write what they (S) like (/S) 'What?!' and they don't understand that,

> actually (R: hmmm) you can go in and write stuff, and change facts and things, so, I would use - I've used images from it before, but I haven't used
>
> (S: yeah, change what they want)
>
> (TC department interview:47-48)

In this example, Gemma (G) is the main speaker, and during this passage of speech, Ruth (R) and Steve (S) both interject, primarily to affirm Gemma's position. The contributions from Steve and Ruth are (apart from one) three words or less, and so these were included within Gemma's speech. Placing the interjections within the main passage gives a feel for the conversation; as we read Gemma explaining how her students have engaged with Wikipedia, and her incredulity at the students' naivety towards the editing process, the regular affirmations from Ruth and Steve are heard alongside; the department concurs - keep going Gemma, you're right. When Steve spoke for more than three words, this was shown using the brackets as described above; (S) (/S), and his statement placed after Gemma had finished, and in brackets. I felt that inserting more than three words into her speech would break the flow for the reader in a way that does not represent as accurately the audio recording of the interview. Steve was not beginning a new turn, although his interjection may be a sign to Gemma that he would like to, and it is interesting that shortly after this she does stop, at which point Steve then continues. Our attention as listeners was still with Gemma, and so it seemed to make most sense to indicate the point at which he had spoken whilst Gemma was also speaking, but to allow her to continue, and then provide his words later.

Appendix Seven **University of Oxford**

CENTRAL UNIVERSITY RESEARCH ETHICS COMMITTEE (CUREC)

CUREC/1A Checklist for the Social Sciences and Humanities

The University of Oxford places a high value on the knowledge, expertise, and integrity of its members and their ability to conduct research to high standards of scholarship and ethics. The research ethics clearance procedures have been established to ensure that the University is meeting its obligations as a responsible institution. They start from the presumption that all members of the University will take their responsibilities and obligations seriously and will ensure that their research on human subjects is conducted according to the established principles and good practice in their fields and in accordance, where appropriate, with legal requirements. Since the requirements of research ethics review will vary from field to field and from project to project, the University accepts that different guidelines and procedures will be appropriate. Please check the CUREC website to ensure that you have the correct form for your project.

This form does not cover research governance, satisfactory methodology, compliance with the requirements of publishers when administering their tests or questionnaires, or the health and safety of employees and students. As principal investigator, it is your responsibility to ensure that requirements in these areas are met. Please carry out a risk assessment of the project, in consultation with all researchers involved, using the checklist and CUREC's other documentation.

The use of an asterisk in this form indicates a phrase defined in the glossary. The glossary and further information on the University's research ethics procedures are available from the CUREC website:

www.admin.ox.ac.uk/curec

This form is designed largely for research that falls within the Divisions of Social Sciences and Humanities and which does not involve a high-level of risk to the subjects. Elite interviews, field work and oral history are included in the CUREC process. Please take a moment to read through it and if you have any questions or doubts as to whether it is the appropriate form, please review Section A or consult the CUREC website.

Note on anonymised data and audit: you do not need to obtain ethical approval for your study if:

- you are using previously collected **anonymised data** about people which neither you nor anyone else involved in your study can trace back to the individuals who provided them (e.g. census data, administrative data, secondary analysis). Please refer to the definition of *personal data in the glossary and FAQ no. 6 for further guidance; or
- you are conducting research on behalf of or at the request of a service provider that matches the definition of *audit in the glossary.

If your research is audit or uses prior-anonymised data, please check this box: ☐

You do not need to seek ethical approval from CUREC, and you do not need to complete any more of this form. However, please check with your department's requirements, as some departments require you to lodge this form with them.

