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UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIOLOGY, SOCIAL POLICY AND CRIMINOLOGY

Challenging Orthodoxies in Digital Literacy: young
people's practices online.

by

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Thesis for the degree of Doctor of Web Science

January 2015

Abstract

We are told the Web is different from previous mass communication technologies because its technical affordances have created an informational “Wild West” (Reevell (2007)). We are also told, that by overestimating their ‘savvy’, we have abandoned many young people to the risks of this frontier beyond regulation (Hargittai, 2010) (boyd, 2014) (Livingstone, 2007). Young people are therefore said to be vulnerable to untruths circulating on the Web such as health misinformation (Levin-Zamir, Lemish, & Gofin, 2011) (Hargittai & Young, 2012) and conspiracy theories (Millar, 2012). The advertised remedy for these problem populations of digitally illiterate youths is a programme of re-education.

I begin by examining these claims to show the way we have constructed and investigated this problem has shaped our claims about young people online. I argue, in our drive to locate problem populations, we have reduced young people’s relationship with the Web to a series of reductive summative judgments that blame the Web or young people for their lack of digital information literacy.

If we accept the current orthodoxy and then blame the Web we offer a technological determinist explanation of reality: technology produces misinformed populations. If we locate the problem solely with young people, as many researchers do, we evoke a legacy of bio-physiological conceptions of youth’s deficiencies. Our social explanations often attribute young people’s deficiencies to their parent’s occupation (the typical proxy in this research domain for socio-economic status) or their ethnicity; but these reduce young people to unreflective victims of structural inequality.

I begin by conceptually distancing my research from positivistic methods such as tests and questionnaires that often confirm young people’s relatively powerless position in society (Morrow & Richards, 1996); particularly when these methods result in binary judgments such as ‘unskilled’ or ‘skilled’. I then conceive of young people’s status as a social construct that affects their sense of self while they behave as active agents negotiating their position in society. Similarly, I reconceptualise

hitherto fixed categories of information, misinformation, and disinformation as dynamic and socially-produced. I then position this unstable form of information within Foucauldian descriptions of the relationship between informational truths and the production of power in our society.

I operationalise these new concepts of youth and information in this domain by using Mason's (2011) facet methodology and mixed qualitative and digital ethnographic techniques. This combination of concepts (of youth, information, and power) and my research methods, allowed me to investigate the multidirectional and situational environmental and social influences (including my research methods) on youth's engagements with information on the Web.

My findings show that we cannot effectively isolate and implicate the Web, young people, or their socio-economic status as explanations of why and how young people use the Web for information. In analysing the data I began by looking for a conceptual framework that would account for the entanglements of technology, people, and society. This study identifies and analyses how young people's web practices are defined by "the possibilities and impossibilities" (Bourdieu 1984, p100) that exist within young people's educational fields and beyond. Although learning new skills is always important, the social context in which these skills are acquired and used is crucial. The social environment influences which skills are naturalised, incentivised, and rewarded.

This thesis focusses on this space where, buffeted by the various vested interests who are concerned about how the Web is being utilised; young people are exercising their agency and using the Web in ways that suit their purposes. My research has found young people are not free to use the Web as they please nor do they always consciously or critically reflect on their own practices, yet they do describe complex patterns of usage that help them explore their sense of self as well as society's norms and values. My data shows young people's Web usage emerges from the tensions between: how they want to use the Web; how they have learnt to use it; how they have been taught to use it; how they have been allowed

to use it; and how these tensions are played-out in context of their contingent social reality.

In short, this thesis aims to repatriate young people's web practices from the sterile, positivist methods space of questionnaires and tests of digital literacy to social contexts of everyday life.

Constructions of young people in relation to technology have important consequences. We no longer think young people know what they are doing so we are now looking for evidence to substantiate our intervention strategies. These findings suggest we need to rethink, again, what we mean in our narratives of justification when are describing young people's digital deficits and digital inequality otherwise these interventions could be ineffective or indeed counterproductive.

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Declaration of Authorship

I, Huw C. Davies

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

Challenging Orthodoxies in Digital Literacy: young people's practices online.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given.

With the exception of such quotations, this thesis is entirely my own work;

5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.

Signed:.....

Date: January 31 2015

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Introduction

Back in 1990, after I had been offered a place to study Sociology at Bristol University, I attended the department's open day. After talking to no-one all day, I turned down Bristol's offer of a place. I had left a small town in a South Wales valley and I found, on arrival at Bristol, everyone there was just too posh and self-assured to be approachable. Having never visited Canterbury, I ended up at Kent University, which in many ways was equally dominated by an upper and middle class intake.

Since then, I have always been fascinated by how someone's classed socialisation can produce their mind-set. The sharp, pre-Thatcherite, visible class distinctions that defined my parent's life in South Wales were, by 1990, rapidly fading. Icons of Welsh class consciousness were being erased from the landscape; pits were filled in and levelled to make way for Japanese technology manufactures; slag heaps were cultivated for garden theme parks; workman's halls were demolished to make room for shopping malls; rugby was professionalised and assimilated into the entertainment industry. At Kent however, these pre-Thatcherite distinctions existed in the dress codes, body language, social networks and attitudes of students. In particular, I remember one student who was the archetypical playboy with a soft-top sports car who was admired for his blasé attitude to his studies. Although he is undoubtedly technically skilled, after painting his father's friends he is now one of Britain's most feted portrait artists.

What *does* this have to do with my thesis? Fast forward to the 00s, after escaping a career in London's IT business sector, I was a secondary school teacher in a mixed, predominately white working class comprehensive school. I taught Media Studies and ICT. During my lessons students would often come out with all sorts of nonsense they had read on the World Wide Web: the moon landings were an elaborate hoax; 9/11 was an inside job; and so on. The Web, for them, seemed to embody a certain counter-cultural kudos and credibility that eluded most teachers. It would have been easy to laugh at the students in the staffroom; dismiss them as stupid, gullible, poorly educated and incapable of critical thinking. Yet, I knew from working with them, this

would be a lazy, unfair assessment and there was something much more complicated and interesting going on that reflects subtle, sometimes invisible embodiments of social class.

The Web Science DTC programme at the University of Southampton provided me with a unique opportunity to indulge my life-long love of sociology, combine it with my knowledge of digital technology, and investigate this complex junction of technology, class, mind, and culture. From my original application to study Web Science, through to my Master's thesis to my PhD proposal it was always my intention to investigate the topic of this thesis. When I began studying it however, I discovered a substantial body of literature, much of it produced by world renowned experts in their field that related to my agenda. Celebrated academics had looked at this problem; how could I possibly add a unique contribution? The answer came from a relentless evaluation of the current literature and a deep appreciation of the differences between what certain genres of more positivist, American sociology, social-psychology, and theory-driven British sociology can offer.

With only an emergent position on the value of social theory to Web Science, in 2013 I helped organise a workshop that sought to argue for the indispensability of theory to the Web Science project. My instinct was that the Web, and the social world that produced and supports it, is just too complicated, messy and interconnected to be described and accounted for without social theory. This thesis represents my attempt to further embed social theory in Web Science. I recruited a rich history of sociological critique to problematise the current research; deployed an interdisciplinary methodology to my research questions and then began a search for theory to account for the data. What eventually emerges from this thesis is a distinctive methodological, theoretical, and analytical approach to socio-technical Web practices that challenges the orthodoxy that has built-up around young people's digital skills. If we accept that digital technology is set to further revolutionise many aspects of our lives; so that we avoid unhelpful binary categorisations of young people, we must ensure that what we say about digital inequality is carefully informed by robust evidence and its critical analysis.

Chapter 1: Exposing young people's lack of savvy: Governmentality in action?

1.1 Introduction

The number of recent research papers, books, and reports that address youth's relationship with information on the Web show it has become a focus of anxiety. After establishing a historical perspective on how we construct youth as a social category (and how we simultaneously problematise people who exist within this category), I will examine the claims about the Web and youth that sustain this anxiety. I intend to provide an alternative, empirically and theoretically informed perspective on this relationship between young people and digital communications technology. Initially, I will provide evidence of these claims before asking; why are we so concerned about young people in particular? Answering this question will help me show that our descriptions of young people's engagements with the Web are defined by the assumptions and methodologies that we deploy to research them. In turn, this will explain what is distinctive and innovative about my approach.

The first claim that sustains the anxiety is that the Web resembles what Reevell (2007) calls an information "Wild West". We are told this digital frontier allows information to flourish because it is an editorial vacuum, that is without "government or ethical regulation" (Eastin, Yang, & Amy, 2010, p211). Information exchange occurs despite the absence of "traditional gatekeepers" (Fullerton et al., 2010, p469) who would be responsible for "quality control standards" (Flanagin & Metzger, 2008, p12). This lack of executive control is said to signify a discontinuity with traditional media (newspapers, magazines, television, radio and film) which, it is suggested, has always benefitted from professionals making judgments about the validity of its content before it reaches its audience. Instead of "familiar markers of authority, value, trust, and authenticity" (Livingstone, 2009, p187) the Web offers "disintermediation" (Flanagin & Metzger, 2008, p12). Consequently, the origin of information online, its quality, and its veracity is said to be "less clear than ever before" (Flanagin & Metzger, 2008, p5). We are left, it seems, with the indiscernible "blending of advertising and information" (Flanagin & Metzger 2007, p320) and offered a diet of "misleading, questionable, and factually incorrect information" (Schwarz & Morris, 2011, p1) that allows

the “opinions of crusaders, critics, and conspiracy theorists” (Kata, 2011, p2) to flourish.

In this context, we are told there is, therefore, an “unparalleled burden on individuals to locate appropriate information and assess its meaning and relevance accurately” (Flanagin & Metzger, 2008, p1). Yet, to compound this liability, according to Lankes (2008); “filters, assumptions, biases, and outright distortions can never be factored into a user’s credibility decisions” (p104). He goes on; we have “fewer physical cues to work with” (than traditional media) and we are “more dependent on the information provided to us by others” (p103). Lankes also tells us that “people are simply unable to, or fail to, recognize many of the more technical influences on the information with which they are provided” (p104). Livingstone (2007) agrees that, online, the “cues to interpretation” are “inconsistent or confusing” (p116). Unravelling such a complex Web, it is argued elsewhere, may well be beyond our ability:

“Even when a user spends time investigating every claim that they think might be disputed, they can still be misled by information that they had not realized was disputed.” (Ennals, Trushkowsky, & Agosta, 2010, p341)

The second of these anxiety-inducing claims is that young people in particular have a profound relationship with the Web. For example:

“Youth share the feature of having been immersed in an environment of digital technologies (e.g. computers and the Internet) for their entire lives.” (Flanagin & Metzger, 2008, p6)

“Young adults are the most highly connected age group.” (Hargittai & Hinnant, 2008, p602)

“Young people and the internet appear to be inextricably bound up with each other.” (Boonaert & Vettenburg, 2011, p54)

“The Internet has become one of the most important information sources for young people who have access to digital technology and the basic skills to use it.” (Gasser et al., 2012, p19)

Statistics are often used to support such statements. For example, Miller (2012) quotes Ofcom's (2011) figure that 86% of the 12-15 year olds use the Web to research information for school. And, Livingstone et al. (2005) cite the UK Go Online survey in 2005 which found 90% of 9-19 year olds use the Web for school work and 94% for any other information.

The third claim is that we have mistakenly overestimated young people's skills online and many young people are not as savvy as previously suggested. During the first decade of the new millennium Prensky (2001) (and others who shared his perspective) urged educators to recognise contemporary young people were "Digital Natives." He argued, since they had grown-up with the Web, these young people had become naturalised users of digital technology who possessed certain inherent forms of expertise while older people, born before the Web's maturation, were Digital Immigrants with relatively low levels of know-how. This, we were told, was the "Net Generation" (Oblinger et al., 2005) of "Homo-Zappiens" (Veen, 2006) who had grown-up "bathed in bits" (Tapscott & Williams, 2008, p2): users who therefore had an "innate", "hardwired" affinity (Baird & Fisher, 2009, p48) with Web technology.

Scholars call such descriptions of young people "popular rhetoric" (see: Hall & Keynes (2011, p34), Hargittai (2010, p108), Hope Cheong (2008, p772), Jones & Czerniewicz (2010, p317), Lee (2008, p141), Livingstone (2010, p3), Ng (2012, p1), Ross & Bayne (2011, p160), Selwyn (2009, p372)). While the Digital Native has entered into the lexicon of educators, none of these authors provide evidence this popular rhetoric has had an effect on education policy. Nevertheless, the problematisation of this rhetoric (that suggests young users are experts) has become a critical point of entry into research and related discussions about youth's skills online.

For example:

"Digital Natives: where is the evidence?" (Helsper & Eynon, 2010)

"Digital Natives?: A Myth?" (Beckett et al., 2009)

"Digital Na(t)ives? Variation in internet skills and Uses among members of the "Net Generation." (Hargittai, 2010)

“Digital skills of internet natives: Different forms of digital literacy in a random sample of northern Italian high school students.” (Gui & Argentin, 2011)

More specifically, scholars problematise the suggestion Digital Natives are “savvy” (Bennett & Maton (2010, p321), Brouwer (2006, p20), Cheong (2008, p771), Helsper & Eynon (2010, p505), Herring (2007, p72), Metaxes & Graham (2003, p74), Hargittai (2010) and Livingstone (2007)).

For example:

“Assumptions prevail about young people’s inherent savvy with information and communication technologies (ICTs).” (Hargittai, 2010, p93)

“This is an empirical test of assumptions about the supposed inherent savvy of the so-called “digital natives.” (Hargittai, 2010, p93)

“While popular rhetoric would have us believe that young users are generally savvy with digital media...” (Hargittai, 2010, p108)

“Critical scholars should challenge the inflated public claims regarding the internet-savvy teenager.” (Livingstone, 2007, p117)

There are no specific descriptions of what these authors explicitly mean when they use the word savvy. I can, however, infer from its general purpose meaning (and the context within which it is used in the research I have discussed) that it means a combination of proficiency, know-how, and an ability to critically engage with information. Some researchers do not use savvy but deploy a similar term; for example “digital fluency” (Miller, 2012). The scholars who use the term and related concepts invariably conclude that some young people lack savvy or a similar quality. For example:

“Many adolescents do not possess the expertise required to search the Web efficiently or critically assess the credibility of what they find.” (Hargittai et al., 2010, p470)

“Students of lower socioeconomic status, women, students of Hispanic origin, and African Americans exhibit lower levels of Web know-how than others. (Hargittai, 2010, p108).

“Other digital fluency skills – understanding differences in the quality of information, recognising bias or propaganda, visiting a variety of informational sources and applying source verification strategies – were all rated below average.” (Miller, 2012, p50)

“Ted had poor skills in searching and evaluating Web sites.” (Livingstone, 2007, p105).

Adolescent’s *“performance in evaluation skills”* was *“particularly poor.”* (Gui & Argentin, 2011, p977).

“Unskilled” young female users “naïvely assume that unnamed information gatekeepers vet the information.” (Robinson, 2013, p13)

Harvard’s Berkman Centre (Gasser et al., 2012) even seemingly reverses Prensky’s (2001) Digital Native/Digital Immigrant dichotomy by suggesting:

“...stakeholders are concerned that youth will not have the pre-digital evaluation skills adults have used to adapt to the digital context and the digital context will not provide sufficient ability to develop such tools.” (p75)

So we can see that the relationship between youth, information and the Web is attracting attention because it is claimed many poorly skilled young people are at the mercy of the information-free-for-all we call the Web. Before I examine the research that sustains these claims, I need to step back and ask; why are we so concerned about young people in particular?

We can trace the modern drive to problematise youth’s online information practices within our history of problematising the process of growing-up: from its origins in the industrial revolution to its current, naturalised and institutionalised state in our culture. In what follows, I will explore the social history of youth as way of establishing my own

position relative to the mentalities and practices of the past. It is also easy to take for granted the myriad of stakeholders, including academics, educators, governmental, non-governmental, and commercial agencies orientated to intervening in and then monitoring and guiding contemporary youth's development. Are there continuities between the mentalities and practices of today's stakeholders and those of the past? Alternatively, what (if anything) is new about today's interventions?

As we have transformed from an agricultural to post-industrial society our definition of youth has evolved. Young people used to be parental property; nurtured by domestic folk practices then forced into work and afforded no legal rights. Youth today is a public institution; objectified by the state, preserved in law, commodified by business and studied and monitored by rational, scientific expertise. Youth, have been transformed from disempowered mini-adults to today's instruments for influencing the future in a way that "reduces and homogenises" youth (Lesko & Talburt, 2012, p14). Pre-industrial European societies had no clear categories for pre-adult phases of life. The notion of childhood or adolescence as a distinct stage of life or a social category that afforded political and social rights is a recent invention (Zelizer, 1994). The aristocracy aside, previous generations and their social institutions have regarded children primarily as a source of cheap labour (Cunningham, 2009). In 1821, approximately half of the workforce was under 20 (The National Archives, 2012). During the nineteenth century, the increased concentration and visibility of child labour in towns and cities and a growing middle class, some of whom were preoccupied by social reform, helped construct models of childhood and society's obligations to them. After 1867, no factory or workshop could legally employ any child under the age of 8 and employees aged between 8 and 13 were to receive at least 10 hours of education per week (The National Archives, 2012).

Two trends emerged during this time; the sentimentalisation of childhood and the construction of a new category to describe the transition from childhood to adulthood: adolescence. Younger people began a transformation from a domestic economic resource to objects that embodied the public institution of pure childhood to be protected and nurtured. Adolescents, beyond school, were given to

apprenticeships to learn the roles and responsibilities of adulthood. Ideal types were created and used to protect and civilise urban working class groups (Griffin, 1993). For the wealthy, public schools became engines of moral improvement that turned out ideal leaders equipped for the duties of empire (Griffin, 1993). How youth developed, learnt, behaved, and what they represented and believed became an issue of state and public concern. As a result, youth departed from being intrinsic to the state of being young (Scott, 1999) to become a problematised moral classification (Qvortrup, 1994).

In this context, a *laissez faire* approach to youth and abandoning them to fate was seen as a recipe for “moral anarchy” (Lesko 2012, p75).

Consequently, in the late 1800s the line between youth and adulthood “became sharper and more intently watched” (Lesko, 2012, p74). Lesko and Talburt refer to the emergence of “pastoral power” during this period: an era characterised by a “distributed discipline among adult authorities and youthful subjects who internalised regulations to monitor the self” (Lesko & Talburt, 2012, p13). By the early twentieth century, youth was “under the administrative gaze of teachers, parents, psychologists, play reformers, scout leaders, juvenile justice workers” (Lesko, 2012, p75). The persistent and imagined threat of moral anarchy combined with the affordances of pastoral power meant anyone with the authority to exercise this administrative gaze could easily justify their problematisations of youth and their attempts to influence its social shaping. In modern societies this increasingly became the domain of experts.