Office use only: IDREC Ref. No. _____

Date of confirmation that checklist accepted on behalf of IDREC: // //

SECTION A	Yes	No
1) Are you using research methodologies commonly used in biomedical or behavioural laboratory sciences?		X
2) Is there a significant risk that the research will induce anxiety, stress or other harmful psychological states in participants that might persist beyond the duration of any test or interview in which they are participating?		X
3) Will the research involve present or past NHS staff, or will the research, in whole or in part, be carried out on NHS premises, use NHS facilities or assess NHS facilities or services?		X
4) Will the research involve human participants recruited by means of their status as present or past NHS patients or their relatives or carers?		X
5) Does the research involve *human participants aged 16 and over who do not have *capacity to consent for themselves? See the Mental Capacity Act 2005		X
6) Is the study to be funded by the US National Institutes of Health or another US federal funding agency?		X

If you answered 'yes', please **stop** work on this checklist and

- **for questions 1, 2 and 3**, complete CUREC/1 instead (available from www.admin.ox.ac.uk/curec/);
- **for questions 4 and 5**, submit your proposal to the appropriate NHS ethics committee (see www.nres.npsa.nhs.uk and www.admin.ox.ac.uk/researchsupport/ctrg for further information);
- **for question 6**, or **if you answered 'yes' to questions 1, 2 or 5 and your research will take place outside the EU and is a biomedical study**, submit your proposal to OXTREC, which uses separate documentation. **Applications to OXTREC using this form will not be accepted.** If your research is not a biomedical study and does not have US funding, but will take place outside the EU, you may use this form to submit your application for approval to the Social Sciences and Humanities IDREC.

If you have answered 'no' to all questions in Section A, please complete Sections B-E. This form and any supporting materials should be typewritten.

SECTION B

****Principal investigator/ supervisor/student researcher (title and name):***	***Steven Puttick***
Name of supervisor (STUDENT RESEARCH PROJECTS ONLY):	***Dr Roger Firth, Dr Alis Oancea***
Degree programme, e.g. DPhil, MPhil, MSc (STUDENT RESEARCH PROJECTS ONLY):	***DPhil***
Department or institute:	***Education***
Address for correspondence (if different):	
Email and phone contact:	***steven.puttick@education.ox.uk***
Title of research project:	***Secondary school geography teachers' subject knowledge***

Brief description of research methods and goals plus description of the nature of participants (including the criteria for inclusion/exclusion, method of recruitment), explanation of how professional guidelines and/or CUREC protocol(s) will be applied (if relevant) and expected use to which the results/data will be put. Please describe how you will obtain informed consent. Approx 400 words.
This exploratory study seeks to contribute to emerging debates about knowledge in geography education, by offering a case study of three secondary school geography departments. It builds on a pilot MSc project. The main research question is *how might geography teachers' subject knowledge be conceptualised?* **The overall approach is described as rapid-ethnography. The researcher will spend 4 weeks in each department observing, collecting documentary evidence and photographing areas of the departments, such as wall displays. Before physically entering the departments the teachers will also be asked to complete a log of sources of knowledge used to create the content of their lessons (over a two week period). There is the option to complete this log online or using a paper copy (the layout of both is the same and is attached). Data collection methods also include two semi-structured individual interviews with each teacher (30 minutes each, attached), and a focus group with each department (lasting one hour, attached). Part of the individual interviews include a subject knowledge mapping exercise, in which the participants are asked to draw a map (attached as part of protocols for the first interview). Copies of these will be kept and analysed. The finishing positions of sources during the focus group will also be photographed.** **The departments will be chosen because they best met the criteria arising from the literature review. Primarily this means they represent different organisational types. It also includes differences in teachers' length of service and participation in a subject association.** **All participants will be invited to take part by the researcher. Invitation letters / consent forms are attached. They will be reminded of the aims of the study before all interviews and focus group, and reminded of their right to withdraw at any time.** **The interviews and focus groups will be audio recorded and transcribed by the researcher. Teachers' anonymity and confidentiality will be preserved and the schools will remain anonymous.** **In all field notes and transcripts the data will be anonymised and audio recordings will be destroyed after submission. All data will be kept securely in an electronic format.**

List actual or probable location(s) where project will be conducted, if known:	Comprehensive secondary schools in Oxfordshire
Anticipated duration of project:	__7__ months (of data collection: 2 x 2 week periods of physical presence in each department, each preceded by 2 weeks of teacher logs, and separated by a period of time for initial analysis)
Anticipated start date:	10 / 05 / 12
Anticipated end date:	20 / 12 / 12
Name and status (e.g. 3rd year undergraduate; post-doctoral research assistant) of others taking part in the project:	none

Please indicate what training on research ethics the researchers involved with this study have received, e.g. the title of the online or in-person course, and date completed (online training available at www.admin.ox.ac.uk/researchsupport/integrity/):	Research ethics seminar: Dr David Mills, 31/11/10 Philosophical research ethics session: Dr Alis Oancea, 24/11/10

SECTION C

Methods to be used in the study (**tick** as many as apply: this information will help the committee understand the nature of your research and may be used for audit).

	Please tick
Interview	X
Questionnaire	
Analysis of existing records	
Participant performs verbal/paper and pencil/computer based task	X
Measurement/recording of motor behaviour	
Audio recording of participant	X
Video recording or photography of participant	
Physiological recording from participant	
Participant observation	
Covert observation	
Systematic observation	
Observation of specific organisational practices	
Other (please specify) Documentary collection and analysis and unstructured observation	X

SECTION D

Have you read one or more of the following professional guidelines and do you undertake to use the principles listed there as a guide for your own work? Please note that this is not intended to be an exhaustive list. Links to the guidelines listed below are included on the CUREC website.

	Please tick
British Society of Criminology: Code of Ethics for Researchers in the Field of Criminology [www.britsoccrim.org/codeofethics.htm]	
British Educational Research Association Ethical Guidelines for Educational Research [www.bera.ac.uk/publications/guidelines/]	X
Academy of Management's Code of Ethics [www.aomonline.org]	
Association of American Geographers Statement on Professional Ethics [http://www.aag.org/cs/about_aag/resolutions/statement_on_professional_ethics_]	X
Oral History Society of the UK Ethical Guidelines [www.oralhistory.org.uk/ethics/index.php]	
American Political Science Association (APSA) Guide to Professional Ethics in Political Science (Section H) [www.apsanet.org/content_9350.cfm]	

British Psychological Society Code of Ethics and Conduct [www.bps.org.uk/the-society/code-of-conduct/code-of-conduct_home.cfm]	
Ethics Guidelines of the Association of Social Anthropologists of the UK and Commonwealth [www.theasa.org/ethics/guidelines.shtml]	
Social Research Association: Ethical Guidelines [www.the-sra.org.uk/guidelines.htm]	
Statement of Principles of Ethical Research Practice from the Socio-Legal Studies Association [http://www.slsa.ac.uk/content/view/247/270/]	
Statement of Ethical Practice for the British Sociological Association [www.britsoc.co.uk/equality/Statement+Ethical+Practice.htm]	
Other professional guidelines (please specify): ESRC Ethical Guidelines	X

SECTION E

Please put a tick in the yes/no column as appropriate to indicate your response.

1) Will you obtain informed consent according to good practice in your discipline before participation?	**Yes**	**No**
	X	
2) Will you ensure that *personal data collected directly from participants or via a *third party is held and processed in accordance with the provisions of the Data Protection Act?	**Yes**	**No**
	X	
3) Does the research involve as participants *people whose ability to give free and informed consent is in question? (This includes those under 18 and vulnerable adults.)	**Yes**	**No**
		X
4) As a consequence of taking part in the research, will participants be at serious risk of rendering themselves liable to criminal prosecution (e.g. by providing information on drug abuse or child abuse)?	**Yes**	**No**
		X
5) Does the research involve the *deception of participants, as part of the investigation/experiment?	**Yes**	**No**
		X
If any of your answers above are in a shaded box, please indicate whether those aspects of your project are fully covered by the following.		
6) Research protocol(s) which has/ve received IDREC/CUREC approval?	**Yes**	**No**
If yes, please give protocol number(s):		
7) Professional guidelines that you will be following, as noted under Section D?	**Yes**	**No**

If any of your answers in Section E are in a shaded box and are not covered by a protocol or by professional guidelines, please complete CUREC/2, available to download from the CUREC website. Then submit both this form (you need not complete section F) and the CUREC/2 to the Social Sciences and Humanities IDREC.