American psychologist G Stanley Hall, for example, is usually credited with the invention of modern adolescence as a category (Griffin, 1993). He used his privileged position as an expert to synthesise a range of discourses influenced by nineteenth-century western ideologies around race, sexuality, gender, class, nation, and age (Griffin, 1993). Hall argued that, as they develop, “individual children recapitulate the same evolutionary steps as do human groups as they reach toward higher civilised stages” (Lesko & Talburt, 2012, p12). In short, the journey from childhood to adulthood, with all its religious and supremacist connotations, was for Hall an ascent of the chain of being from a

primitive state governed by drives and impulses to a civilised, rational state of self-government and control. Contemporary youth discourses have a legacy in these bio-physiological conceptions of youth's deficiencies.

As the twentieth century progressed science increased its authority and society became more secular. Educational experts were then called upon to address these deficiencies with "pedagogical imperatives" which operated as "disciplinary and instructional techniques" (Lesko, 2012, p75) intended to measure and guide youth's development" (Lesko & Talburt, 2012, p12). A discourse of youth inflected with the morality of the pulpit was superseded by a language that appears (at least superficially) to be less judgemental but is still calibrated to the same purpose: to monitor youth's development and problematise youth who were failing to meet certain standards.

Today, it is the purpose of our educational institutions to "equip youth for the challenges of the new social, economic and world arrangements" (Lesko, 2012, p185). Yet, as young people's educational lives are extended and more stakeholders, including corporate leaders like Google's Eric Schmidt (see BBC (2011)), intervene in the business of education, there seems to be no clear end to this process. "Late modernity" itself seemingly "demands its citizens become more "self-determining and reasoning" (Lesko, 2012, p5). Scholars within the literature I am examining are fulfilling their role by identifying young people who are failing to meet the challenges not of empire but the post-industrial knowledge economy.

The widely promoted remedy for young people who fail to acquire the necessary skills and competencies to participate in this economy is their re-education and training through a programme of digital literacy. Digital literacy policy therefore aims to 'up-skill' young target populations and scaffold their precarious development to create networked yet independent and self-motivated learners able to equip themselves with new knowledge and expertise. For these learners, in the near future, traditional instruction would be redundant: via expert intervention, they would become true Digital Natives.

The various overlapping definitions of digital and new media literacy are as old as the Web's entry into mainstream culture (see for example Lanham (1995) and Glister (1997)). All contemporary definitions of digital literacy now include the critical assessment of information which is suggested by the term savvy (see for example Bawden (2007), Kellner & Share (2007), Livingstone (2007), Buckingham (2009), Jenkins (2009), Eastin et al. (2010), Bennett & Maton (2010), Ng (2012) and Miller (2012)). Robinson (2013) refers to this critical assessment specifically as "evaluation literacy" (p9). Here, in the domain of youth's relationship with the Web, the deficit that justifies and drives expert interventions is young people's lack of critical skills or savvy.

We can see, therefore, contemporary concerns about youth's lack of digital skills is a continuation of historically identifiable processes that are marked by the exercise of pastoral power and energised by the identification of deficits and remedies. Indeed some scholars echo the previous century's bio-physiological conceptions of youth's deficiencies. Ironically, despite its concern with social change their research is influenced by a bio-physiological Piagetian model of development. Eastin (2008), who details the Piagetian model "in order to understand how children are able to reliably evaluate the credibility of information they encounter either on or offline" (p31), is widely cited by many authors who focus on the intersection between youth, information and the Web. Menchen-Trevino & Hargittai (2011) quote him when they say, "Young people may have even more difficulty assessing credibility than adults" (p2). Flanagin and Metzger (2008) also cite Eastin when they suggest:

"Youth are faced with rather complex cognitive tasks online, and youth at different developmental stages are equipped to different degrees to resolve these dilemmas effectively" (p20).

The use of the developmental model here suggests a standardisation of biographies, clean distinctions between age groups, and a positive convergence towards an ideal scientifically rational adult. In this domain of research therefore:

"It is still taken for granted that the process of maturing from a child to adolescent to adult unfolds as a series of naturally

*occurring stages, that there is a right age at which children **should** develop certain competencies and acquire certain freedoms and responsibilities.” (Scott, 1999, p92)*

I am not suggesting this is a project coordinated by vested interests: there are many apparently disparate stakeholders in this domain (academics and educational consultants for example have very different interests to business leaders of companies who supply schools with software). When they use the language of risk, intervention, and remedial action they all, nevertheless, share a series practices and a particular mentality that Foucault (2002) called “governmentality”.

In his lecture on *Governmentality* he firstly defined this as:

“The ensemble formed by the institutions, procedures, analyses and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population, as its principal form of knowledge political economy, and as its essential technical means apparatuses of security.” (p219-220)

The collective noun ‘ensemble’ seems here to refer to government itself. This could be understood, in lay terms, to be government ministers; their departments of state and their civil servants, etc.; our system of government. Foucault, however, refers to any ensemble that lays claim to or exercises power. An institution’s procedures, analytical conclusions and reflections; its calculations and tactics can be therefore called an ensemble. Elsewhere, Foucault (2001) suggested these institutional mechanisms are its “apparatus” which are given a common purpose by the “épistémé” (p364) (the norms, values and practices that binds the ensemble together). If youth is a target population then its problematisation is therefore the initialisation of governmentality in action.

Foucault (2002) secondly defined governmentality as a “type of power called government”:

“The tendency which, over a long period and throughout the West, has steadily led towards the pre-eminence over all other forms

(sovereignty, discipline, etc.) of this type of power which may be termed government, resulting, on the one hand, in the formation of a whole series of specific governmental apparatuses, and, on the other, in the development of a whole complex of knowledge savoirs.” (p220)

An ensemble or more specifically its “apparatus” produces “savoirs” or bodies of knowledge generated by expertise which are an expression of power over youth. Foucault is arguing this has replaced or coexists with more visible, less benign forms of power such as discipline. The secondary literature on Foucault supports this analysis. For Dean (1999), governmentality addresses the different “mentalities of government” (p16). Institutional regimes, knowledges, practices and procedures are said by Wyn & White (1997) to be “structured, internalised and normalised to exercise power over and through certain sectors of society” (p133). This, however, is not top-down, directed power nor an all pervasive form of social control, but the enacting of “assorted attempts at the calculated administration of diverse aspects of conduct” which are “intrinsically linked to the activities of expertise” (Rose & Miller, 1992, p175).

Initially with the help of expertise a “set of problems” is identified that is “specific to the issue of population” (Kelly, 2000, p304). Foucault argued that this discovery of problematic populations, or “more correctly the discursive construction of populations, and of populations within populations, became central to the art of European government from the 16th century onwards” (Kelly, 2000, p304). Young people have become one of these populations: “community and policy discourse is marked by widespread adult concerns about today’s young people” (p301). Thinking about youth in terms of a population “enables an engagement with long-run historical processes of expert knowledge production about the truths of youth; which suggest that youth can be understood as an artefact” (p306). This then affords a variety of contemporary experts to produce and mobilise further “truths” (p306) to help society discuss “how young people should be schooled, policed, housed, employed, or prevented from becoming involved in any number of risky (sexual, eating, drug

abusing or peer cultural) practices” (p301). Experts tell us how young people’s behaviours and dispositions can be regulated.

Governmentality therefore refers to an ostensibly benevolent, “less spontaneous” exercise of power over problematised populations particularly to enable the “use of techniques and technologies” to intervene and “regulate individual practice” (Threadgold, 2006, p4). This is evidenced in the language of education strategy which has been inundated with such terms as ‘emotional literacy’, ‘individual learning styles’ and ‘individual learning journeys’; and now ‘digital literacy’ through mastery of the Web (see, for example, Hague & Payton (2010) for how this language is used). Governmentality intends ‘the self’ to be more accountable to an external agenda; so knowledges, practices and procedures are enacted through self-regulation. Its purpose is “to shape, guide or affect the conduct of some person or persons” (Gordon, 1991, p2) by convincing its subjects that conformity is an act of rational self-investment.

At this point governmentality and bio-physiological conceptions of young people intersect. Within “cultural and social turmoil” the young “suffer most” as they “face the difficult metamorphosis from child into adult while deciding who they are and what they believe” (Giddens, 1990, p5). This last problem; ‘what they believe’, is the one that has recently mobilised experts who are advancing a digital literacy agenda and illustrates the processes of governmentality at work. Inversely, the response to popular rhetoric that overstated youth’s proficiency with the Web begins with a “mistrust of youth’s partial and provisional subjectivities” (Kelly, 2000b, p303). Kelly (2000a, 2003) has shown how governmental power is translated into an institutionalised mistrust of young people’s development. Research is done on young people’s web usage so that their suspicious practices can “become knowable” (Threadgold, 2006, p2).

Governmentality applied to youth online is augmented by powerful narratives of “risk, fear and uncertainty” that structure a variety of emergent processes and practices aimed at regulating the actions and thoughts of young people” (Kelly, 2000b, p302). We are told scholars

are right to caution against “overestimating young people’s literacy” because “anxieties about risk are, to some degree justifiably, enhanced in the risk society” (Livingstone, 2007, p117). Descriptions of the Web as an information Wild West are mobilised here to reinforce the warnings about youth’s vulnerability. Indeed, it has been said the more we trust youth to find their own way the more we expose them to danger. Online, we are told there is “a strong, positive relationship between the breadth of opportunities and breadth of risks experienced” (Livingstone et al., 2005, p16).

Moreover, the inability to evaluate information is considered no ordinary deficit; its importance is elevated by calling it “a form of capital” (Livingstone, 2007, p106) the absence of which, we are told, will damage a young person’s life chances. It is claimed therefore there is much more at stake than a simple lack of skills; it is said young people need these skills to “take a full and active part in social, cultural, economic, civic and intellectual life now and in the future” (Hague & Payton 2010, p1).

Furthermore, it is suggested if young people fail to acquire these skills they face “social exclusion and inequality” (Livingstone et al., 2005, p6), “economic, social, psychological and political disadvantage” (Livingstone, 2011, p31), and could be risking their health (by for example being unable to locate safe emergency contraception (see: Hargittai & Young (2012)). Eysenbach (2008) even concluded an accurate assessment of health information “can literally be a matter of life and death” (p124).

Policy based on such pronouncements is unimpeachable; it is “legislated reason” (Bauman, 1990, p26) or “political rationality” (Foucault, 1988, p162). It is governmentality as common sense delivered via the “activities and practices of expertise” (Kelly, 2000b, p313) such as the incitement, funding and structuring of research agendas. Interventions based on rational, expert evidence and advice promises, for young people, smoother transitions and safety from harm. For society these interventions offer “more appropriate public and private behaviours” from the young (Kelly, 2000b, p309). Constructions of young people as: “friends and students of business; active consumers; dutiful citizens; the children of authoritative parents; good characters-in-the-making” (Brooks, 2013, p321) coalesce here. For example;

Knowledge economy, competitiveness, and choice: in a market economy increasingly based on information, often in a complex and mediated form, a media and information-literate individual is likely to have more to offer, and therefore achieve at a higher level in the workplace, and a media and information-literate society is innovative and competitive, sustaining a rich array of choices for the consumer. (Livingstone, 2007, p114)

Digital literacy is seen as an engine of Putnam's (2001) concept of social capital. Within Putnam's terms social capital is embodied in a community's morally-informed cohesion. Therefore, trust and its attendant social norms and obligations create social networks of active citizens who, for instance, participate in voluntary associations. Although never explicitly defined, this definition is strongly implied in the digital literacy literature. For example:

"Social capital is primarily a matter of access to social networks of friends and acquaintances; and here, families with access to social networks that already possess expertise in computing will obviously be in a stronger position to realise the benefits of technology than those without." (Buckingham et al. 2005, p34)

It is only, therefore, by productively engaging in digital literacy classes that young people will "adequately develop into the kind of adults who can function effectively in the complex and demanding world of modern society" (Faye, 1991, p66). This perpetuates a "fantasy of the adolescent, as a 'desiring', 'motivated' subject who wants to learn; who wants to belong; and who wills their own subjection as a democratic citizen" (p. 66): According to this ideal, young people want to learn how to find facts, evaluate information and use it constructively, and they are waiting eagerly to be told how.

The current research and wider calls for digital literacy are not part of conscious, coordinated attempt to exercise governmental power over youth. However, the literature's conceptualisations of youth, the Web and information (as well as its methods) mean this research lends itself to the processes of governmentality. It begins when the research only cursorily defines or fails to define youth. Within the literature youth is rarely

explicitly substantiated, especially in relation to childhood. Flanagan and Metzger call children 11 to 18 year olds (Flanagin & Metzger, 2010, p239); the UK Children Go Online (UKCGO) project calls refers to them as 9-19 year olds (Livingstone et. al., 2005, p7); meanwhile, Ofcom (2011) calls 5-15 year olds “children and young people” (p4). Gasser et al. (2012) conclude “a review of the literature suggests there is as of yet no real standard for using or defining these terms” (p25). Therefore, while recognising youth as social and legal construct, Gasser et al. adopt the convention of referring to all legal minors (generally, individuals under the age of eighteen in U.S. law) as “youth” (p25). The use of age as a simple, self-evident, timeless and unproblematic category homogenises youth for the purposes of intervention. As young people’s behaviours, practices and deficits can be attributed to their age, this treatment of age also lends itself to a process of further, clean categorisation such as skilled or unskilled.

By augmenting the language of risk metaphors that problematise the Web also lend themselves to process of governmentality. In many respects the dominant metaphor in this academic domain, of the Web as an information Wild West, is outdated. The very latest calls for digital literacy now reference portentous commentaries about the power of algorithms. For example:

“That we are now turning to algorithms to identify what we need to know is as momentous as having relied on credentialed experts, the scientific method, common sense, or the word of God”
(Gillespie, 2014, p169).

Pariser (2011) is a high profile exponent of such commentary. He claims personalisation algorithms encase us in “filter bubbles” by a process of what has been referred to in the past as “cyberbalkanisation” (van Alstyne & Brynjolfsson, 1996). Algorithms, according to this narrative, have predetermined effects. In this case they only afford an engagement with culture that is dangerously self-affirming and self-regarding. This digital “echo chamber” (Zittrain, 2009) is said to fatally undermine constructive public dialogues. Authors concerned with youth online are now

reorienting discussions about youth's deficits to these warnings about algorithms for example:

"Teens view Google as the centre of the digital information universe, even though they have little understanding of how the search results are produced, let alone any awareness of how personalization affects what they see." (Boyd, 2014, p186)

This talk about the power of algorithms also primes us for the news the world can be divided between people who understand technology, and its potential to surreptitiously organise our thoughts and practices, and the unenlightened victims of technology's power to organise our lives such as this:

"The notion of an algorithm is foreign to most people, including most youth." (Boyd, 2014, p185)

Embedded in these digital literacy debates and dialogues are two instances of technical determinism. Firstly (with concepts centring on 'capital enhancing skills') advocates of digital literacy imply digital technology has the power to transform young people's lives. Since young people from low socio-economic groups are often problematised; this suggests a programme of digital up-skilling could help them transcend the structural inequality that defines their educational experience. The second instance technical determinism is suggested by the wider commentaries related to digital literacy about the power of algorithms. Software seemingly has the power to organise our thoughts and lives whether we like it or not. This thinking organises us into hierarchies; at the top of which is an enlightened few who are able to see right through what technology is doing to us. Owing to governmental thinking, youth are positioned at the opposite end of this hierarchy as technology's victims.

Secondly, young people who get the difference between information and misinformation are easily classifiable into skilled or unskilled; digitally literate or illiterate; savvy or naïve. As well treating youth as a self-evident and socially neutral category, this process is facilitated by clean unproblematic distinctions between good and bad information. Yet, in

their in-depth analysis of the term, Brock and Dhillon (2001) concluded that information is almost everything and anything: they liken it to the "ether" of the Middle Ages, which pervades everything but cannot be captured. Despite its potential vagaries, however, the authors who address youth and information online are more sure-footed when they identify and label problematic forms of information. These labels include, most commonly, "misinformation". For example:

"Four questions tested particular areas of misinformation: advertising claims, government misinformation, lobby group propaganda, and scams." (Metaxes & Graham, 2003, p72)

The literature is inundated with other further references to "misinformation" (see, for example, Schwarz & Morris (2011), Flanagin & Metzger (2008), Burbules (2001), and Lankes (2008)). Less frequently problematic information is called "disinformation" (see, for example, Fritch & Cromwell (2001), Burbules (2001), and Bartlett & Miller (2011)). Yet, in reality there is often "no clear and unambiguous dividing line between information and misinformation" (Stahl, 2006, p92);

"A statement that can serve as useful and clear information when uttered by A in context B can become an outright lie with political intentions when uttered by person C in context D." (p92)

Such ambiguities go unacknowledged as it appears they would distract us from the need to address youth's skills deficits. Sometimes youth's lack of interest in *any* information is even problematised for example:

"...the benefits he gains from the internet are curtailed first by his lack of interest in information, education, or exploration and, second, by his poor skills in searching and evaluating Web sites"
(Livingstone, 2007, p105)

We can see then an institutionalised mistrust of youth, technological determinist descriptions of the Web, and binary constructions of information merge to lend themselves to the processes and logic of governmentality (within which young people or certain groups of young people are marked out for investigation and expert intervention).