If all your answers in Section E are in the unshaded boxes or your answers in shaded boxes are covered by a protocol or professional guidelines, complete Section F and submit this form and any accompanying documents to the Social Sciences and Humanities IDREC or to the relevant officer/committee at departmental level (see notes and address below).

FINAL CHECK

Please check each of the following before submitting the checklist. Failure to provide this information could delay the start of your research.

Have you completed Sections A-E? ☒

Have you defined all technical terms and abbreviations used? ☒

If you have produced any documentation in support of your application (which might include questionnaires, participant information, consent forms/form or note of procedure for recording oral consent, advertisements and surveys), have you attached a copy of these? ☒

Are all pages (including appendices and attachments) numbered? ☐

SECTION F

You can submit this checklist by email and/or as a signed hard copy; if it is being sent by email only, the checklist, and any email from the head of department or nominee separately endorsing its submission, must be sent from a University of Oxford email address (i.e. as a minimum, the checklist and supporting documents must be submitted by the head of department or nominee indicating his/her approval from a University of Oxford email account).

Complete this section only if you do not need to submit form CUREC/2.

I understand my responsibilities as principal researcher/supervisor/student researcher as outlined in the CUREC glossary and guidance on the CUREC website.

I declare that the answers above accurately describe my research as presently designed and that I will submit a new checklist should the design of my research change in a way which would alter any of the above responses so as to require completion of CUREC/2 (involving full scrutiny by an IDREC). I will inform the relevant IDREC if I cease to be the principal researcher on this project and supply the name and contact details of my successor if appropriate.

Signed by principal researcher/supervisor/student researcher:……Steven Puttick ……

Date:……22nd March 2012…

Print name (block capitals)……STEVEN PUTTICK……

Signed by supervisor:……(for student projects)

Date:……

Print name (block capitals)……

I understand the questions and answers that have been entered above describing the research, and I will ensure that my practice in this research complies with these answers, subject to any modifications made by the principal researcher properly authorised by the CUREC system.

Signed by associate/other researcher: ……

Print name (block capitals)……

Date ……

I have read the research project application named above. On the basis of the information available to me, I:

(i) consider the principal researcher/supervisor/student researcher to be aware of her/his ethical responsibilities in regard to this research;

(ii) consider that any ethical issues raised have been satisfactorily resolved or are covered by relevant professional guidelines and/or CUREC approved protocols, and that it is appropriate for the research to proceed without further formal ethical scrutiny at this stage (noting the principal researcher's obligation to report should the design of the research change in a way which would alter any of the above responses so as to require completion of a CUREC/2 full application);

(iii) am satisfied that the proposed project has been/will be subject to appropriate *peer review and is likely to contribute something useful to existing knowledge and/or to the education and training of the researcher(s) and that it is in the *public interest.

(iv) [FOR DEPARTMENTS/FACULTIES WITH A DEPARTMENTAL RESEARCH ETHICS COMMITTEE (DREC) OR EQUIVALENT BODY - PLEASE DELETE IF NOT APPLICABLE] confirm that this checklist (and associated research outline) has been reviewed by the Department's Research Ethics Committee (DREC)/equivalent body, and attach the associated report from that body.

Signed:……..
(Head of department or nominee e.g Chair of DREC, Director of Graduate Studies for postgraduate student projects)

Print name (block capitals)……

Date:……

Please check with your department about its procedures for the approval of CUREC forms. If your department indicates that the checklist should be submitted directly to the IDREC, please send it, together with any supporting documentation, to the following address(es), keeping a copy for yourself:

Secretary of the Social Sciences and Humanities IDREC Email: ethics@socsci.ox.ac.uk
University of Oxford Social Sciences Division
Hayes House, George Street
Oxford, OX1 2BQ

IDRECs and/or CUREC will review a sample of completed checklists and may ask for further details of any project.