This process is further sustained by many of the specific research methods used to date to apprehend the relationship between youth, information, and the Web. Hargittai et al. (2010) conducted a study among 1060 first-year college students (aged 18 or 19 years) who were marked out for their “ethnic and racial diversity” (p473). They took 102 of these students for “in-person observations and interviews” (p473) and concluded:

“In both the larger group as well as the subsample, there is considerable variance on our digital literacy measure suggesting that we have both very digitally savvy and much less knowledgeable respondents in the study.” (p476)

The task list administered during in-person observation sessions, however, reveals a series of questions that test competency with a search engine. For example, task 3 is:

“You need to read Act 2 Scene 4 from Shakespeare’s Romeo and Juliet by tomorrow for class. What is a quick way you can get access to it?” (p488)

And task 12 (B) is:

“You are trying to figure out what two businesses are next door to Brandy Ho’s Chinese restaurant in the North Beach neighborhood of San Francisco. What are they?” (P488)

The students who failed this test were excluded from the digitally savvy group. Similarly, Robinson (2013) performed “one-on-one and focus group interviews” with 319 17–18 year-old students from an “economically diverse” (p4) high school in “agricultural California” (p4). While she tells us “formalized skill-testing was not carried out” (p5), Robinson gave the students exercises to expose their “information-seeking skills” (p6). For example, she asked them to use a search engine to find ‘What myths inspired Sophocles’ plays?’ (p11) then, as Hargittai et al. did, Robinson divided the cohort between skilled and unskilled students:

“Skilled students use several strategies to develop effective search terms for information-retrieval”. (p7)

Similarly, in the “information evaluation” (p8) states:

“Skilled searchers use several evaluation strategies to determine credibility. In evaluating the results of their information-retrieval, skilled students identify 1) the domain suffix, 2) authorship, and 3) the author’s credibility.” (p9)

Conversely:

“Unskilled students’ unsuccessful information-seeking strategies neglect this third evaluative stage in two different ways: naïve overtrusting or disengaged undertrusting. Here we see a fascinating gender difference. While exploratory, these findings suggests (sic) that naïve overtrusters are predominantly female, and undertrusters are predominantly male.” (P12)

Gui & Argentin (2011) also separated young people with assessment criteria. They researched 65 youths aged 15-20 from various “cultural backgrounds” (p967). To “combine the large-scale nature of the survey with the need to observe real task performances”, they used “a questionnaire approach (suitable for a large sample) where multiple-choice questions are also applied for testing actual skills online” (p968). There was a “theoretical part of test” within which, for example, the cohort had to identify that a website was: “A collection of web pages organized under the same domain in the World Wide Web” (p969). A series of “operational” tests such as: “While you are surfing on the website www.barilla.it (the link is active) find how many minutes it takes to cook the conchiglie rigate [ribbed shells] pasta variety” (p969). For the final evaluation skills part of test, Gui and Argentin’s research cohort was asked to correctly identify, from menu of possible answers, a website’s purpose. Once again, many of the students failed this test: “the performance of the sample in evaluation skills was particularly poor” (p977).

This research contributes to the measurement of young people for the purpose of separating them into digitally illiterate sub populations who

lack savvy. The research is therefore implicated in the management of young people's progress towards becoming reasoning, digital literate global citizens of the future. This process is normalised by contemporary preoccupations with self-governance that pervade other areas of society such as work and health. If governmentality is characterised by treating the young as a research artefact (that can be held to account by classifications and judgements) then Miller (2012) intensifies the governmental nature of this research by bypassing young people altogether and canvassing their teachers. He calls upon an online questionnaire of 412 primary and secondary school teachers who were asked to rate, for instance, their student's understanding of "how search engines operate" and ability to "recognise bias or propaganda" on a scale of "Excellent, Good, Average, Poor or Very Poor" (p47). One of Miller's "key findings" was that "teachers rated their pupils' digital fluency abilities, on average, poor" (p50). This leads him to recommend:

"The era of mass, unmediated information needs to be attended by a new educational paradigm based on a renewal of critical, sceptical, savvy thought fit for the online age." (p51)

The use of tests in this domain that demand correct answers are limited in their outcomes: young people can either be declared savvy or unskilled. Youth's relationship with information technology is, (in the Foucauldian sense of the term) disciplined and syndicated by tests, judgements, and statistics. Many of these tests and questionnaires measure young people against the standards of a well-educated, digitally literate adult with particular interests. Models of digital literacy based on such tests therefore enshrine adult-normative accounts of sophisticated, measured, reflective, and purposeful usage of technology. Calls to make young people more digitally literate echo historically embedded fears about their deficiencies; fears which were informed by bio-physiological conceptions of young people transferring between problematic states into adulthood (and in some cases such as Eastin (2008) still are).

We can therefore trace the invention of youth back to mid-nineteenth century and follow its evolution from attributes which embody the qualities of the British Empire, to disquiet about youth's perceived non-

conformity and on to today's concerns about the equipping young people for the post-industrial "information age" (Castells, 2007). We can see this social history of youth reflected in current concerns about youth's relationship with information on the Web. The subtext of these concerns suggests, initially the innocence of childhood (which has its antecedents in the Victorian era) has to be preserved, and then the potential moral anarchy of adolescence (described by early twentieth century psychology) has to be addressed before young people can be taught to manage themselves into competent digitally literate adults. The problematisation of youth's skills; the processes of identification, description and monitoring of youth's deficiencies and efforts to guide youth through their problematic transition to adulthood can be understood as the "legislated reason" (Bauman, 1990, p26) of governmentality in action. Problematic populations of young people are discovered by research; their lack of savvy becomes integrated into our *savoirs* of knowledge about youth and a *truth* that can be mobilised by advocates of digital literacy.

Why does this matter? Conceptualising young people as less competent in this way can be as equally unhelpful as inflating their skills: It is important to engage with these dichotomous representations critically, because they provide teachers and parents (and researchers) with "powerful normative models for what children are (or should be) like" (Morrow & Richards, 1996, p100). Moreover, despite marking out young people for their "ethnic and racial diversity" (Hargittai, 2010) or "cultural backgrounds" (Gui & Argentin, 2011) or because they are "economically diverse" (Robinson, 2013), competency tests and judgements only: individualise and essentialise young people; remove individuals from the social worlds they inhabit; and reduce young people to a neat category. We are encouraged to mistrust, suppress or neglect young people's subjective experiences. We learn some young people lack skill with a search engine or knowledge about domain suffixes but judgements about young people based on this knowledge can sever them from their lived social reality. What about the communities; institutions, online social networks, families and peer groups young people inhabit: Do they have an influence? Do young people participate in shared, evolving,

cultural systems of meaning or are they, as existing research suggests, internalising knowledge, culture, and expertise as isolated individuals? In short, this thesis aims to repatriate young people's web practices from the sterile, positivist methods space of questionnaires and tests of digital literacy to social contexts of everyday life. The next chapter; via my research questions, my methodology and its methods, sets out how.

Chapter 2: Applying a new approach to 'the problem' of youth's information literacy.

2.1 Introduction

I want to refrain from problematising individuals because they happen to be born around the same time and avoid judgements about youth's deficiencies. These judgements are often characterised by a positivistic urge to build what Schatzki (2002, p xii) calls "simplifying, diagrammatic models of social life". This process is compounded by oversimplifications of technology that suggest its effects, such as filter bubbling, are predetermined by the technology itself. So, by querying the governmental nature of existing research, I also want to examine its inherent technological determinism.

My first research question expedites this aim by asking: What can we learn from positioning young people's web practises relative to the mentalities of government I described in Chapter 1? More specifically:

Q1: How do young people's Web practices compare with the problematic/ideal user offered in the digital literacy literature?

I have stated this question here because the mentalities that this research question challenges are fresh in the reader's mind. In answering this question I plan to query the shared and evolving cultural systems of meaning that existing research neglects when it severs young people from their social worlds. I have two further research questions that develop this intention by building on the first question. Answering each question in turn will twist the kaleidoscope; re-energise the thesis' narrative and illuminate further facets to the data. This process, however, will not begin from cold. I will draw on previous scholarship that has challenged neatly packaged definitions of technology, youth, and information. Before I introduce my next two research questions that operationalise what this scholarship offers us, I need to describe it.

2.2 Reconsidering the Youth/Technology Interface

Technology's effects may be "complex and contingent" but this is not to say that it has "no social effects" (Mackenzie & Wajcman, 2012, p3). There is therefore a "valid aspect" to technological determinism:

Technology does have some “influence of upon social relations” (p41). The mistake is to assume that the social consequences that flow from technological change are entirely predictable and inevitable. Conceptualisations of technology’s transformative potential and the interconnectivities between technology and social life have antecedents in the history of sociological theory. There is debate whether Marx was a technological determinist in this respect; some, including for example Sismondo (2011, p96), reprint Marx’s famous statement from *Poverty and Philosophy*;

“The hand-mill gives you society with the feudal lord, the steam-mill, society with the industrial capitalist.” (Marx, 1847, p92)

The use of this quote to characterise Marx as a determinist is, however, contested by other selective interpretations of his work that suggest a more mutually constitutive relationship between people and technology. Such as:

“The architect builds the cell in his mind before he constructs it in wax. . . . Man not only effects a change of form in the materials of nature; he also realizes his own purpose in those materials.” (Marx (1973, p113) quoted in Mackenzie (1984))

Whichever way he is interpreted, Marx shows us that the emergence of socio-economic hierarchies is mediated, consolidated, and amplified by new technologies (McKenzie & Wajcman, 1999). More recently, examinations of the social construction of technology (SCOT) have provided a more focussed and direct critique of technological determinism. SCOT emerged from the field of science and technology studies (STS), which in turn developed from the sociology of scientific knowledge (SSK) (Collins, 1983). SSK observed the social influences on the production of scientific facts as they were mediated by the culture of a laboratory (see, for example, Law’s investigation into a biochemistry laboratory lab in Callon, Law, & Rip (1986)). STS turned the SSK approach to the production and subsequent deployment of technologies. Proponents of STS, Pinch & Bijker (1984), argued that “the social constructivist view prevalent within the sociology of science” provided a “useful starting point” (p400) to rethink how technology is made and

used. Scholars of STS start therefore from an assumption that “science and technology are thoroughly social activities” (Sismondo, 2011, p10). After critiquing the apparently inevitable linear processes of technological progress that are “implicit in much history of technology” (Pinch & Biker, 1984, p411), SCOT sensitised us to how the social world interferes in and constrains or accelerates technology’s emergence and usage. Within the SCOT approach, the “developmental process of a technological artefact is described as an alternation of variation and selection”: a “multi-directional model” (p411). Since social agents are involved in this variation and selection “there will always be more than one way of using a resource” (Mackenzie & Wajcman, 2012, p14).

SCOT scholars illustrate their arguments with case studies. For instance, Bijker (Pinch & Bijker, 1989) show us, in Victorian Britain, despite the availability of safety bikes with smaller wheels, young men insisted on ostentatiously riding the impractical and unstable Penny-farthing. The giant front-wheeled bike became an icon of the period not because it was the most utilitarian bike for riding but because it was prop with which men, via their mastery over machinery and jeopardy, could publicly exhibit the full majesty of their masculinity. A SCOT analysis tells us therefore “the success of an artefact depends upon the strength and size of the group that takes it up and promotes it” (Sismondo, 2011, p99). Moreover, the technology’s definition “depends upon the associations that different actors make” (p99). Then when technologies are brought into use in the field of practice, users exercise “interpretive flexibility” (Pinch & Bijker, 1989). Norms coalesce around technologies to define their utility and value. Design is influential: “the good design of an artefact cannot be an independent cause of its success” (Sismondo, 2011, p99). Technological determinism, however, retrospectively attributes a technology’s success to its design and is then blind to the possibility that what is normatively valued for its design is instead, as the Penny-farthing shows, the result of unanticipated social norms and values that reorientate a technology’s purpose.

Actor network theory (ANT) similarly conceives of technology as emerging from continuous socially-shaped processes. ANT, however,

obliterates any distinction between the social and technology or indeed any social constructions;

“Truth and falsehood. Large and small. Agency and structure. Human and non-human. Before and after. Knowledge and power. Context and content. Materiality and sociality. Activity and passivity...all of these divides have been rubbished in work undertaken in the name of actor network theory” (Law 1999, p3)

For ANT’s adherents there is “no empirical case where the existence of two coherent and homogeneous aggregates, for instance technology ‘and’ society, could make any sense” (Latour 2005, p76). In place of these false dichotomies, according to Latour, we should think of intentionality or agency as “borrowed, distributed, suggested, influenced, dominated, betrayed and translated” (p46) throughout a vast array of entities including the user. From a SCOT perspective technological practice is a result of culture enacted by users on technology. Meanwhile, ANT sees technological practice as a co-production of inseparable agents. For ANT’s advocates, humans and technology “do not merely share a common history: they are each other’s common history” (Latour, 1999, p192).

Given the frequent absence of boundaries, defining technology, particularly Web technology, can be a challenge. For example, wearable technologies that transmit and receive data from the Web have a variety of functions and uses that defy easy categorisation. This is because the definition and meaning of technology is never stable, rather it is what Latour would call an ‘artefact’ that is in a continuous process of becoming. We cannot therefore work with “a priori definition of technology and graft it onto social practice” (Sterne, 2003, p374). Moreover, to “substantialize” technology is “to bracket the very questions that are supposed to be asked when we do a sociology of technology” (Sterne, 2003, p373). In substantialising technology we often preconstruct the object of study. For example, Pariser (2011) hypothesised the negative effects of Google’s search engine and this fed further discussion and speculation: now Google’s algorithms are widely problematised (see for example Hannak & Sapiezynski (2013)). This is typical of:

“The forces that encourage us to ask certain questions of technologies, to define technology in certain ways to the exclusion of others, and to accept the terms of public debate as the basis for our research programs.” (Sterne, 2003, p368)

We can see that this dissolution of boundaries is particularly applicable to contemporary digital technology where often there is no apparent distinction between producer and user or technical professional and amateur hobbyist or content provider and content consumer. Many of the Web’s dominant technologies such as the Apache web server or the Mozilla web browser are open source which means users can re-write its algorithms.

In this context, STS appropriates the concept of the black box used to by engineers to describe “a predictable input-output device, something the inner workings of which need not be known for it to be used” (Sismondo 2011, p120). Digital black-boxed technology is not open source so we have to attempt to infer its inner workings from its outputs. Companies with different business models to open source such as Google black-box their technology; so called propriety software. Many of Google’s competitors are open source or, such as DuckDuck Go, they use a combination of open source and propriety software. Yet, Google is the Web’s dominant search engine. A SCOT analysis would help tell us why Google became more successful. This, however, is beyond the scope of this thesis. I will, within certain limitations open Google’s search engine black box, though I am more interested in how digital technologies are practiced. Intelligent digital black-boxed technology is designed to adapt to its user community’s practices and feedback what it has learnt about the user into its functionality. For example, Google predicts, from contextual information, a user’s search expectations.

We can see then that isolating and implicating the user or the technology in digital practices, as existing research does, is highly problematic. I will explore this as an example of what Mason (2011) calls an “entwined problematic” in Chapter 3 when; in particular, I will examine how young people use search engines. Here, the STS concept of distributed agency will be a useful starting point. This is a challenging proposition; when

they use digital technology young people are not like their ancestors faced by a simple choice between a safety bicycle and a Penny-farthing: they “must navigate among constellations of interests, goals, claims, images, and existing and potential artefacts” (Sismondo 2011, p128). These choices become even more complex when “even the most narrowly technical characteristics of competitors may be in dispute” (p128). Before I can explore the relationship between young people and socially-shaped technology however, I need to show youth, before and after it encounters technology, also evolves within its processes of becoming.

2.3 Introducing the Sociological Youth

Contemporary sociological research has “highlighted the blurring of boundaries between youth and adulthood and the destandardisation of the life course” (Reisinger, 2012, p96). Griffin (1993), Lesko (2011), and Seaton (2012) argue that young people’s development is a complex, non-linear and dynamic process that involves mutually defining interactions between asynchronous biological changes and multidirectional environmental and social influences. Young people, like all individuals are involved in, what Giddens (1991) called, a 'project of self' or a 'reflexive biography', which allows them to engage in an evolving process of defining and re-defining their self-identity. Youth therefore intersects with a range of social differences, including culture, gender, ethnic background, personal characteristics and so on (Morrow & Richards, 1996). I am seeking to investigate how an individual’s engagements with the Web can be configured by their social identity or identities and, in turn, I aim to query the wider social conditions of these engagements.

James et al. (1998) separate ‘the developing child’ characterised by bio-physical descriptions of developmental stages (presented by for example Eastin (2008)) from what they term ‘the sociological child’: the de-essentialised child who is shaped by their social environment present in the sociology of youth. My approach builds on Morrow’s (2008) operationalisation of this ‘the sociological child’ as it attempts to:

“Understand children as social actors, as competent research participants with particular communication skills that researchers

can draw upon in social research, and as forming a social group who are constrained by adult structures and practices in which they are located.” (p51)

In Chapter 4 I will explain what I mean by adult structures and practices and how the Web is implicated in these arrangements. I will also explore the possibility that, as well as constraints, adult structures and practices may embody affordances and incentives. This will utilise the work I do in Chapter 3, which via the STS concept of distributed agency, will explore the relationship between the user and technology before introducing ideas about the user’s wider social arrangements.

This is important because if I conceive of adulthood as something young people practice, perform, and achieve at different times in their lives rather than a quality they inherit by virtue of their age, then this has implications for the theories, methods and research ethics of this thesis. And, crucially, this means the thesis’ methodological and ethical concerns are often inseparable. By making a theory-inspired methodological decision to investigate the sociological child and therefore distance myself from the governmentality of existing research, I am producing ethical tensions. I am adding extra strain by operationalising a particular conceptualisation of information. Since these tensions are an entwined with the research methods I will describe how I resolved them after describing my methodology and its methods.

2.4 Operationalising the Sociological Youth

After establishing, in theory, young people’s identity is made by multidirectional environmental and social influences the next question was how could I observe the mobilisation of young people’s identity for the purposes of my research in a way that told me something about these identities and the influences? From a Bourdieusian perspective, particularly through the concept of habitus and its empirical operationalisation (see, for example, Reay, Crozier, & Clayton (2009)), we see that a person’s fundamental cognitive and physical dispositions are configured by how they respond to the social spaces they inhabit. This means the way a person thinks and their practical actions are produced

by a combination of the legacy of their socialisation and their adaptations to the affordances and constraints on their actions that they encounter day-to-day. In differentiating between young people who have grown-up and live in contrasting circumstances, the possible combinations available to me to operationalise the 'sociological youth' were almost innumerable.

I chose to operationalise these potential arrangements in an educational context. A young person's school or college is an important site of socialisation (Parsons, 1959). Reay et al (2001) represent the effects of such a site as "institutional habitus" which "could be understood as the impact of a cultural group or social class on an individual's behaviour as it is mediated through an organisation" (Section 1.3). Following this logic, if I took two educational institutions that were situated in different cultures so that they would generate a different institutional habitus within the institution's personnel. Apart from the important influence that their school or college had on young people's lives and potentially their use of the Web, the educational context of my research was important for other practical and methodological reasons. A school or college was the best place I could supervise young people in the same room with standardised, networked computers and fast access to Web. Ideally, I might have tracked the students at home and within their extra scholastic social lives. For a lone PhD student this, however, would present possibly insurmountable logistical and ethical challenges. Carrying out the research in an educational establishment made this research achievable and softened the ethical speed bumps. For under-eighteens, the parents were more likely to sanction the research if they knew it was happening with the school or college's approval. The students were already within each institution's duty of care. There were likely to be, for example, web filters, in the school so that the students would be protected from any offensive or upsetting material they could have encountered. The potential drawback is the students could have been inhibited by this context; for example, the students may have felt like, as representatives of the school or college, that they had to impress outsiders like me. (The subsequent data however, as I will go on to explain, shows this was only a minor or irrelevant concern.)

My next research question emerges then from rethinking youth as work-in-progress as a young person develops their sense of self particularly in relation to their educational culture and my intention to locate the Web in this relationship.