Appendix Eight: invitation letter and consent form

Department of Education, University of Oxford,
15 Norham Gardens, Oxford, OX2 6PY



<Date>

Dear <name>,

I am writing to invite you and your geography department to take part in a research project about subject knowledge in geography. Three school geography departments from Oxfordshire are being selected. The aim of the research is to provide evidence to inform current debates about knowledge, including the on-going curriculum review. Until recently I taught geography at The Warriner School. I believe that teachers play a central role in the construction of school geography and so it is vital to consider teachers' subject knowledge in these debates. The study is about developing more in-depth understandings of subject knowledge and is in no way going to 'judge' or 'measure' participants' knowledge.

The study will involve me spending 4 weeks in your department (in 2 blocks of 2 weeks), at some point before June 2013. The timing is very flexible and will happen at a point most convenient for you and your department.
For each teacher in your department the research will involve three formal aspects:

1. Keeping a log of the sources of knowledge used to create the content of lessons (over a 2 week period).

2. Two individual interviews, each lasting 30 minutes.

3. One group discussion with the whole geography department, lasting 1 hour.

This research will be written up as a DPhil dissertation. On successful submission it will be deposited both in print and online in the University archives, to facilitate its use in future research. The dissertation will be published with open access.
If you would like your department to be considered for this research please or if you have any questions about the study, please email or call me: steven.puttick@education.ox.ac.uk 07793737183.

Yours sincerely

Steven Puttick
steven.puttick@education.ox.ac.uk

Appendix Eight: invitation letter and consent form

Department of Education, University of Oxford,
15 Norham Gardens, Oxford, OX2 6PY

Teachers' consent form

I have read this information sheet. I have had the opportunity to ask questions about the study and am satisfied with any answers I have received. I understand that I may withdraw without any penalty at any time by advising the researcher of this decision. I understand that the study has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee. I understand who will have access to personal data provided, how this data will be stored and what will happen to it at the end of the project. I understand the research will be written up as a DPhil dissertation, which will be made freely available online. I agree to participate in this study and I understand how to raise a concern and make a complaint.

Signed:_____ Print name:_____

Date:_____

Appendix Nine: learning language

Definitions of the learning language used on Tim's lesson plan (Figure 12)

PLTS: Personal, Learning and Thinking Skills

IE: Independent Enquiry

SM: Self Management

RL: Reflective Learning

TW: Team Work

EP: Effective Participation

Appendix Ten: Town Comprehensive's fortnightly department bulletin

<table>
<tr><td>A</td><td colspan="2">W/C – 19/11</td></tr>
<tr><td colspan="2"><u>Key Reminders</u>
• Geography meeting on Monday – please find agenda attached.
• Steve Puttick is in for this fortnight – timetable and activities are attached.
• Year 11 – Please push any late orders for the revision guides, these will be ordered mid-week.
• Year 11 – Please finish CA by the end of this week. Final deadline for completed CA should be the 30th of November. This gives us a week before mocks to take care of stragglers.
• Year 11 Learning Leaders on Wed lunch, focus will be on pre-release for mock exam.
• KS5 Options Eve at the Guild Hall on Thursday – Se in attendance.</td><td><u>KS3</u>
7 – My Changing Geography
8 – Brazil – Favelas
9 – Tectonic Hazards – Tsunamis

<u>KS4</u>
10 – Climate & Change Assess
11 – Controlled Assessment Conclusion / Evaluation