Q2 How is a young person's engagement with the Web configured by social identities as these are mobilised in distinctive educational fields'?

2.5 The Research Sites and Cohort

Since I was looking for distinctive educational fields my research began with a search for comparative case studies: groups of young people who, despite their similar chronological age, lived within very different social, cultural educational arrangements.

Using two research sites, I chose to recruit two contrasting groups of young people with key differences in educational culture, social class, gender, ethnicity, and locality. I used an all-boys independent school in London with a multi-ethnic intake and a publically-funded, co-educational college of further education with a primarily white-working class intake from a town on England's south coast (see Appendix for how I achieved access to these sites).

Before I describe these sites, there is however a thorny issue to address. In the digital literacy literature, and indeed the most of the literature that discusses young people's skills, the words ability and capacity (as well as similar words of summative judgement) are routinely used to identify users who, we are told, are failing to keep pace with the demands of our tech-driven modernity. For instance:

"Thus, people's ability to find desired types of information and their capacity to evaluate the credibility of the material they come across compose an important part of the medium's potential to contribute to people's everyday needs and well-being and ultimately improve their life chances." (Hargittai, 2007, p3)

Since ability is an additional, highly problematic concept that is beyond the scope of this thesis, I wanted to side-line it as I attended to the other

constructs I identified in my literature review. I therefore studied groups of 16-18 year olds who, by conventional measures, had reached a certain ability threshold. Many of the students in London were, however, by these same measures, exceptionally able. I will discuss the implications of this later in the empirical analysis chapters.

The English and Welsh education system is organised into stages and levels. Level 2 is a 'GCSE' or equivalent vocational qualification such as 'BTEC' (that is usually studied by 14-16 year olds at Key Stage 4 in their education). Level 2 qualifications allow young people to access level 3 courses at Key Stage 5 which are usually provided by 6th forms within schools, 6th form colleges, or higher education colleges which also offer adult education. Level 4 courses are UCAS accredited undergraduate courses or equivalent professional qualifications, while level 5 are Master's courses. Although, both within and between groups there were individuals who were more successful in exams and/or written and formal verbal communication, all the students were studying at the same level of education; level 3. All the students had needed some degree of ability or capacity to get them this far. The independent school students, however, had more GCSEs and more 'A' and 'A*' grades than the college students. Indeed, by the time the individual interviews took place, based on their predicted A level grades, all the young men had been offered a place at top tier universities (see Table 1 for details). Again, I will explore the implications of this later in the study.

2.5.1 Calshot College

My first research site is Calshot College a general further education college on England's south coast. Traditionally, it has been a vocational college that prepared recent school leavers for specific occupations and trades and therefore its intake is from a predominately working class catchment. More recently, the college has responded to industry's demand for technologically skilled young people and simultaneously widened its appeal to offer 'A' levels to students aspiring to university. Calshot College, from its command station reception desk to its bright, softly-furnished 'break-out' areas, frosted glass-walled executive meeting rooms and its Apple Mac equipped classrooms presents itself as

travelator to a successful career that acclimatises its students to the contemporary workplace.

My contact offered me a range of classes I could use for my study. I made enquiries about the characteristics of each these classes. Since I had planned interactive group activities, I wanted a group of at least ten individuals who were familiar with each other as well as a group that provided a range of personalities. After discussions and preliminary observations the sample of students I choose to study there were working towards a level 3 (A level equivalent) qualification in media. The course is a mixture of practice and theory that offers the students either entry into the media industry or a level 4 course; possibly at a university. This was a mixed gender group who all identified themselves as white and English and/or British. They further self-identified through complex array of pop-cultural codes such as fashion-tribe, loyalty to their football club, favourite: bands, digital games, and celebrities, as well as their social networking presence, and, in some cases, their sexuality. These identities emerged during my observations of the students and my interactions with them during the study.

At Calshot some students were more committed than others to the programme of study as well as the idea of further education and its practicalities. Some of the students rejected or tested the limits of the college's culture and procedures; they often wanted to step-off the figurative travelator. This had implications for my study; some of the students' attendance was, at best, erratic and some students dropped out of the course altogether. Unfortunately, this meant only 7 out of the original 14 students participated in every stage of the study (see Table 1 for details). I had, nevertheless, enough data to allow me to compare data between the methods.

The students were told they had a choice to participate in my study or continue with their coursework while the study was on. Beyond a chance to have a break from their normal work to participate in an interesting and unique study about how young people use the Web, I offered no incentives to the students. Only one student prioritised his work over my

study; he left the during the research task and did not participate in the interview.

I have taken parental occupation as a proxy for the student’s social class. With one exception, all the student’s parents were employed in technical, engineering, semi-skilled or unskilled service occupations. The data (that will be presented in empirical chapters) shows this was, however, far from a homogeneous group. The students’ pseudonyms, together with the parents’ occupations are listed below (if the box says unavailable either the student did not take part in the individual interview where I collected biographical data or this was a sensitive topic).

Table 1: The Calshot cohort

Name	Attended Group Interview	Attended Research Exercise	Attended Individual Interview	Father’s occupation	Mother’s occupation	Intended Next Step
Liam	Yes	Yes	Yes	Air steward	Sales representative	University or job
Alfie	Yes	Yes	Yes	Sales administrator	Post office clerk	Job
Sarah	Yes	Yes	Yes	Call centre operator	Housewife	Staying at Calshot
William	Yes	Yes	No	Unavailable	Unavailable	Job
Jake	Yes	No	No	Unavailable	Unavailable	Job
Phil	Yes	Yes	Yes	Mechanical engineer	Cleaner	University or job
Jessica	Yes	Yes	Yes	Unavailable	Cleaner	Undecided probably job
Paul	Yes	No	No	Unavailable	Unavailable	Unavailable
Mel	No	Yes	Yes	Mechanical engineer	Cleaner	Undecided
Alex	Yes	Yes	No	Unavailable	Unavailable	Unavailable
Lizzy	Yes	Yes	Yes	Naval communications engineer	Charity worker	University
Beth	Yes	Yes	Yes	Unavailable	Teacher	Job
Rob	Yes	No	Yes	Health and Safety in building trade	Retail	Stay on or career in music
Josh	Yes	No	No	Unavailable	Unavailable	Unavailable
Matt	Yes	No	Yes	Shop assistant	Hospital assistant	Job
Totals	14	10	10			

2.5.2 The Chancery School

The Chancery School is an independent school in central London. Its staff informed me its main competitors for students are the schools that tend to supply senior members of the UK's government. The school prided itself on unifying its traditions with modern sensibilities; painted portraits of austere-looking former masters and brightly lit trophy cabinets are passed by boys wearing business suits carrying tablet computers. The school valued its academic reputation above all else, students were admitted by exam and interview. Explicitly and subliminally the school's aspirational travelator was synchronised for frictionless transition to an elite university. Subject to aptitude tests some boys are offered scholarships; this, however, was only small minority of students.

I had less choice over the sample's constituency here. My contact at the school, on my behalf, asked the whole sixth form for volunteers. Since I was looking for different approaches to information on the Web, I wanted potentially a diverse set of identities and outlooks so I asked for a group of young men who were studying (at 'A' level) a range of subjects from different epistemological traditions such as science and history. Perhaps the best indicator of the young men's participation was their relationship with my contact at the school; she had taught many of them from 'prep' school. I did, however, often get the tacit impression the group was to an extent engineered to represent the best of the school. Nevertheless, the group provided many potential axis of difference to investigate within and between samples.

All the young men considered themselves English and/or British they were, however, much less assertive about their national identity than the Calshot group. They expressed this in combination with other ethnicities and nationalities including Indian, Egyptian, Jewish, Canadian and Burmese. Almost without exception all these student's parents worked in professional occupations. One student wanted to take part in all the study's stages but he was unavailable for the group interview.

Table 2: The Chancery cohort

Name	Group Interview	Research Exercise	Individual Interview	Father's occupation	Mother's occupation	Intended Next Step
Omar	Yes	Yes	Yes	Professor	Admissions tutor	Oxford Computer Science & Philosophy
Caleb	Yes	Yes	Yes	GP	Practise manager	UCL Medicine
Zac	Yes	Yes	Yes	Lawyer	Lecturer	UCL English
Daniel	Yes	Yes	Yes	Architect	Unavailable	Princeton
Tariq	Yes	Yes	Yes	Doctor	Computer scientist	Kings College/ Imperial Medicine
Ryan	Yes	Yes	Yes	Civil Judge	Professor	Cambridge Human Social & Political Science
Tom	Yes	Yes	Yes	Retired consultant	Haematologist	Classics Oxford
Stephen	Yes	Yes	Yes	University senior management	Professor	Classics Oxford
Seb	Yes	Yes	Yes	Financial professional	School nurse	Imperial Biology Chemistry & Maths
Saul	No	Yes	Yes	Endocrinologist	GP	Gap year working in research lab
William	Yes	Yes	Yes	IT consultant in banking	Linguist	Imperial biological engineering
Totals	10	11	11			

In relation to my research questions, I had a group of at least 20 students from different educational and social communities that were a mix of gender, social class and identities.

2.7 Repositioning Information as Discourse

I required next to rethink what information means in this domain: to show definitions of valid information (as well technology and young

people's identity) is socially produced. If there "no clear and unambiguous dividing line between information and misinformation" (Stahl, 2006, p92) how was this going to affect my research?

Foucault (1980) called discrimination between various forms of information an 'exclusionary practice' that reflects the norms and values of people embedded communities. What counts as information can be distorted by an individual's epistemological lens (Hjorland, 2002). For example, Schulz-Hardt et al, (2000) found individuals with strong beliefs selected information sources consistent with their own views and rejected information sources that were in opposition to these views: so called "confirmation bias" (p108). In this context, misinformation becomes something that is rejected by a community's epistemological values rather than stable category. Attempts to understand youth only in terms of narrow, adult normative practices and definitions of misinformation, may fail to capture the reality of youth experience; their expectations and norms.

Rather, youth practices might be related to meaning making particularly in response to adult norms. Schools, colleges, mainstream media institutions both on and offline may, for some young people, be sites of power producing what Hall (1980) called the 'dominant readings' of events and narratives that give 'voice to facts' (Bruno Latour & Woolgar, 1986). Teenage counter-culture often involves a repudiation of adult norms (Lesko, 2012). A drive to assert an identity in opposition to such adult sites of power and adult attempts to discipline, control or nurture youth often attends adolescence (Lesko, 2012). A young person's direct social experience and subsequent interpretation of their social world (including the Web) could therefore involve a rejection of dominant readings.

Information itself "provides a language which legitimates a particular world view when it comes as part of a process which sanctions a certain model of practice" (Grenfell, 2009, p25). This is where information becomes discourse; and discourses are inseparable from power relations in society (Foucault, 1980). If I locate the 'sociological youth' I have described above within society's discursive struggles for ascendancy this

could reveal further insights into where the young people in my study exist in relation to power. This, however, requires a fuller explanation of Foucault's conceptual vocabulary.

The basic unit of discourse is a piece of information; Foucault calls this a statement. A statement is not limited to spoken or written words; "a graph, a growth curve, an age pyramid, a distribution cloud are all statements" (Foucault, 2002b, p93). He conceptualises discourse in *The Archaeology of Knowledge* as:

"An individualizable group of statements, and sometimes as a regulated practice that accounts for a number of statements."
(p90)

If this definition of discourse seems opaque it is because defining a discourse is a process of mapping Foucault's conceptual tools onto sentences, graphs etc. in a way that groups them together. A discursive statement "always belongs to a series or a whole"; "a network of statements" (p111). When examining statements, we have to decide which statements belong to a collection of statements we call a discourse.

In doing so:

"One tries to determine according to what schemata (of series, simultaneous groupings, linear or reciprocal modification) the statements may be linked to one another." (p67)

Statements can be grouped if they share certain epistemic or ideological assumptions. Statements, within discourse embody, common ways of seeing and practice; they are marshalled and mobilised in patterns so that we may recognise their allegiances. For example, science, for Foucault, is a discourse. I am using science as an example as the conceptualisation of science as a discourse is crucial to my research methods; I will be asking the study's participants to explore contested science. Although science is fragmented into many sub-genres or sub-disciplines they all share unifying principles. Each science develops within the framework of an "épistémé", and is therefore "linked in part with other sciences" (Foucault, 1994, p364). "The 'sciences of man' are part of

the modern épistémé the same way as chemistry or medicine or any other such science” (p364). The épistémé is the norms, values and practices that unify statements and tell us what counts as valid knowledge. We recognise scientific statements because they are product of these norms, values and practices. A scientific statement becomes valid knowledge when it is sanctioned by specific institutions and uttered by authorised persons who: use the technical correct language, have adhered to approved methods, have claimed objectivity and have validated their statements through peer review. What science claims as valid knowledge in its statements is therefore deeply culturally encoded by these processes. If we share an affinity with science’s épistémé we are likely to agree with its discourse.

In his subsequent output, Foucault synthesised his conceptualisation of discourse with his theory of power. He showed us certain claims to authority or expertise are evidenced in discursive statements; discourse can be a grab for power or produced in response to power. Discourses therefore do not form in isolation; in a struggle for legitimacy they emerge in relation to each other. Discourses are mutually sustaining; both an instrument and an effect of power. They are also self-sustaining because, over time, discourses are systematised and institutionalised: “discourse and system produce each other”(Foucault, 2002b, p84).

This theory of discourse is illustrated in a condensed Foucauldian genealogy of the relationship between science and religion. While I don’t intend to discuss religious discourse with my study’s participants this is a lucid illustration of how discourses never emerge in isolation. This example will help contextualise this chapter’s exploration of discourses in the data.

Each society, according to Foucault, has its “régime of truth”: the hegemonic “épistémé:

“Its 'general politics' of truth: that is, the types of discourse which it accepts and makes function as true; the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the

status of those who are charged with saying what counts as true."
(Foucault, 1980a, p131).

In pre-Reformation Europe religion was the régime of truth; religious power was sustained by rendering the words of divinity (religious scripture) esoteric; they were in the custody of powerful institutions and kept unknowable to the laity. Only clergy; authorised persons, could reveal its unquestionable truths. Originally, Western science arose not in opposition to this religious discourse but from within it. As Nietzsche observed, science was driven to an extent by the Christian impulse to reveal the 'truth'. Pioneers of the Scientific Revolution were pious men who thought that they were performing God's work by revealing the laws that *He* had established in nature. However, this initiated the process of science of laying claim to the truth. Scientists "delimited" the natural world; transformed it into a "field of objects" for scientific enquiry and emerged from the Enlightenment as "agents of knowledge" (Foucault, 1980, p199). Eventually, science became the "legitimate perspective" for anyone intent on understanding the natural world (p199). It "claimed a domain of normativity for itself (according to what criteria one may exclude certain statements as being irrelevant to the discourse, or as inessential and marginal, or as non-scientific) and it "constituted a domain of normativity for itself" (Foucault, 2002b, p68): certain criteria had to be met before a statement qualified as scientific statement.

Gradually, bolder scientific statements intensified the rivalry between scientific and religious discourse for the truth. Controversial books such as *The Origin of Species* produced rival discourses they became "points of resistance" for scientists, agnostics and atheists; it afforded them "opposing strategies" that "undermined, exposed and rendered fragile" religious discourse (Foucault, 1978b, p101). In response, theology has produced alternatives such as Intelligent Design and various attempts to accommodate Darwinian Theory into its worldview such as the theistic evolution adopted by Anglicans.

Foucault therefore shows us how, in Enlightenment Europe scientific discourse emerged from religious discourse to challenge religion's status as the "régime of truth" (Foucault, 1980, p131) and how religion has

adapted its discursive practices in riposte; how the rival discourses produce each other in struggles to lay claim to the truth. He is unconcerned with what is the truth rather he addresses how the status truth is requisitioned. Rather than explain science's legitimacy by describing its successes in providing convincing evidence and credible explanations, Foucault attends to the discursive processes science deploys. He argues "truth isn't outside power" (Foucault, 1980, p131) and because as, Latour and Woolgar (1988) said, facts do not speak for themselves; they are produced and disseminated by the scientific epistémé then reproduced, repackaged or repurposed for the general public.

Owing to new technology, particularly the Web, we now have an unprecedented volume of discursive statements claiming to be facts. They are circulating and vying for the status of truth in our culture. The volatility of 'general polities' of truth is evidenced within discursive fields such as climate change, immigration and economics where the facts are highly contested. A Foucauldian analysis of this situation tells us neutral information does not exist; statements such as *raw data* are themselves discursive. All information including statistics involves translation; we rely on "modes of translating quantitative statements into qualitative formulations and vice versa"(Foucault, 2002b, p65). For example, a measurement of the amount of species in decline is translated by scientific discourse into "a mass extinction event" (Barnosky et al., 2011) and by denialist discourse into "a natural cycle" as the Global Warming Policy Forum (GWPF) argues (see <http://www.thegwpf.org>). The discourses are mutually productive. To undermine scientific discourse denialists seize upon its "points of diffraction" (Foucault, 2002b, p73) such as doubt over the exact future global temperature rises to create new "points of resistance" (Foucault, 1978b, p95). The resulting opposing strategy of denialists is to argue scientists are presenting a false consensus on global warming.

There are many competing discursive presentations and translations of evidence in newspapers, on television and on the Web all demanding our attention. We can observe many points of resistance and opposing strategies that show science is not the only discourse giving voice to the

facts. Young people may synthesise these discursive statements with their personal experiences, and the views of friends, family and significant adults in their lives.

I will explore how young people access, contextualise and appraise information and how different forms of knowledge and experience produce different 'translations' of information. This analysis has wider implications; those uttering discursive statements are attempting to dominate the narrative, justify their own actions or influence those in power to affect changes in policy: where language, culture and power converges in the data there are microcosmic enactments of contests for the truth being played out at societal scale. How do young people engage with these discursive statements? What does this engagement say about them and our contemporary culture?

The assessment of information online is not a unilateral, linear process such as fact-checking. The methods applied until now do not allow young people to critically engage with broader forms of information online and do not capture any complex interactions with the Web nor any of their social contexts. I want to begin with the assumption often there is no clean distinction between information and misinformation and explore therefore how young people, within the context of their every-day lives, engage with contested, controversial or ideologically-encoded forms information online. My final research question emerges from this position:

Q3 While engaging with the Web when and why do young people discuss, confirm or reject contested, controversial or ideologically-encoded forms of information (or discourses) they encountered circulating on the Web?

I operationalised my conceptualisation of information by selecting a series of controversial or contested topics for the students to discuss and research online. I wanted to operationalise discourse and ambiguities between information and misinformation so that each individual in the cohort may express their knowledge and identity through navigating a path through these uncertainties. While pursuing my three research objectives, it was my intention to show a new approach can produce rich data that defies easy judgements and classifications. I did not use all

these topics in each case. I evaluated each topic based on what I knew about the students and data collected from other methods then I used them when I thought it was appropriate to the students and study.

2.8 Operationalising Discourse

2.8.1 Climate Change

There is widespread concern from climate scientists and anyone who wants action on climate that a denialist agenda is, by disseminating misinformation, undermining the scientific consensus on climate change (Chasek, Downie, & Welsh-Brown, 2010)(Coady & Corry, 2013). The Web is commonly cited as a source of this misinformation (Schäfer, 2012). This includes news outlets and their websites (Boykoff, 2008). The debate is becoming increasingly polarised (Coady & Corry, 2013). The scientific consensus tells us global temperatures are rising at an unprecedented rate; the causes are anthropogenic and the consequences potentially catastrophic.

The counter, denialist discourse tells us there is no real scientific consensus; many scientists, we are told, are alarmists or worse conspirators who exaggerate the threat of climate change and any rise in global temperatures is either short term or part of a trans-millennial natural cycle. Two contrasting sites of information are, for example, The Intergovernmental Panel on Climate Change (IPCC) <http://www.ipcc.ch> and the Global Warming Policy Forum (GWPF) <http://www.thegwpf.org>. Each body produces statements; papers, press releases statistics and graphs to supports its arguments, via news outlets, blogs and social media these are often widely circulated on the Web. Confidence or belief in climate change has been linked to scientific knowledge and/or epistemic values (Hulme, 2009). To witness how the student's position on climate change I asked whether or not they endorsed the scientific consensus and which sources of information on the Web informed their views.

2.8.2 Conspiracy Theories

The Web is host to a multitude of conspiracy theories that present different versions of the ‘truth’ of events from The Roswell Incident to 9/11 (Dean, 2014). At the time of writing, for example, according to Google there are 349,000 websites that address "The Truth about 9/11". Belief in conspiracies has been associated with a person’s ethnicity, social class, gender and age (Stempel, Hargrove, & Stempel, 2007). To explore these and other, further avenues of inquiry such as educational background, I therefore asked the students to if any of these theories, for them, had any credibility and the Web sites they could cite to support these views.

2.8.3 Immigration

The impact of immigration is a politically contested, there are many contradictory statistical claims and opinions in circulation; indeed the distinction is often unclear. Negative views about immigration have been associated with white working class people in provincial cities who construct identities based on positioning vis-a-vis other groups, communities and the nation (Garner, 2012). And, positive views about immigration have been associated with levels of education (Chandler & Tsai, 2001). Where identity, class, education and the Web intersect there was potentially a rich source of data.

2.8.4 Aspartame’s link to cancer

Aspartame has been certified safe by independent foods standards agency (FDA, 2014) and the European Union. Online, however, many consider its use a threat to our health. For instance, in March 2013, days before this study, The Daily Mail linked it to “cancer and premature birth fears” (Poulter, 2013). There are almost innumerable articles, blogs and forum posts citing aspartame’s toxic effects. This issue also intersects with a sub-genre of digital literacy, “media health literacy” (Levin-Zamir, Lemish, & Gofin, 2011, p323)

2.8.5 Cannabis’ harms

There is some debate about cannabis’ harms; particularly which mental illnesses it causes, how much ingestion causes mental illness, and

whether a user has to be predisposed to mental illness to become mentally ill from ingesting cannabis (Moore et al. 2007). These are discussed online; I wanted to see which sources of information the students would trust.

2.8.6 The causes of ‘The Crash’

A cross-party House of Commons Treasury Committee (2009) investigation attributed the 2008 financial crisis and the subsequent national debt crisis to systemic failures in the banking industry. Yet the causes of the crisis are highly contested along political lines of engagement. The ideological right invariably cite pre-crash profligate left-wing public spending. The Web is an extended arena for these arguments. If I asked the students to research this topic on the Web it could reveal much about their interpretation of ideological bias.

Operationalising young people as potentially competent actors who can adapt to their social environments and operationalising information as discourse challenges the ethical definition of the young people in my study as vulnerable children. My power position vis-à-vis this ethical dilemma is a key consideration in the choice of methods. I required an approach that would be sensitive to the student’s legal status as children and data subjects yet allow them to potentially behave as competent adults *and* enable me to observe their practices when my position of power is removed or at least set further back from young people’s relationship with information on the Web.

I distanced my research from positivistic methods such as tests and questionnaires that often confirm young people’s relative powerless position in society (Morrow & Richards 1996); particularly when these methods result in binary judgments such as unskilled or skilled. In response, I chose to study multidirectional environmental and social influences on young people’s web practices. I therefore devised a methodology that, within the constraints of time and ethics, positioned me as a trusted insider (for the purposes of the in individual interviews) as well as an outsider (who could observe more relatively natural group behaviours) so I could compare and contrast these two positions. I began therefore by looking for more interactive and participatory research

methods and a sophisticated methodology that allowed me to expose and explore nuance, contradiction and unexpected insights.

2.9 Methodology

I was drawn to Mason's *facet methodology* (Mason, 2011) because it represented the distinctive alternative I required. The facet is a metaphor for a mixed, yet more sophisticated and multi-dimensional methodology. The facets in the gemstone:

"Are conceived as different methodological-substantive planes and surfaces, which are designed to be capable of casting and refracting light in a variety of ways that help to define the overall object of concern" (Mason, 2011).

I have argued that the methods that dominate current research in this field are reductionist. In contrast the facet methodology assumes;

"That the world and what we seek to understand about it is not only lived and experienced, but is multi-dimensional, contingent, relationally implicated and entwined". (P78)

The Web is not an external to young people's lives: statements in the current research about their 'connectedness' fail to capture this. The facet methodology is appropriate because (to paraphrase Mason) the Web is a multi-faceted "contingent, relationally implicated and entwined" presence in young people's lives. Young people use the Web with different motivations, at different times of the day, on different devices, and, in a complex interrelationship between their personal circumstances and developments in technology, their patterns of usage continuously evolve (Ito et al. 2010). The relationship between the Web and young people is, what Mason calls, an "entwined problematic" (p83) that lends itself to the facet methodology.

Previous research invites us to make generalisations that unproblematically bridge the divide between the 'macro' and the 'micro'. If, for example, the young people from lower socio-economic backgrounds in Hargittai's (2011) or Robinson's (2013) study are said to

have limited Web skills, advocates of digital literacy argue this is true of every young person from a low socio-economic background. Therefore localised, micro events captured by scientific measures become signifiers of macro phenomenon such as society's structural inequality. The facet methodology assumes the "different registers of scale that social scientists sometimes like to apply analytically (e.g. micro/macro)" (p79) are not so self-evidently revealed.

As corrective to this mode of discussion, facets are:

"Mini investigations that involve clusters of methods focussed on strategically and artfully selected sets of related questions and problematics. Each facet represents a way or ways of looking at and investigating something that is theoretically interesting in relation to the overall enquiry and each seeks out particular instances or versions of the kinds of entwinements and contingencies that are thought to be characteristic of the object of concern in some way." (P79)

The facet methodology is also "ontologically and epistemologically orientated" (p83). This means that it is "implicated in all stages of research, including how we theorise from or with data" (p83). The resultant processes of writing, representation and argumentation are "driven by ideas about how different facets, and facets in combination, can tell us about the entwined problematic" (p83). It encourages the researcher to examine and think laterally and critically about the data. Embodiments of structure such as social class, ethnicity or gender may manifest in young people's engagement with the Web. The facet methodology allows us to explore how these are not immediately self-evident but subtly 'entwined' and mobilised in educational contexts in sometimes counter-intuitive ways.

For these reasons, facet methodology is woven into the infrastructure of the remainder of this thesis. It shapes the thesis in the research design and in the initial data analysis. In the research design within the field of education I mobilised different contexts and different ways of observing these contexts to produce multi-faceted sources of data. While this generated corroborating sources these methods also produced subtleties

and ambiguities in the data. A simple example is comparing what young people say they do online to what they do on the Web in practise (this, for example, conceptually justifies the use of the proxy server in the research design).

The analysis proceeded in two stages initially I coded the data in relation to the research questions. Then, rather than a step-by-step exposition of each research stage, I identified salient facets that intersected across data sets. I will provide an illustrative example of these processes at the end of this chapter and then extend, as Mason intended, the facet approach to the data's analysis.

9.1 Research procedure

Returning to my research questions:

Q1 How do the student's Web practices compare to the problematic/ideal user offered in the digital literacy literature?

Q2 How is a young person's engagement with the Web configured by social identities as these are mobilised in distinctive educational fields?

Q3 While engaging with the Web when and why do the students discuss, confirm or reject contested, controversial or ideologically-encoded forms of information they encountered circulating on the Web?

I had a group of young people who could be differentiated by their social identities and educational settings. This was a group that offered sufficient diversity to challenge the existing binary of a problematic/ideal user that we are offered in the digital literacy literature. I also had a list of contested topics to explore everyday practices around 'misinformation'. Next, I needed to create observable situations that would transform this combination into data-generating situations and methods to capture this data.

My plan was to be sensitive to the possibility that there may be discrepancies between what users claim to do in interviews, what they say and do alone and in groups and what they say and do in my presence while I was recording their contributions to my study. Via the facet methodology I wanted to treat these potential discrepancies and other

methodological challenges as further sources of data. I would ask students to describe and reflect on what they do online and observe what they do in particular contexts and then I would cross-reference the data. My mixed methods approach was intended to make this research, within its constraints, as robust as possible. The different methods have to be understood in combination; their rationale is mutually sustaining. The research unfolded in three stages separated by an opportunity for me to reflect on the data.

I had, however, only partial control of this timetable. Since I took every effort not to disrupt the young men's education, in London the timetable was built around their exam schedule. Stage one at The Chancery School took place on the 18th June 2013, stage two took place on the 24th June 2013 and stage three on January 10th 2014; each occasion was just after the students had sat their A levels and had some time to relax. The students at Calshot would be under pressure to submit coursework in June so I pre-empted any difficulties by holding stage one on the 15th of March 2013 and stage two on the 22nd of March 2013. When I intended to go back for stage three many of the students were failing behind with their deadlines. There was further departmental and managerial upheaval at the college that I had to accommodate in my plans. I was unable to return to the college for my last stage until 17th March 2014 and then again to complete my research on the 24th March 2014. I used the time between visits to process and analyse the data. As well examine how different methods produced different data (for example find out if individuals would be more circumspect about controversial topics in interviews than they are in groups); these delays were also an opportunity see if the students changed their views over time. After a brief synopsis of each stage, within the rest of this chapter, I will describe and reflect on these stages.

For stage one I interviewed the groups. I encouraged them to describe what they knew about the Web's technology, reflect on their Web practices and discuss the controversial and contested information circulating on the Web. I chose to begin with a group interview for three reasons: Firstly, for its value as a discreet method. In an ideal group interview participants present their own views and opinions but they also

hear from other people. The best groups are synergistic (Stewart & Shamdasi, 1990); individuals listen, reflect on what it is said, and consider their own position further. Additional data is therefore produced in response to what participants hear: they ask questions of each other, seek clarification, comment on what they have heard and prompt each other to reveal more. As the discussion progresses individual responses are refined and can become deeper and more considered (Kreuger & Casey, 2009). Since participants are influencing and influenced by others (Arthur & Nazroo, 2003) data is produced via social interactions. Group interviews enable projective techniques used to aid expression and refinement of views: tease out differences, explore boundaries, or prioritise between options to expose what underpins beliefs or opinions. These techniques can help centre the discussion, consolidate views and promote further thought (Finch & Lewis, 2003). Once a person expresses an unusual or non-conformist view, others will often feel more confident to do the same, and there can be a more frank and open exchange than might happen in an individual interview (Morgan, 1997). Group interviews can therefore reflect: the social constructions; normative influences; collective as well as individual self-identities; and shared meanings that are an important part of the way in which we perceive, experience and understand the world around us (Bloor, Frankland, Robson, & Thomas, 2001).

Secondly, the group interview had practical and methodological value in relation to the study's other methods. In both groups the students were familiar with each other and the interview's setting; only my presence was unusual. I chose to begin with the group interview because for the students it would be a soft introduction to my research and less intimidating than an individual interview. And thirdly my analysis of this stage would inform the design of the next stage. I was conscious of the effects of what Simon (1957) calls "satisficing" where people, when faced with evaluating information, if they are uninvested in the information's topic, they spend no effort investigating its credibility. Stage one would tell me about the topics that engaged these students as well as the best way to word the questions.

For next stage I gave the students a series of contested or controversial questions to answer individually and without looking at the Web before returning their answers to me. I then asked them to answer the same questions using the Web and to support their answers with credible, digital sources. This time, however, I told the students they could, if they wanted to, discuss the questions within the group. Each group had up to two hours to complete these tasks. Although this method generated data that addressed all three research questions, I introduced the 'before and after' set-up because the problematic user, or indeed anyone outside an enlightened elite of users, is, we are told, vulnerable to the Web's agential power to distort his or her interpretation of reality.

During this exercise, the students at each site occupied the same room. I audio and video recorded all the proceedings; captured all the intra-group discussions and interactions while the students were deliberating the questions. This was my opportunity to deploy methods unfamiliar to social science and demonstrate computational methods in practice. Using proxy server technology (see appendix for details) that is more familiar to computer scientists, I recorded all the Web traffic that entered the room. I was able to see all the websites each student accessed during the study and what time these sites were accessed. In London I was also able to collect the student's history files so I was able to document the requests each student sent to the webserver including search engine queries. This was an additional layer of ethnographic evidence I could compare with other sources of data.

For the study's third stage, to investigate any potential differences in on/offline norms and simulate, what for many of these young people is ubiquitous and established mode of communication, using *Google Docs* I set-up a temporary social network and asked the students to discuss the questions again within a discussion feed.

For the fourth stage, I returned to the more conventional method of the semi-structured individual interview. I was allocated up to 30 minutes with each student. As well as gather further data about young people's Web practices this was an opportunity for us to reflect on my analysis of the data from stages one, two, and three of the study.

Finally, to develop yet another facet to the data at the Chancery School I interviewed the young men's ICT teacher and Calshot the student's course tutor.

2.9.2 My Approach to Interviews

Interviews therefore formed spine of this study; there was one group interview for each cohort and one individual interview for every participant. Since planning, actioning and analysing interviews the researcher's epistemological stance can be decisive, before the study I considered various approaches to interviewing. Each had its advantages and flaws: in adopting elements all but one of the following approaches I was led by the utility it offered my research agenda. My overall strategy carefully reflected the purpose and nature of my research as well as my skills and experience. The stances I considered were neo-positivism, interactive rationalism, and romanticism (Alvesson, 2012). The challenge for me was to obtain valuable data about the social world through the various views and behaviours of the interacting agents. The 'solution' to interview problems I found was not in a single best way or in a 'recipe' for how it should be done. I borrowed the most useful elements from each approach while attempting to mitigate their flaws.

While to address my research questions and afford comparisons between interviews I needed some structure. The most structured approach to interviews however; neo-positivism, was the least the useful here. By following an apparently rigorous research protocol that minimizes researcher influence and other sources of 'bias', a neo-positivist is "eager to establish a context-free truth about what is really 'out there'" (Alvesson, 2012, p11). The interviewer is interested in undistorted "'facts' (about behaviours, practices, attitudes, values or whatever) that can be compared or aggregated (p11). The neo-positivist is therefore compelled to follow rules and procedures, use detailed coding, and emphasise the empirical weight of large quantities of material. The neo-positivist's ambition is a completely transparent research process, characterized by objectivity and neutrality (Alvesson, 2012). He or she acknowledges contingencies that can influence the interview's outcome, but only to neutralise these influences. The interview becomes "a pipeline for

transmitting knowledge” (Alvesson, 2012, p52). This approach however can reduce the interview to a “speaking questionnaire” (p52). Respondents may produce only “superficial and cautious responses” (p12) that can be corralled into preconceived, manageable categories such as the question of young people’s trust or mistrust of search engines (for example Ofcom (2011)). Neo-positivism is the pseudo-removal of subjectivity; it offers the illusion social life can be easily captured, quantified and held to account by scientific rationality. Since technology is inseparable from ‘the social’ and it is enmeshed in people’s emotional and practical lives, a neo positivist approach to interviewing was inappropriate for me: it would only problematically reduce complex interactions into supposedly easily digestible and generalisable ‘facts’.

Interactive rationalism offers to moderate neo-positivism’s excesses; contingencies, rather than contaminating the data, can improve a study’s integrity. The interactive rationalist researcher should therefore evaluate the interview’s setting, attend to the respondent’s language and culture, and reflect on the investigator’s influence in relation to the purpose of the study. In practice, this meant I attended to these contingencies both in the analysis and enactment of the interviews. There will be more about the analysis later in the thesis; in the interview’s enactment I was conscious of my mode of address. The Calshot students’ language was more idiomatic and accented. They made more use of slang and teenage pop-cultural references. While the London students, in their speech, were more formal, conventional and adult-orientated and I configured my mode address accordingly. Guided by the interactive rationalist approach, I tried to mitigate the inevitable artificiality of the interview by meeting the students before the interviews took place. I wanted them to relax, become familiar with my presence. To help build trust, at any opportunity I would chat to the students about topics that were unrelated to my research. When I was otherwise visible it was usually as I was chatting to their tutor or teacher. I therefore increased the likelihood I was trusted by proxy. At every opportunity I reassured the students they would remain anonymous at all times and the research involved no tests or judgements. I was conscious of treating the students equitably while maintaining an objective distance. Fontana & Frey (2005) suggest the

interactive rationalist may find an 'insider' to help gain trust, establishing a rapport, and offer insights into the interview's setting; for me, the insider was the student's tutor. Inevitably some students contributed to the group discussions much more than others. This informed my analysis; the group dynamics, how the students negotiated and debated between themselves about what was true and false information as well as how they performed between methods.

Since appeasing the untidy social reality is "accomplished mainly around - rather than in - interviewing" (Alvesson, 2012, p13), interactive rationalism is, however, only a breach of positivism rather than its rejection. Subsequently, to avoid "social interaction leading to bias within it", an interactive rationalist interview should "be carried out in a fairly neutral manner" (p13). It is unrealistic to suggest an interview can exist external to our untidy reality; an attempt at neutrality is, in itself, a statement interviewees will interpret. Moreover, although I imposed the structure and norms that suggested to the students we engaged in a research interview, it is unrealistic to suggest I was a separate, reinvented entity to the person the students had chatted with previously. It was likely they were continually assessing the meaning of my presence. The interviewer is not an invisible, neutral entity; rather, the interviewer is part of the interactions they seek to study and influences those interactions (Fontana & Frey, 2005). I therefore considered my involvement in the interview; the process of producing data, inevitable and it was my intention to turn this apparent concession to my advantage. I treated my presence as another catalyst for data. If research wishes to understand the emic or "insider's" perspective of a group, such as young people who access the Web, it follows that the researcher should observe and interact with its members

The students knew I was a representative of Southampton University's Web Science DTC; it is clear from the data this for them had certain connotations which I address in the analysis. For example, Omar, to show-off his technical knowledge to me and the group, was keen to receive reassurance he had answered technical questions correctly while some students in the Calshot group, young women in particular, were disinclined to attempt answers in their peers' presence.