<u>KS5</u>
12 – Climate / Population
13 – Superpowers and Water Crisis</td></tr>
<tr><td>B</td><td colspan="2">W/C -26/11</td></tr>
<tr><td colspan="2"><u>Key Reminders</u>
• There is another Geography meeting on Monday, please be prepared to bring some examples of assessed work from KS3.
• Year 8 and 9 tracking needs to be done by the end of Thursday.
• Year 12 Parents evening is on Thursday. Please let Se know of parents you can't see.
• Please ensure that you are up to date with marking in order to complete the assessment map, and for a forthcoming marking sampling.
• Year 11 Learning Leaders on Wed lunch, focus will be on pre-release for mock exam.
• Year 11 revision will continue in the Tuesday lunch, Wednesday after school pattern.</td><td><u>KS3</u>
7 – My changing Geography
8 – Brazil – Managing Urban
9 – Tectonic Hazards – Tsunamis

<u>KS4</u>
10 – Battle for the Biosphere
11 – Consuming Resources

<u>KS5</u>
12 - Climate / Population
13 – Superpowers / Water</td></tr>
</table>

Appendix Eleven Richard's (HoD, City Academy) Card Sort

A large number of battery casings were left discarded all over the site

According to most international standards, lead levels above 70 µg/dL in children are considered medical emergencies. Levels upwards of 100 µg/dl have been documented

According to the United Nations, the population of Haina is reported to have the highest level of lead contamination in the world.

Paraiso de Dios is a community located in the municipality of Haina, 7 kilometers due west of the capital, Santo Domingo and just west of the bridge crossing the Haina River.

Bajos De Haina is located in the Dominican Republic

Birth defects in the town are common. Two Children were born with their feet facing backwards

Blacksmith Institute (An American NGO) will continue to monitor the blood lead levels of the children in the community.

Blacksmith organised a community education programme " how to live with lead". This has been effective in changing some behaviours

Children handling the abundant large and small "rocks" (slag) in the area can get lead oxide on their hands. This substance enters the body through direct ingestion or contaminated foodstuffs.

Contaminated soil generates dust that accumulates on locally grown fruits and vegetables. Dust can enter homes and settle on food items inside.

During dry months, soil causes airborne dust pollution that affects a large area. Automobile usage, construction activities, and other everyday activities further generate airborne dust, which enters the respiratory system as well as the bloodstream.

Empty battery casings, large piles of excavated lead slag, and other debris litter the facility.

Excavation of the site occurred from December 2008 through February 2009. Over 6000 cubic meters of principal threat materials have been removed from the community and transported to an industrial site for storage in an environmentally sound, monitored pit for processing at a later date.

Health effects of lead poisoning include neurological damage, reduced I.Q., anemia, nerve disorders, loss of memory and concentration, infertility, increased blood pressure and chronic headaches and weakness. Effects are particularly severe on children.

many of the poorer locals use water from the Haina river and wells as there source of water

In the last 5 years a coalition including government, academics and NGOs came together to design and fund a cleanup project-the first of its kind in the country. This has been funded by the original company and NGOs

In 2001 The Dominican Republic passed the law on the environment and natural resources, which for the first time sets minimum standards and has a polluter pays principle.

In conjunction with the Ministry of Environment, local crews and contractors were hired and trained, building capacity within the Dominican Republic to perform a hazardous waste removal operation - the first of its kind for the country.

In time, lead can migrate and contaminate subsurface and surface water supplies. Airborne dust can also migrate and enter water supplies.

Lead can enter the human body (pathways) in a number of ways, throughbreathing, food, water or absorption through skin

Lead levels in soils throughout the community exceeded U.S. EPA limits for lead by over 10,000 times - some reaching 60 percent lead content.
An intial report highlighted evacuation as the preferred option. This was rejected by both government (too expensive) and locals (too disruptive)

Levels of recorded lead levels in blood have fallen from an average of 71 µg/dl in 1997 to 28 µg/dl in 2009

Many of the town's poorest inhabitants lived next to the factory

Metaloxa, a battery recycling smelter that operated for 20 years in the area without complying with any environmental standards or controls.

Nicol García lives in the town of Paraiso de Dios about 1 km down hill from the old factory

Nicol García was born with 23 mcg/dl of lead in his blood

Over 90 percent of Haina's residents were found to have elevated blood lead levels.