During the process of co-constructing data with the interviewees, I mobilised the most useful elements of the romanticist approach. If interactive rationalism is a compromise then romanticism is neo-positivism's antithesis. A romanticist's interviews are guided by 'emotionalism' (Silverman, 2006); for "a deeper, fuller conceptualisation of the subject's inner life" he or she intends, via an "unstructured, open-ended" process, to access "authentic subjective experiences" (Alvesson, 2012, p14). A romanticist's analysis "richly reconstructs processes and interactions" (Alvesson, 2012, p14) that form the interviewee's experienced social reality. The absence of a strict protocol affords "active interviewing: the romantic researcher can intervene in the interview" (Alvesson, 2012, p15) and "activate, stimulate and cultivate the subject's interpretative capabilities; actively lead or support the interviewee into intelligent talk" (p15). The romanticist approach enabled me to draw-out individual responses before contextualising them; it helped me encourage my interviewees to participate, relax, and candidly reveal insights into their lived, situated experiences. For instance, during the interviews at Calshot some of the students became emotional when we spoke about their family's unintended dependency on benefits. Initially, this appeared to be an unnecessary digression from purpose of the study. Later in the interview, however, this helped me contextualise the same student's engagement with the Twitter hashtag #BenefitsStreet.

Romanticists, however, expose themselves to the risk that interviewees are guided by the researcher's mode of address, implicit as well as explicit cues and "expectations of what the researcher wants to hear" (p14). The intensive interaction that is produced by this co-construction of knowledge can erase the distinction between researcher and subject; the outcome becomes an "idiosyncratic and highly local interplay of a debatable quality and value for moving outside this local setting" (p17). This for me then was about taking inspiration from the romanticist approach while tempering its excesses. In maintaining objectivity by carefully walking the line between observer and facilitator, apart from my training as Web Scientist, I was able to call upon my teaching experience.

Teaching, particularly in a 'challenging' school, requires finely honed observation and interpretation skills. During lessons, practitioners have

to be able to instantaneously read a room; look for verbal and non-verbal cues to for example pre-empt conflict and boredom. Similarly, in personal situations a teacher is required to decode what a young person is communicating or attempting to communicate through body language, silences, irony, slang or frustrated attempts at articulation. Six years of being a 6th form teacher for students from a range of backgrounds prepared me well for qualitative research in education. I could see who was isolated from the group, who was unlikely to contribute in group situations and who needed encouragement in interviews to become disinhibited. Equally, to prevent their domination of the dialogue and steer it off-topic, some individuals needed careful management. This was about, through reflective consideration of the method, avoiding undercurrents that can submerge the value qualitative interviews in unreliable data. To enable my research to rigorously attend to young people's web practices and ensure the data had comparative value, I had to maintain an objective distance from the interviewees and yet become involved so that I could concentrate their minds on my research topics.

2.9.3 The Interview and Research Questions

Since I sought to explore differences between individuals at each site and individual responses to research methods it was crucial, while allowing comparisons, I deployed my methods reflexively; I would adapt them to get the best out of the cohort. While we covered broadly the same topics, the interview questions were therefore often different between sites and individuals. As these were semi-structured interviews I required some flexibility so I could explore interesting lines of enquiry as they emerged. I mixed preconceived questions to cover my research objectives, with questions I designed in response to my analysis of the previous research stages and questions I improvised in response to what the students revealed during the interview.

2.9.4 Group Interviews

The interviews took place in one of the school or college's meeting rooms with the students around table and me at its head. Each question addressed one of my research questions or investigated related issue as they arose. For example, my first research question required practical

examples of how the students used the Web within their education such as:

“So, if one of your teachers gave you some homework and you didn’t know anything about it what would you do?”

In relation to the research questions I would often investigate more specific issues. For example, within the digital literacy literature descriptions of problematic usage have cited young people’s lack of understanding of Wikipedia and the way they are said to passively consume its contents rather make edits (Menchen-Trevino & Hargittai 2011).

In Calshot I asked; *“Who oversees Wikipedia?”* and; *“Have you ever changed anything on Wikipedia?”* When someone said they had I asked questions relating to this. While for my third research question investigating ideologically-encoded forms of information they encountered circulating on the Web I asked;

“How about global warming? Is that true, is that happening? Where do hear or read people saying it’s not happening?”

2.9.5 Individual Interviews

At Calshot College the individual interviews took place in private, in a small recording studio adjacent to their classroom where a normal lesson was taking place. In the Chancery School they took place in an otherwise empty classroom. With all the students, because some of these questions were sensitive or potentially sensitive, I used the some of the time before recording to make some small talk and put them at ease. The interviews in this, more personal setting further addressed the central research questions. For example the problematic user described in the digital literacy literature has not been taught any useful ICT skills in school. So I asked all the students:

“What did you learn about ICT and the Internet at school?”

Authors who problematise self-education argue it prolongs young people’s naivety and exposes them to risks. Since students would often

say they were mainly self-taught, my subsequent questions explored possible vulnerabilities:

“So how do you know how to protect yourself online? Like, when you’re buying something?”

Further individual interview questions were informed by findings from other methods. For example, The Daily Mail would often appear in the research exercise’s proxy logs and answer sheet data. Whenever I connected a student to a source they referenced or apparently trusted, I asked them about it in the interviews.

“I can see you often read The Daily Mail, why do you like it?”

And;

“Do you think it’s ever biased?”

I would then cross reference this with The Daily Mail’s approach to my study’s contested topics;

“Do you think it’s biased against immigrants?”

2.9.6 The research exercise

To help understand young people’s web practices, this was an opportunity to operationalise the controversial topics I described above. Based on what I learnt during the group interview some of the questions were worded subtly differently at each site. For example, during the group interview at Calshot College the discussion was framed in terms of human’s responsibility for global warming while in the Chancery School the dialogue focussed on validity of the scientific consensus on global warming. This influenced the wording of my questions.

At Calshot I asked:

Are humans causing global warming?

And, at The Chancery School I asked:

What’s the scientific consensus on global warming, and is there any reason to doubt it?

2.10 Capturing the Data

2.10.1 Audio recording

All the proceedings were recorded using a digital recorder and booster microphone. After each recording I uploaded the data to a secure server. During each recording's transcription I referred to a seating plan, field notes, and a video to differentiate between speakers. In Calshot for example, I noted that Liam's body language was significant when he was addressing the group about immigration or conspiracy theories; he would subtly intimidate some other members of the group.

2.10.2 Video recording

Since I told the students they could discuss the research questions and the websites they visited between themselves, I videoed proceedings. I placed a camera in the corner of the room where it had a view of all the students. The camera had a microphone but I still used an additional audio recorder to pick-up quieter conversations at the other end of the room. Video is not infallible as decisions about the camera's position and the student's awareness of its presence in the room could be used challenge claims to its objectivity. I intended the video to be an additional 'memory' of the process that I referred to during the analysis. I was able to see who spoke to whom, and when, and compare this to the timeline of search queries and clicks on in the proxy server data.

2.10.3 The Proxy Server

For the research exercises I was given a room of PCs at Chancery and Apple Macs at Calshot I installed caching proxy software for the Web on my laptop called Squid (<http://www.squid-cache.org/>).

Using this, I was able to capture in real time all the http traffic that was sent to each client machine via the institution's web server and router. HTTP is an application layer protocol to exchange or transfer hypertext on the Internet. When a user clicks on a link known as a URI, the link contains an address on the Internet for the data associated with that link such as a HTML document that represents a webpage.

Web browsers send a request for the data, if the data is there, the server (the computer on which the data is stored) sends the data to the browser. The communication between client and server takes place using the Hypertext Transfer Protocol (HTTP). Pages delivered are most frequently HTML documents, which may include images, style sheets and scripts in addition to text content.

The client machine was the student's machine; its browser (Safari at Calshot College, Internet Explorer at the Chancery School) translated the data that travelled via the protocol into readable and watchable digital content. Each computer or client machine on the network has a unique network or IP address. Its access to the Web is managed by the Web server. The Squid software captured the address on the institution's network of the client machine, and URI client machine requested. The institution's web server(s) was capturing the traffic for the whole site. My laptop was given a network address so that I could access the Web via the institution's web server. With help from each institution's technical staff the client browsers for each machine were redirected to my laptop's network address. For the client's browser to access the Web it therefore would have pass through my laptop on its way to the institution's Web server. I captured the client's HTTP requests, responses and the data it retrieved as it passed through my laptop. All other traffic such as file transfers and email was ignored. The data came is a lines of text and numbers that detailed the client/server transaction. This included destination of the data, the date and time the data was sent, and the URL (i.e. the data's address and its file extension). (See appendix for technical details about Squid).

2.10.4 Online social network

Recent research from America and the UK shows what any parent or any adult who works with teenagers knows; young people use the Web and the Internet heavily for leisure: socialising; watching and sharing videos; and gaming rather than researching information or creating content (Menchen-Trevino & Hargittai, 2011)(Ito, Baumer, & Bittanti, 2010). As a result, according to Ito et al. (2010), there is an emerging consensus that the most young people are deepest engaged with digital media in "youth-

driven settings” that are focused on “social communication and recreation” (p33).

It is difficult to know what a youth driven setting is. If adults restrict young people’s public spaces so they that are more likely to congregate virtually on the Internet is this youth or an adult driven setting? Consumption of video games could, for example, be described as youth-driven but it is also driven by complex mechanisms of marketing and incentivisation produced by corporations (such as unlocking rewards within games and employing young people as in-game product ambassadors).

Nevertheless, to simulate a setting that at least required different norms, codes of conduct and strategies of engagement to my other methods and explore the boundaries between education and leisure, I afforded the students a further opportunity to discuss online and offline their responses to my questions. This method was based on familiar social-networking format of engagement; the discussion feed.

I allocated, a Google standard format web page, to each of the research questions. The website’s format was familiar to these students. They had all used Facebook; the discussion section looked and behaved like a Facebook timeline and would therefore require little or no training for the students to begin. I administrated the site and allowed only the study’s volunteers to access and edit its pages. The students logged on to the site to discuss and answer the questions.

I encouraged the students to publish their point of view and support it with the urls that informed their opinion. Every contribution to the discussion and main page was attributed to a user and time stamped. The content evolved over the course of the session and was locked at its conclusion. The camera and audio equipment recorded what happened off line and the feed what happened online.

2.11 Ethical tensions produced by operationalising the ‘sociological youth’ online

Now I have explained my research methodology we can see where the ethical challenges exist and I can better explain how I resolved them. Ethics can be defined as a set of moral principles and rules of conduct: ethics in research relates to the application of a system of moral principles to prevent harming or wronging others, to promote the good, to be respectful, and to be fair (Morrow & Richards, 1996). When researching youth, ethical discussions are usually “dominated by a particular conceptualisation of children as vulnerable and consequently in need of protection from exploitative researchers, and as the objects rather than subjects of research” (p97). Lansdown (1994) suggests that young people are vulnerable in two respects: they are inherently defenceless because of their physical weakness, and their lack of knowledge and experience, which renders them dependent upon the adults around them. Secondly, young people are structurally exposed, “because of their total lack of political and economic power and their lack of civil rights” (p.35) which derives from historical attitudes and presumptions about the nature of childhood which I have outlined in Chapter 1. Morrow & Richards (1996) also argue the “key perceived (and related) difference between young people and adults in research is young people’s assumed lack of competence: competence to make decisions about whether to participate in research, and competence to provide valid sociological data” (p99).

By using qualitative methods to engage with young people in their identity work and web practices rather than assessing their competencies with tests and questionnaires, I approached them as *competent* social actors on the Web who have the ability to reflect on what they do online. Yet, since most of the cohort I selected was under eighteen and therefore legally children (United Nations, 1989) ethically I had to treat them as vulnerable minors. This tension between the competent and vulnerable user was strained further by my methodological decision to study 16-18 year olds who are on the verge of becoming legal adults. At this age young people at an important transitional stage between youth and

adulthood (Lesko 2012). By studying a group that contains 16, 17 and 18 year olds from various social and ethnic backgrounds I investigated the nature of this transition: particularly its implications for web practices. Since youth transitions to adulthood are not clean and uniform (Lesko, 2012), in this instance, there is unlikely to be any rigid hierarchy of separate adult and child practices.

Beyond satisfying the requirements for human centred research set out by my university (see appendix for my full ethics committee submissions) the key challenge for me was resolving the tension between the vulnerable and competent user. In practice this meant protecting the students from harm online and securing their data rights while using multi-faceted methods that respected many of participant's status as children and therefore my relative position of power as an adult outsider who is representing a research institution.

When a student was under-eighteen, I sought consent from him or her as well as their parent's and institution's consent. I offered the students and their parents my contact details so they could discuss the terms and nature of the research before agreeing to participate. Some parents in London needed reassuring (see appendix for an example of my email exchange with parents). I took every effort to anonymise the data. All the names, personal and institutional, are pseudonyms. The students often gave me specific information about their parent's occupation; for example named a hospital, I therefore generalised the information.

During the research exercises all the http traffic that travelled through my proxy server had to go via each institution's web server; firewall and filtering software before the students were able to access the open web. This way the students were protected from accessing potential harmful material during my research. The social network I set-up was only live during the day of my visit. Access to the network was password protected; the students provided and used their own passwords. After the research sessions I downloaded the data to a secure location. Although the students talked about their social networking accounts such as Youtube, Instagram, Facebook and Twitter I did not investigate their profiles or take my research any further than what they disclosed during

interviews. Sometimes the students would discuss potentially sensitive or personal topics; I left them out of the transcription. All the interview data, video data, proxy logs, answers sheets and social network data is stored on secure server. In transferring the data to the thesis I have removed any data including IP addresses that can be used to trace it to its source.

Power imbalances between adult researchers and child subjects are not always adequately addressed (Morrow & Richards, 1996). Those who consider children to be essentially indistinguishable from adults avoid the issue by employing the same methods as those used with adults (Punch, 2002)(Lesko, 2012). It is then the responsibility of the adult researcher not to draw attention to any adult-child distinctions by treating them in any way other than as mature, competent people. I chose, however, to address the power imbalance because as well as any perceptions the students had of me as middle-aged male researcher from Southampton University, measures such as seeking parental consent may have confirmed my status as the powerful adult authority speaking to vulnerable people. I therefore chose to operationalise this disparity by comparing data between methods where my presence influenced the data such as the interviews and where I tried to blend into the background or become invisible altogether such as on the simulated social network. The challenge then becomes identifying and explaining the nuances of these dynamics in the data.

2.12 Analysing the Data

I began by coding the data by its relevance to the research questions:

Q1 How do young people's Web practices compare the problematic/ideal user offered in the digital literacy literature?

Q2 How is a young person's engagement with the Web configured by social identities as these are mobilised in distinctive educational fields'?

Q3 While engaging with the Web when and why do young people discuss, confirm or reject contested, controversial or ideologically-encoded forms of information they encountered circulating on the Web?

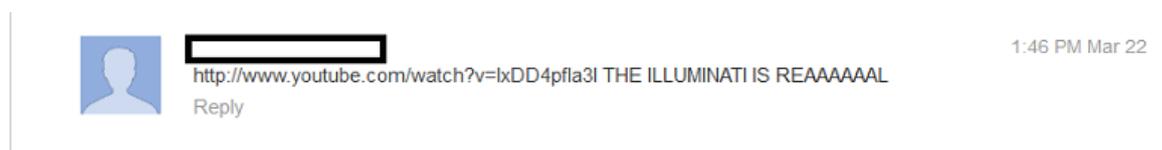
Some responses in the data initially appeared to fall clearly into the boundaries of a specific research question. For example, the young people who lack digital literacy are said to be unable to source reliable health information (Levin-Zamir et al., 2011). Therefore, to help address my second research question I asked the students in the individual interviews “If you were ill where would you go to look it up?” Jessica said; “If I was ill I’d look on the NHS website or health websites I know or have heard of” so I coded her response Q1. When a student answered this question differently to his or her peers I compared the answers by referencing other contextual data. Michael for example said he would use Wikipedia for health information. This is because on work experience he had seen doctors use it and, for him, it provided more technical information than NHS direct. Meanwhile, Jessica said she had been told in college not to trust Wikipedia. So we can see these responses are also relevant to Q3; Michael came from a family of medical professionals, he had had work experience at a hospital which challenged his perception of Wikipedia as an unreliable source. Although I was investigating these young people in an educational context, Michael’s social identity as a young man progressing towards a career as a health professional influenced how he engaged with the Web.

The facet methodology became useful in drawing together all the data sources into a coherent narrative. I wanted to move beyond comparing the differences between sites and differences between individuals at each site to provide explanation of how micro phenomena or “particular instances of the kinds of entwinements and contingencies” can tell us “something characteristic of the object of concern” (Mason 2011, p79). The particular instances here was trust in Wikipedia: because Michael has been afforded more opportunities to critically engage with Wikipedia than Jessica, taking to account other sources of data, this is indicative of Jessica’s relatively limited life-chances at this stage in her life where she was cleaning in the nights to help fund her college course.

Jessica provides further exemplary instances of how my faceted data is multi-dimensional, contingent, relationally implicated, and entwined. Different representations of Jessica emerge from each method’s data set. I could, for example, use the proxy logs and her worksheet answers to

argue she is a naïve and unsophisticated Web user but I took into account the many facets of her data a more complex picture of Jessica emerges. She was relatively quiet during the group interview and willing to defer to confident, loquacious males such as Jake, Liam and William. When she contributed, she was hesitant and she only made fairly frivolous comments about how she liked to shop online. The proxy logs show just over eight minutes into the research exercise Jessica went off task and started to play Candy Crush (a game on Facebook). She returned to the exercise to look at number of sites about conspiracy theories. Further evidence from the other proxy logs, the video and audio recordings of the session show that other students were simultaneously looking at similar sites; especially Youtube. Along with others such as Alex and Mel, Jessica can be heard exclaiming about some of these theories. She voices her shock, for example, that celebrity couple Jay-zee and Beyoncé are apparently active members of a secret power elite called the Illuminati. She appears to be deliberately over-emoting to prompt a reaction from her peers. At one stage, on the video she wheels her chair over to Liam to draw attention to something she found about conspiracy theories. Liam was the group's resident expert on conspiracies; Jessica appears to seeking his approval. Similarly, on the simulated social network her contributions are hyperbolic and attention seeking for example:

Figure 1: Jessica's comment on the social network



In the individual interview, however, Jessica's more sober and thoughtful persona emerged. She said she did not *really* believe the Illuminati were a secret, powerful organisation of celebrities. In private, her views on social security and immigration contradicted the apparent group consensus. I asked her for example about Twitter's coverage of Benefits Street (a Channel 4 series that claimed to document the reality of living on benefits by telling one Birmingham street's story).

Jessica said:

"I don't think people understood the programme was showing a minority of people in one road there's a lot more people who claim benefits in this country who need to in order to survive otherwise they'll be below the poverty line. People weren't putting that into perspective – they were seeing that and saying that's how everyone is on benefits and we should stop benefits – I didn't agree with it. And The Big Benefits Row – I think that was meant to make the reality more clear – but in some ways it didn't - personally I think it had the opposite effect."

At Calshot an anti-immigration sentiment emerged from the group interview, many of the students, including Jessica, had read stories about immigration on the Daily Mail's website (Jessica's proxy log data supports this). Yet when I asked her if the Daily Mail's website had convinced her immigration was a threat to English people's jobs (as many claimed in the group interview) Jessica said no:

"If immigrants are coming to do the jobs people here won't do then that's absolutely fine. People say they are taking our jobs but they are jobs that need doing and there's nobody willing to do them. Especially the dirty jobs no one wants to do."

There is of course the possibility that Jessica had carefully configured her responses to what she believed were my ideological sensibilities. She was, however, unaware of my views. Moreover, considering other contextual cues such as body language and tone of speech these opinions appeared sincerely held.

We can see how Jessica's data is multi-dimensional and contingent; different representations of her emerge between methods. And how her data is relationally implicated and entwined; her data can only be understood relative to her peers and wider web practices such as using Twitter outside college. Apart from the students who were absent from one the research stages, I applied this facet analytical technique to all the students.

We can see the value of operationalising information as discourse. Jessica was engaging with powerful and politically volatile language about race

and class. When these young people engage with information whether it was within my study or in their normal lives they were participating in Foucauldian arenas of discourse where power lays claim to truth. The facet methodology assumes the “different registers of scale that social scientists sometimes like to apply analytically (e.g. micro/macro)” (p79) are not so self-evidently revealed. The ‘macro’ is the collectively held norms and values that influence the ‘micro’; our thoughts and behaviours when we engage with technology. In expressing her values, Jessica was engaging with discourses circulating in her local community and wider society.

To do full justice to this data; however, I need a yet more sophisticated theoretical framework. Why did Jessica feel she had to meet certain normative expectations: behave and interpret information in a particular way in this educational setting and within her peer group? Why did she have more sympathy for immigrants and people on benefits than many of the others in her group but was unwilling to express them in public? How can I explain the contrast between Jessica’s patterns of usage and interpretation of information and that of Chancery students?

I have argued that young people such as Jessica have been previously defined as digitally savvy or ill-equipped for the Web by the processes of governmentality. I have sought to operationalise socially sensitive conceptualisations of youth and information to help query micro phenomena, such as sharing a hyperlink referring to an immigrant’s housing situation, so that they can be understood in relation to macro phenomena such as the production of dominant or counter hegemonic discourses. Combining a governmental critique with the theories of discourse and the facet methodology explains how young people express social norms and values through using the Web but a deeper analysis of the data poses further questions. The data subtly speaks of the young people’s educational, cultural and gender identities. Accounting for these identities the constraints and affordances that shape them requires a yet more sophisticated critical assessment of the relationship between the micro and macro.

The following chapter develops a theoretical approach to take over where facet methodology leaves us. I need a framework that accounts for the 'entwined problematics' of the user and technology that have until now, via positivistic methods, been isolated from the society that produces them. There is, however, an added complication. Advocates of digital literacy argue that young people need to increase their skills and their depth and breadth of web usage. This is because; if young people are introduced to more opportunities online and given the skills to take advantage of them then this, we are told, will increase their life chances. This implies that the technology is pre-loaded with transformative potential. The promise suggested by the digital literacy literature is that technology could transform Jessica's social economic status as she exploits capital-enhancing digital applications in the same way as Tom was using Duolingo for learning new foreign languages or Omar Stackoverflow for learning a new programming language. Jessica was not using technology in this way; explicitly as tool for self-improvement. Is it because she has yet to be exposed to and taught to use such technology Duolingo or C++? I need to establish first, does digital technology have inherently transformative potential? This is a deceptively complicated question that has been discussed by various theoreticians of technological practice.

Schatzki (2000) distinguishes four main types of practice theory: philosophical (such as Wittgenstein's practice theory), social theory (such as Bourdieu's), cultural theory (such as Foucault's), and, from the field of Science and Technology Studies (STS), practice theory that reconsiders "humanist dichotomies between human and nonhuman entities" (Schatzki, 2000, p10). I will take-up this challenge by way of addressing three; technical, social, and cultural theories of practice to my data.

Chapter 3: Reconceptualising Web Practices.

3.1 Introduction

In this Chapter I will begin by using Introna's (2014) "Post-human Interactional Account of Sociomaterial Agency" as the antidote to the technological determinism in the digital literacy literature and its wider related discussions. Introna effectively synthesises the SCOT approach to technological practice of distributed agency. Since he critiques ANT's obliteration of any boundary between the user and technology, Introna also helps me meaningfully locate agency in a way that facilitates my further analysis of young people's technological practices. Rather than working with a priori definition of technology that can be grafted onto social practice so that technology produces effects, this is the beginning of a process that investigates how the meaning of technology can emerge through practice. I will demonstrate the value of Introna's theory and explore its limits by applying it to the data I collected on young people's use of search engine technology. I will then contextualise my findings with further evidence of the research cohort's usage of online social networks.

We know from SCOT the nature of the technology is changed by the user's interpretation of its limits and affordances and users are changed by technology. Therefore, as time passes (in a mutual evolving synthesis of demands, learnt behaviours, and customisations) technology and users co-produce technological practice. In a typical example of this process, Google's search engine algorithms learn (from previous cached searches and aggregated search terms) to pre-empt what users are looking for with automated suggestions. For Introna (2014) when users engage with computer systems there is "a triad of intentionality at work" (Johnson 2006, p202 (quoted by Introna (2014))). This triad includes "the intentionality of the computer system designer, the intentionality of the system, and the intentionality of the user" (Johnson, 2006, p202 (quoted by Introna (2014))). (Introna's meaning is sometimes unclear so to get more insight into his thinking I refer to his original sources). Introna therefore regards technical systems as inseparable from: "the social arrangements of which they are a part; the activities that produce them and the cultural notions that give them meaning" (Johnson, 2006, p198).

He argues they need to be understood in context because such systems operate “in particular places at particular times in relation to particular users, institutions, and social purposes” (p198). People, software and machines become “components in socio-technical systems that are complexes – ensembles, networks – of human activity and artefacts” (p198). These complexes are sustained by a pluralistic matrix of intentionalities: the intentionality of the non-human components is “related to their functionality” which is produced by “the intentional acts of their designers”. The systems are “poised to behave in certain ways in response to input” (p201). The intentionality of computer systems and other artefacts is therefore “connected to two other forms of intentionality, the intentionality of the designer and the intentionality of the user” (p201). Johnson describes the practice of querying a search engine to illustrate her argument:

“When, for example, using a search engine, I press certain keys entering particular words in the appropriate box and then press a button, the search engine goes through a set of processes and delivers particular output to my computer screen. The output (the resulting behaviour) is a function of how the system has been designed and the input I gave it.....Therefore artefacts, including computer systems, have been intentionally designed and poised to behave in the way they do – by humans.” (p201)

Introna uses Friedman et al’s Value Sensitive Design (VSD) paradigm to corroborate, complement and improve Johnson’s approach. VSD extends Johnson’s triad of intentionality; it argues the design and implementation of a system enables or privileges certain behaviours while limiting or excluding others. Therefore, the “interests and values of a privileged subset of stakeholders; such as economy, efficiency, safety, and so forth” can be enacted by users of the system or, alternatively, systems can “render possible a wider, more inclusive, set of behaviours and values” (Introna 2014, Kindle Location 862). VSD suggests these “values are viewed neither as inscribed into technology (an endogenous theory), nor as simply transmitted by social forces (an exogenous theory)” (Friedman, et al, 2006, p361); rather agency emerges from a complex, dynamic relationship between interpretive and embedded intentionalities:

“While the features or properties that people design into technologies more readily support certain values and hinder others, the technology’s actual use depends on the goals of the people interacting with it” (Friedman et al., 2006, p13).

We should be careful not to marginalise design: “there are quasi-universal principles that underscore good technology design” (Kirkpatrick, 2008, p85) that require our attention. If, however, the user’s goals and the technology’s affordances are discordant, this, scaled-up, can mean the “societal rejection of a technology, or that its acceptance is delayed” (p13). So, we can therefore see the emergence of a theory that accommodates technology’s agency into a SCOT interpretation of technological practice; users are decisive but so too are the intentionalities embedded in the technology. As an ability to enact or determine the outcome of technological practice, for Introna, both the user and the technology possesses agency.

Introna argues, however, the concept of distributed agency unsatisfactorily absolves the user or the engineer of any moral responsibility for his or her actions. In this belief he shares many of Sismondo’s (2011) concerns with ANT; the ultimate theory of distributed agency. Since ANT “treats humans and non-humans on the same footing”, and because it “adopts an externalized view of actors”, for Sismondo it does not “pay attention to such distinctively human and apparently subjective factors as cultures and practices” (p89). The wider community and societal influences on technological practice are neglected because, Sismondo says, “ANT is culturally flat” so that “macro-level features of the social world have to be reducible to micro-level ones, without action at a distance” (p89). He continues; to treat humans and non-humans symmetrically, ANT has “to deny that intentionality is necessary for action” (p90). Following the actors (as is often suggested by ANT scholars) will therefore, for Introna, only “continuously displace agency to somewhere else as we transverse the network of humans and non-humans” towards “an infinite regress“ (Introna 2014, Kindle Location 912) that critically neglects human accountability:

“If Latour is right about the distributed and unoriginal agency of actors (or more specifically normatively relevant agency of actors) then one might conclude that it is ultimately impossible for us to deal with the ethical and political implications of electronically mediated social practices.” (Introna, 2014 Kindle Locations 909-911)

Within Introna’s interpretation of leading ANT scholar Latour (2002) therefore, Latour unsatisfactorily sublimates our agency and in doing so reduces us “to ‘objects’ in programmes and scripts: things-for-the-purposes-of the network at the disposal of a higher logic (capital, state, community, environment, etc.)” (Introna, 2009, p31). He resolves his dissatisfaction with ANT by turning to Barad. Barad argues that in socio-technical agency the locus of responsibility is “a prosthetically embodied, performativity constituted agency” (Rouse, 2004, p155). According to this concept of agency:

“We are responsible for the world in which we live not because it is an arbitrary construction of our choosing, but because agential reality is sedimented out of particular practices that we have a role in shaping.” (p155)

Thus, Barad, for Introna, helps re-establish socio-technical agency within the social world that influences it but in way that still accounts for non-human agency. Barad “leaves a conceptual and practical space for understanding and being accountable to non-human agency, not because no differences between human and other agencies exist but because agency is not an all-or-nothing affair” (Rouse, 2004, p156). Introna endorses Barad’s account of responsibility because it “recognises and responds to the embodiment of human agency in specific settings that sustain and transform other agents’ field of possible action” (p156).

To strengthen his position Introna recruits Heidegger (1962) to argue the meaning (or coming into being) of us and our tools (the social and the technical) can only be understood within an individual’s “horizon of meaning”; the world within which he or she is already “intra-acting” (Introna, 2014, Kindle Locations 966-967). Introna’s argument is illustrated by this extract:

“We encounter things in the world as mattering (being significant) because we matter to ourselves as being or becoming such or such a particular being (father, teacher, etc.). Thus, we do not simply bang on keys, we use the laptop to type, in-order-to write this paper, to do e-mail, to surf the web, etc. Thus, as beings-in-the-world, our tools and us always already intra-act or rather we co-constitute each other’s possibility for being agents—not in general but exactly that which we are in this or that particular world (of academia, business, and so forth). But this is not all. If we exist in a co-constitutive intra-relation with technology then our technological world is also more than just this or that particular co-constitutive practice in this or that particular practices.”
(Introna, 2014, Kindle Location 971)

More concisely, he is arguing that socio-technical intentionalities cannot be severed from the social environments that produce them. On this basis, he then asks how then do we *fully* repatriate ‘the social’ in an account of socio-technical agency without neglecting ‘the technical’. Introna suggests we should be guided by the STS concept of distributed agency but also account for the user’s social world to develop a new account of social-technical agency.

Introna’s argument unfolds thus: we need to attend to the intentionality of both the user and the technology; but do this in such a way that accounts for an individual’s ‘horizon of meaning’ and this individual’s influence on other agent’s ‘field of possible action’. His solution is a “post-human intra-actional account of socio-agency” (Introna, 2014, Kindle Location 878) that integrates Johnson, VSD and Barad into his own model that breaks-down “co-constitutive intra-actional agency” into four categories:

“Affordances/prohibitions”; we should attend to the “values built into the design of artefacts”; expose the “affordances and prohibitions of artefacts”, query how they “materialise morality”; and question the “prevailing technological moods of our day”.

“(Cyborg) Identities”; we should address the user’s “‘whole’ identities rather than ‘narrow’ identities such as gadget people or Google generation”.

“(Cyborg) Practices”; “we need to understand the practices that are emerging around our technological affordances”.

“Discourses”; although in his recruitment of Foucault’s concept of archaeology and his suggestion we should address the “transcendental, co-constitutive conditions that rendered a phenomena possible” Introna *implies* the discourse surrounding technology should be an object of study; here, instead, he specifically argues we should “develop new discourses that will enable and legitimate the sort of affordances, identities and practices that will intra-enact our common human values” (Kindle Location, 1273) (I will discuss the implications of his use of the concept of discourse in this chapter’s conclusion).

Introna recognises that intra-actions between technology and users are not predetermined and helps me argue that alternatively, within a study of how young people use the Web, we to need account for a fuller spectrum of practices on and offline, and, crucially, the possible affordances and boundaries that produce, channel and limit these practices.

3.2 Putting Introna’s post-human intra-actional account of socio-agency to work

Since Google is our main portal into the Web’s billions of sites (or its indexable ones, since the so-called ‘dark Web’ is invisible to web crawlers) like all search engines, it possesses agency. The generality of this conceptual statement, however, offers limited empirical utility: we know search engines filter results. The concept of the autodidactic propaganda or ‘filter bubbling’ is the most salient *specific* problematisation of Google’s effects that can be investigated. The filter bubble’s most conspicuous advocate is Pariser (2011). Initially, in the following analysis that explores the utility of Introna’s work via a

dissection of the way my study's cohort uses search engines, it appears I am testing the concept of the filter bubble. It is my intention; however, to investigate how, according to Introna's framework, technology's affordances/prohibitions dynamically interact with identities, practices and discourses. Moreover, a close examination of search engine use is a valuable endeavour in its own right. Google's search engine is, argues Kirkpatrick (2008), a technical artefact that is normally encoded as a "neutral, technical to solution practical problems" (p143). We take for granted the way Google organises knowledge in a way that naturalises and privileges Google's "regime of authority" (p143). Such unquestioning use of technology helps sustain "hegemonic technical rationality" (p152) where we hand power to digital technology by out-sourcing our thinking to artificial intelligence such as Google's algorithms.

Within this broader remit the concept of the filter bubble serves as a useful metaphor for Google's potential socio-technical agency. An investigation into how individuals from different backgrounds use search engines in different settings could reveal how practice intersects with affordances/prohibitions of specific search engines to produce differentiated and more specific forms of agency. It will allow me to ask: where is the balance of agency located (in 'the power' of Google's personalisation algorithms to shape practice or in the user's choices); how is agency manifested; where is agency allowed to flourish and where are its boundaries: what *are* its affordances/prohibitions? In answering these questions it is necessary to attempt to remove Google's functionality from its 'black box' and capture user practices as well the context of these engagements with technology.

We cannot assess Google's socio-technical agency with existing accounts of its functionality such as these:

"Google's algorithm for prioritising the order of links when a search is carried out was initially based on 'Page Ranks (sic)' – sites which had lots of links to them were more likely to appear towards the top of the list." (Baker & Potts, 2013, p189)

“Google uses a powerful search algorithm. The details of the PageRank algorithm are secret.....The PageRank algorithm is a form of surveillance that searches, assesses and indexes the WWW”. (Fuchs, 2013, Kindle Locations 2943-2946)

Google uses “57 signals” to produce SERPs “even when you’re a logged out (of Google)” (Pariser, 2011)

These examples oversimplify Google’s functionality and the intentionalities embedded its algorithms. There are, however, limits to my ambition because in pursuit of a better understanding of its socio-technical agency it is impossible to fully engage with a commercial search engine’s affordances/prohibitions. Since it is a source of revenue to a multi-billion dollar transnational corporation, Google’s functionality is classified and protected by intellectual property and copyright law. Because a working knowledge of this functionality is potentially lucrative to an industry that promises its paying clients prominence on its search engine results page (SERP), this secret, is, however, subject to intense speculation.

Our knowledge of Google’s functionality is therefore always evolving. At any time it is this the temporary stabilisation of the tension between what the search engine optimisation industry ‘knows’, from evidence of searches, about Google’s algorithms; what Google is prepared to give away via its publicity channels (including press releases of Google’s regular algorithmic updates); more speculative commentary; and the updates Google applies to its software. Nevertheless, if we consider what we ‘know’ about its functionality with the conditions of my study we can make a reasonable estimation of Google’s agency here.

Dean (2014) after a review of search engine optimisation literature and Google’s blogs and videos, lists over 200 factors that influence SERPs. This includes a variety of “domain factors” such as the domain’s age and country code such as .co.uk. At the “page level” he lists “key word density” and an array of “content quality signals” such as: “Latent Semantic Indexing Keywords in Content (LSI) (LSI keywords help search engines extract meaning from words with more than one meaning (for

example Apple the computer company vs. the fruit); “recency of content updates”; “spelling and grammar”; “number of broken links”, “in bound link density”, and “Page Rank”. At the “site level” there is “server location”, “user reviews and site reputation”, “Page Rank of linking page”, “diversity of link types”, “link from authority sites”, “user interaction and repeat traffic”. We are then left with a series of “special algorithm rules” which take into account “user browsing history” and “user search history” to produce “search chain influence” or search results that are cached for later searches. For example, if a user searches for “reviews” then searches for “tablets”, Google is more likely to show tablet review sites higher in the SERPs. These various levels; server page level and so on, are not considered discrete; rather all the factors, we are told, can be used in combination. For example, Google is reported to use “geo-targeting” which means it gives preference to sites with a local server IP and country-specific domain name extension.