Paraiso de Dios is very hilly and rainwater runoff from this site travels east and south through a highly populated residential neighborhood to the Haina River and then drains into the Bay of Haina.

Appendix Eleven Richard's (HoD, City Academy) Card Sort

Slag (waste by products) from the smelting of batteries were dumped in unlined pits that allow the lead to leach out.

Soil easily generates dust that is ingested through normal childhood hand-to-mouth activity. In addition, barefoot children pick up dust-covered objects and bring them to their homes. Dust containing lead can build up on bedding, clothing, and cooking utensils.

Terragraphics Environmental Engineering, in partnership with Blacksmith Institute, designed an intervention for the site with an approximate timeline of two years.

In 2007, Blacksmith Institute led the formation of a stakeholder group, meeting with possible funders and conducting community outreach and education programs. The stakeholder group consisted of The Ministry of the Environment and Natural Resources, the Autonomous University of Santo Domingo, MetaloXsa, and the community, among others.

The former Lead-acid Battery Recycling facility occupies approximately 45 hectares on a site located on the top of a hill with a view of the Rio Haina; which is about 300 meters to the south, and drains directly into the Bay of Haina another 0.7 km downstream.

The main pit, where a majority of the waste was stored became a park in late 2009.

The Nutrition for Life Programme, which was launched here in 2000, sponsored by the U.S. foundation Friends of Lead-Free Children, the Inter-American Development Bank, and local business associations, delivers nutritional supplements to expectant mothers and children.

The supplements, which contain calcium, magnesium, zinc, vitamins A, B12, C and D, iron and folic acid, help prevent lead from passing from mother to unborn child, and help prevent lead poisoning in young children. However many young children still fall ill.

The recycling factory was located on the hills over looking Haina

The soil in the surrounding areas have Pb levels of over 400ppm, including many of the fields used by locals to grow crops

The town of Bajos de Haina has a population of 90,000, and 32 percent of local households are below the poverty line, according to a government report on poverty in the Dominican Republic carried out in 2005.

The World health organisation states that 10 mcg/dl of lead is the maximum acceptable limit, but also states that any lead is harmful.

Three sides of the factory site are bordered by homes with dirt floors. Across the street is a large vacant parcel of land with barbed wire restricting access. The site is flat with no intact buildings, roads or facilities. There are a few smaller dilapidated building shells and the remnants of a concrete rotary kiln support.

Under the "environment and natural resources" law Metaloxa is now obliged to help pay for the clean up of its old site

Unfortunately, neurodevelopment damages that have occurred among the community's children in Haina may be permanent. Therefore, a significant amount of social support is needed to help impoverished families deal with these life-long disabilities.

BAJOS DE HAINA is commonly referred to as the 'Dominican Chernobyl' due to its chemical pollution levels.

When it rains water flows over and through the soil towards the local river and town

When operational locals complained of a heavy smog like mist emitting from the factory. It is believed that this smog contained high levels of lead particles

When the plant closed there was no significant level of reduction in lead in children's blood observed

With these high levels of lead in the community, action needed to be taken to remove the contaminated material and educate the community on the health risks of lead.

World Health Organization limits are 10 µg/dl for lead in blood although current epidemiological evidence suggests there is no safe level of exposure to lead.

Memory

The capacity to retain knowledge acquired in the past is essential for these, and presumably all teachers. The busyness of their working days was illustrated above through Richard's (HoD, City Academy) declaration to the others in the geography office that a good day was one in which he knew what he was going to teach *before* walking through the classroom door. Carrying his coffee back into the classroom (there was no time to sit and drink) he mused that his planning time is normally the six steps between the door and his desk. Remembering geographical knowledge he previously acquired was necessary for him to work like this. Gemma (Town Comprehensive) framed her desire to retain knowledge in terms of establishing and maintaining her identity and status as a teacher; that is, as one who *knows*. She admired Ruth's ability to *instantly*, *off the top of her head* recall knowledge. These teachers all believed there was more information in their heads than they currently had access to, and when they didn't know something immediately would often say that *it's in there somewhere*. The primary use of memory was as a source of knowledge, rather than justification, although it did also function in this way, with teachers recalling their own earlier experiences to justify assertions made to students:

> When I was a child if you turned over a toy it most likely said made in Taiwan...
>
> When I was at school [geography of development] was all about Asian Tigers...now they're classed as NICs [Newly Industrialised Countries] – shows you how long it takes for countries to develop – still not MEDCs [More Economically Developed Countries].
>
> (Steve, TC, lesson observation 16/4/13)

Students were inducted into the discipline of remembering knowledge through the regular use of tasks requiring them to use their memories. Students' capacity to recall was informally tested at the start of many lessons I observed: answering True/False questions about the previous lesson; writing examples of cases previously studied; and listing positives and negatives of a phenomenon they had previously learnt. Teachers often directly asked students *what they did last lesson.* As well as regularly recalling knowledge, students were often instructed to

'remember the things I keep telling you' (Lesson observation, 22/4/13, TC, period 3). Being one who can remember was presented by these teachers as an important part of becoming a geographer. Identity politics surrounding the use of, in particular, PowerPoints, emphasised these teachers' desires to know, and to be able to remember. Hugh's (Beach Academy) dismissal of heavy use of PowerPoint as a *crutch* made this point: a teacher who *knows* does not need reminders on a slide; they simply speak. A distinction could be seen between teachers of different durations of experience in terms of the amount of knowledge they remembered, with those teaching the same topics for several years retaining a significant amount of information, whereas, those newer to teaching describing concern over their lack of knowledge, and also as having forgotten what they learnt as students themselves.

Introspection

Before the students arrived, Steve (Town Comprehensive) walked around the room with a packet of custard creams. He ate one, gave one to me, and placed biscuits on some of the desks around the classroom.

On entering the room students noticed a biscuit on a desk, and their eyes rested on it for a moment. Seeing a second biscuit they paused, and then when they saw biscuits spread more widely around the room they laughed, asking 'Sir, what's this?!' and 'Ah, thanks Sir, are these all for me?' Steve used the biscuits to describe resource distribution, asking students to count the number of biscuits (17) and compare this to the number of students (17), saying 'right, so that's what we call optimum population'. He then took some of the biscuits away, asking students how they now felt about disparities in resource distribution. Those without the biscuits described feeling that was 'harsh' and 'unfair'. Steve's use as a stimulus from which wider issues might be discussed was the primary way in which I saw introspection being used as a source of

knowledge; teachers did not describe it as a source, or choose it as a source to discuss during interviews.

The importance placed on the format of resources was discussed above in the context of teachers' criticisms of textbooks. Textbooks' direct use is seen negatively primarily because of format rather than substantive content. On the occasions the substantive content of textbooks was criticised it was because it was out-of-date, and in these cases teachers still drew heavily on the information presented in the textbook (often recontextualising it to three or four degrees), and possibly updating facts using Wikipedia.

Knowledge from introspection was also sought through teachers evoking emotional reactions from students in response to things they described as being *awesome*, *beautiful*, and having that *wow factor*. The format of these sources was an important part of their perceived potential to provide stimulation for introspective knowledge. For example, in City Academy shelves of VHS cassettes weighed heavily on the walls of the geography office. I did not see any teachers using them. Whereas, YouTube was often used, and even to show video clips that were older than those held on VHS. The difference was in the format of presentation; YouTube may be projected onto the large white board, with audio played through speakers mounted at the front of the room. VHS could only be played on the much smaller, and quieter, televisions in the corner of each room. Larger, louder images and sounds were seen as having the potential to evoke greater reactions from students. Testimonial accounts of how other people felt were also seen as unproblematic, although they were frequently probed further, which led to normative responses. In the case of the custard creams, this probing led to asking what should be done to make resource distribution more equal. This question being premised on the knowledge now shared by the class that unequal resource distribution feels/is wrong.