Within the research conditions I created and each institution’s IT system (infrastructure, facilities, and policies) there were many fixed and dynamic affordances/prohibitions at work that were beyond any student’s influence. The Calshot College students were given Apple Macs with Safari and the Chancery School students used Windows 7 pcs with Internet Explorer; it has been suggested all these factors may influence SERPs (Dean, 2014). The research at Calshot College took place in March 2013 and at the Chancery School in June 2013 during which time the Web’s landscape will have changed; content available to the Chancery School students may have been unavailable to the Calshot College students. At both sites the browser only cached searches for each live session on the client machine and wiped logs after each user logged-off; therefore any influence on SERPs from browsing history would have been confined to each session. The students could choose any search engine, however some of the potential contextual influences on SERPs discussed above were beyond the student’s agency.

Given all these factors at work, we would expect to see a contrast in the search results between individual users, if not, at least between each site. I gave the students an exercise that would catalyse the search engine’s agency. To reveal the affordances/prohibitions its agency would produce,

I asked the students to use a search engine to research a range of controversial questions that are highly contested online. Given the nature of these questions it was likely the student's search terms and results would vary. Because the wording of the question was identical at both sites, for comparative purposes, I have selected "Does aspartame cause cancer?" This question also offered me a relatively ethically benign opportunity to explore recent concerns that young people are accessing misleading health information online (see: Pariser (2011)); Lewis (2006); Eysenbach (2008); Levin-Zamir, Lemish, & Gofin (2011); and Dobransky & Hargittai (2012) for such concerns). The effects of aspartame on our health are contested. I wanted to see whether these young people would encounter such information; via an exploration of the specific affordances/prohibitions of search engines, this would operationalise Introna's concept of socio-technical agency.

Table 3, Column 1, shows the websites that appeared in on the first page of SERPs at Calshot College that the students then opened in tabs. Column 2 shows the website the students choose that, for them, best answered the question. Every student at Calshot College used Google.

Table 3: The Calshot cohort's web activity in response to the aspartame question.

Calshot College	Does aspartame cause cancer?	
	Column 1	Column 2
Student 1	http://www.dailymail.co.uk http://en.wikipedia.org/wiki/Aspartame http://www.cancer.org	http://www.cancer.org
Student 2	http://www.dailymail.co.uk http://www.cancer.org http://www.weightlossresources.co.uk	http://www.weightlossresources.co.uk
Student 3	http://www.weightlossresources.co.uk http://www.cancer.org	http://www.cancer.org
Student 4	http://www.dailymail.co.uk http://en.wikipedia.org/wiki/Aspartame http://www.cancer.org	http://www.cancer.org
Student 5	http://www.weightlossresources.co.uk http://www.cancer.org	http://www.cancer.org
Student 6	http://en.wikipedia.org/wiki/Aspartame http://www.cancer.org http://www.weightlossresources.co.uk	http://www.weightlossresources.co.uk
Student 7	http://www.dailymail.co.uk http://en.wikipedia.org/wiki/Aspartame http://www.cancer.org http://www.weightlossresources.co.uk	http://www.weightlossresources.co.uk
Student 8	http://www.dailymail.co.uk http://www.weightlossresources.co.uk	http://www.weightlossresources.co.uk
Student 9	http://en.wikipedia.org/wiki/Aspartame http://www.cancer.org http://www.weightlossresources.co.uk	http://www.cancer.org
Student 10	http://www.dailymail.co.uk http://en.wikipedia.org/wiki/Aspartame http://www.weightlossresources.co.uk	http://www.dailymail.co.uk

At the Chancery School the students between them used three different search engines; Bing, DuckDuckGo and Google. As well as the sites the students accessed and choose for their answers, I have therefore indicated (in the first column) the search engine each student used.

Table 4: The Chancery cohort's web activity in response to the aspartame question.

The Chancery School	Column 1	Column 2
Student 1 Search Engine: DuckDuckGo	http://www.cancer.org http://www.dailymail.co.uk http://naturalnews.com http://www.myfoxchicago.com http://www.youtube.com	http://www.cancer.org http://www.dailymail.co.uk
Student 2	http://en.wikipedia.org/wiki/Aspartame http://www.weightlossresources.co.uk	http://en.wikipedia.org/wiki/Aspartame http://www.weightlossresources.co.uk
Student 3 Bing	http://en.wikipedia.org/wiki/Aspartame http://en.wikipedia.org/wiki/Aspartame_controversy http://aspartamekills.com/ http://www.aspartame.org/aspartame_faq.html http://www.aspartame.org/aspartame_myths.html http://www.youtube.com http://www.food.gov.uk	No website specified
Student 4	http://en.wikipedia.org/wiki/Aspartame	http://en.wikipedia.org/wiki/Aspartame
Student 5	http://en.wikipedia.org/wiki/Aspartame_controversy http://www.cancerresearchuk.org http://www.weightlossresources.co.uk	http://en.wikipedia.org/wiki/Aspartame
Student 6 Bing	http://www.aspartame.org/aspartame_faq.html http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/aspartame http://en.wikipedia.org/wiki/Aspartame http://en.wikipedia.org/wiki/Aspartame_controversy http://en.wikipedia.org/wiki/Sucralose http://en.wikipedia.org/wiki/Saccharin http://aspartamekills.com/ http://www.aspartame.org/aspartame_faq.html http://www.aspartame.org/aspartame_myths.html http://en.wikipedia.org/wiki/E_number http://www.food.gov.uk/policy-advice/additivesbranch/55174	http://en.wikipedia.org/wiki/Aspartame_controversy
Student 7 Google	http://en.wikipedia.org/wiki/Aspartame	http://en.wikipedia.org/wiki/Aspartame

Student 8	http://en.wikipedia.org/wiki/Aspartame_controversy http://www.cancerresearchuk.org/cancer-help/about-cancer/causes-symptoms/ http://www.weightlossresources.co.uk/diet/healthy_eating/aspartame.htm	http://en.wikipedia.org/wiki/Aspartame_controversy
Student 9	http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/aspartame http://www.dailymail.co.uk/news/article-2290544/Aspartame-Cancer-premature-birth-fears-linked-fizzy-drink-sweetener.html http://en.wikipedia.org/wiki/Aspartame_controversy	http://en.wikipedia.org/wiki/Aspartame_controversy
Student 10	http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/aspartame http://www.dailymail.co.uk/news/article-2290544/Aspartame-Cancer-premature-birth-fears-linked-fizzy-drink-sweetener.html http://www.cancer.gov/cancertopics/factsheet/Risk/artificial-sweeteners	http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/aspartame
Student 11	http://en.wikipedia.org/wiki/Diet_Coke http://www.dailymail.co.uk/news/article-2290544/Aspartame-Cancer-premature-birth-fears-linked-fizzy-drink-sweetener.html http://en.wikipedia.org/wiki/Aspartame_controversy http://www.dailymail.co.uk/news/article-2290544/Aspartame-Cancer-premature-birth-fears-linked-fizzy-drink-sweetener.html	http://en.wikipedia.org/wiki/Aspartame_controversy

When the students used Google, regardless of location, the SERPs are remarkably similar. On the basis of these data the effects of ‘bubbling’ are relatively inconsequential. Indeed, I was able to replicate the results at home.

Figure 2: My search for “aspartame” + “cancer”:

Aspartame - American Cancer Society

www.cancer.org > ... > Other Carcinogens > At Home
Aspartame (NutraSweet, Equal, etc) is one of the most common artificial sweeteners in use today. Find out what we know about its safety here.

Aspartame is, By Far, The Most Dangerous Substance on ...

aspartame.mercola.com/
by Joseph Mercola - This popular sweetener that many people swapped for aspartame can ... Even though it's been found to cause cancers like leukemia, lymphoma, and other ...

Aspartame controversy - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Aspartame_controversy
The artificial sweetener aspartame has been the subject of several Hayes further justified his approval with a Japanese brain tumor study, the results of which, ...
Origins - US FDA approval - Alleged conflict of interest ...

Aspartame: Cancer and premature birth fears linked to fizzy ...

www.dailymail.co.uk/.../Aspartame-Cancer-premature-birth-fears-linked-...
9 Mar 2013 - Its scientists have published research suggesting aspartame caused several types of cancer in rats at doses very close to the current ...

Artificial Sweeteners and Cancer - National Cancer Institute

www.cancer.gov/cancertopics/factsheet/Risk/artificial-sweeteners
Studies have been conducted on the safety of several artificial sweeteners, including saccharin, aspartame, acesulfame potassium, sucralose, neotame, and ...

Is Aspartame Cancer Causing? - Weight Loss Resources

www.weightlossresources.co.uk/diet/healthy_eating/aspartame.htm
Interestingly, his comments in the House of Commons came six months after the publication of the research from Italy that linked aspartame to cancer in rats.

Life-span exposure to low doses of aspartame beginning ...

www.ncbi.nlm.nih.gov/pubmed/17805418
by M Soffritti - 2007 - Cited by 111 - Related articles
Environ Health Perspect. 2007 Sep;115(9):1293-7. Life-span exposure to low doses of aspartame beginning during prenatal life increases cancer effects in rats.

The American Cancer Society has deceived the American ...

www.naturalnews.com/039677_american_cancer_society_deceptions_as...
28 Mar 2013 - According to the American Cancer Society (ACS), "Rumors claiming that aspartame causes a number of health problems, including cancer, ...

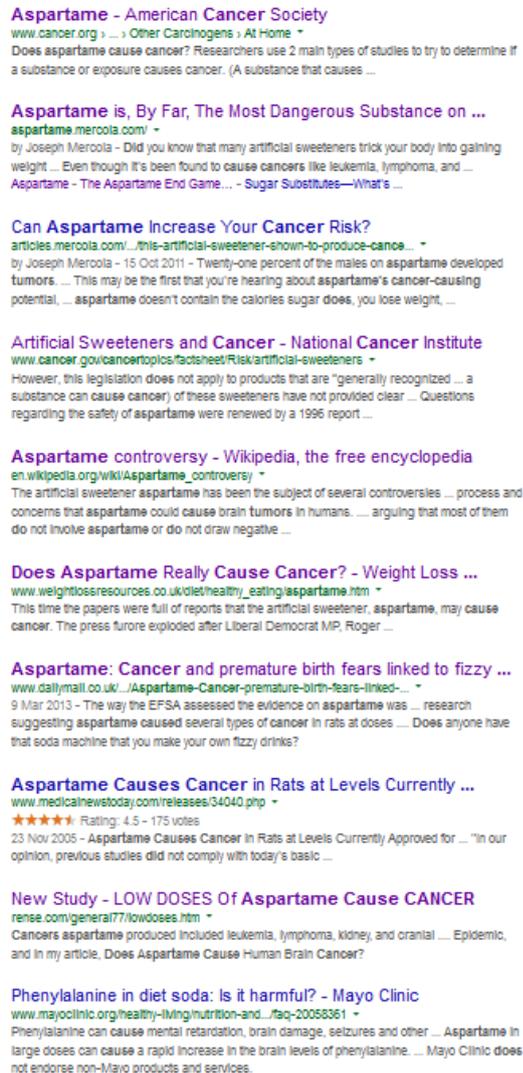
New Study - LOW DOSES Of Aspartame Cause CANCER

rense.com/genera77/lowdoses.htm
Also, of major concern is their finding of statistically significant increases in breast cancer in animals exposed to aspartame. With newer studies clearly indicating ...

Aspartame linked with cancer in humans | Dr Briffa's Blog - A ...

www.drbriffa.com/2012/11/13/aspartame-linked-with-cancer-in-humans/
13 Nov 2012 - If aspartame does cause cancer, how might it do it? Well, one constituent of aspartame is methanol ("wood alcohol" and the primary constituent ...

Figure 3: My search for “Does aspartame cause cancer?”:



If I typed in “Does aspartame cause cancer?” or the key words “aspartame” and “cancer” the results were the very similar to the results produced at Calshot College and the Chancery School. At both sites Wikipedia is prominent in the SERPs regardless of search engine, or browser and so on. Similarly, Cancer.org an American website and The Daily Mail’s website are conspicuous at both sites. The students at both sites ignored Google ads. Generally, we can see the 200+ sorting variables contained in Google’s search prioritisation algorithms produced few differences between users and sites. The only significant difference is the website <http://aspartame.mercola.com> that appeared in my first SERP and in the Chancery School proxy logs. This is a commercial site that claims, counter to the scientific consensus, that aspartame is by “Far, the

Most Dangerous Substance on the Market”. It is absent from the Calshot College logs.

How can we account for this? Google announced in 2011 that its ranking algorithms would be influenced by social networking metrics (Google Official Blog, 2011). ‘Shares’ within Google’s own social network, *Circles*, for example would count within Google’s prioritisation algorithms as significant votes or recommendations for the website’s content thus push the ‘shared’ site up to the top of Google’s SERPs. The personification of the website is “Dr Joseph Mercola”, an osteopath whose empirically unsubstantiated claims about food as well as vaccines, HIV, and sunscreen have been discredited by scientific authorities such as the WHO and FDA. Nevertheless, Mercola’s popularity on social networks by the summer 2013 promoted him to top of Google’s SERPs where he remains at the time of writing. This presents an example of socio-technical agency within which, via its search prioritising algorithms, the intentionality of Google’s strategists and engineers has privileged and amplified the intentionality of a relatively tiny proportion of anonymous web users who have shared this website among their online social networks. Google’s technical affordances, in this case, exposed young people at the Chancery School site to highly contested health information. This highlights two of the sources of agency in Johnson’s “triad of intentionality” (2006, p202). A further examination of the data identifies the third source: the user.

Beyond entering certain search terms, the young men at the Chancery School claimed agency if they chose a different search engine. Ironically, given concerns about young people’s exposure to misinformation, when the students used DuckDuckGo the search engine produced more websites that challenged the scientific consensus on aspartame for example <http://naturalnews.com>. I replicated this search at home in June 2014 with DuckDuckGo here:

Figure 3: My search for aspartame + cancer on DuckDuckGo

The screenshot shows a search engine results page for the query 'aspartame + cancer'. At the top is a sponsored link for 'Aspartame' from 'Made-in-China.com'. Below this are several organic search results, each with a small circular icon to its left. The results include:

- Aspartame - American Cancer Society**: A link to cancer.org with a description of aspartame as a common artificial sweetener.
- Aspartame and Cancer: Questions and Answers - cancernews.com**: A link to cancernews.com with a description of a 2006 study comparing aspartame consumption to lymphom risk.
- Artificial Sweeteners and Cancer - National Cancer Institute**: A link to cancer.gov with a description of a fact sheet on the connection between artificial sweeteners and cancer.
- Can Aspartame Increase Your Cancer Risk? - Mercola.com**: A link to articles.mercola.com with a description of aspartame's potential to increase cancer risk.
- Study Linking Aspartame, Cancer Causes Controversy : NPR**: A link to npr.org with a description of a study linking aspartame to cancer risk.
- Aspartame-Cancer Link Exposed: Increasing Your Cancer Risk ...**: A link to naturalsociety.com with a description of research showing aspartame and diet soda trigger cancers.
- Study: Aspartame linked to blood cancers - Digital Journal**: A link to digitaljournal.com with a description of a study linking aspartame use to leukemia and lymphoma.
- FDA Should Reconsider Aspartame Cancer Risk, Say Experts ...**: A link to a news article with a description of a long-term animal test raising safety questions about aspartame.

Perhaps the most telling evidence is, regardless of the amount of information that challenged the scientific consensus in their SERPs; none of the students at either site used this information to argue aspartame caused cancer. Indeed, an account of *why* students at the Chancery School chose a different search engine begins to show that socially-mediated individual agency was often more important and influential than any of Google's algorithmic manipulations.

During the group interview at the Chancery School Omar revealed he avoided using Google and instead used DuckDuckGo because, in its mission statement, by providing unadulterated SERPs, DuckDuckGo promises to serve the antidote to so called 'bubbling'. Omar claimed he wanted to read information that penetrated his filter bubble.

Here is evidence from his history file of how Omar tried to avoid bubbling: Column 1 is the time the content arrived at his browser and Column 2 is the address of the content that Omar saw on his screen. I have colour coded the rows. Omar's DuckDuckGo searches are in green, his Google searches are in red and his Bing searches are in purple. The text in blue is the SERPs DuckDuckGo presented to Omar. Since Bing and Google are not transparent search engines their results were invisible to the logs. I can, however, infer the results because the SERPs are indicated by the pages Omar clicked-on and these were recorded by the proxy log.

Table 5: Omar's use of multiple search engines.

Time	url
08:38:59	https://duckduckgo.com/debt+crisis
08:37:26	http://www.google.co.uk/search?site=&source=hp&q=Debt+Crisis
08:37:36	http://www.google.co.uk/search?q=Debt+Crisis+lain+m+banks
08:38:09	http://www.google.co.uk/search?q=Debt+Crisis+UK&oq=Debt+Crisis
08:47:56	https://duckduckgo.com/?q=debt+crisis+UK+Labour
08:48:11	https://duckduckgo.com/?q=debt+crisis+UK
08:50:56	http://www.bing.com/search?q=lain+M+Banks
08:51:04	http://www.bing.com/search?q=lain+M+Banks+last+interview
08:58:05	http://www.unicef.org
08:58:05	http://books.google.com
08:58:05	http://www.amrc.org.hk
08:58:05	http://blog.labour.org.nz
08:58:06	http://link.springer.com
08:58:06	http://kerala.me
08:58:06	http://www.global-labour-university.org
08:58:06	http://www.internationallawoffice.com
08:58:06	http://www.resourceinvestor.com
08:58:06	http://www.sunonline.org
08:58:06	http://www.canadianlabour.ca
08:58:07	https://duckduckgo.com/?q=labour%27s+financial+crisis+UK
08:58:08	http://www.thecommentator.com
08:58:09	http://www.creditcrunch.co.uk
08:58:38	https://duckduckgo.com/?q=financial+crisis+UK+labour
08:58:39	http://www.worldlabour.org
08:58:39	http://www.leftfootforward.org
08:58:39	http://www.ifs.org.uk
08:58:39	http://www.labour.org.uk
08:58:39	http://www.independentlabour.org.uk

08:58:39	http://faos.ku.dk
08:58:39	http://economicsonline.co.uk
08:58:39	http://www.ucl.ac.uk
08:58:39	http://carlminns.blogspot.co.uk
08:58:40	http://www.academia.edu
08:58:40	http://www.morningstaronline.co.uk
08:58:40	http://news.bbc.co.uk
08:58:40	http://www.globalmon.org.hk
08:58:40	http://mainlymacro.blogspot.com
08:58:42	http://www.telegraph.co.uk
08:58:51	https://duckduckgo.com/?q=financial+crisis+labour
08:58:52	http://www.routledge.com
08:58:52	http://www.nordiclbourjournal.org
08:58:52	http://papers.ssrn.com
08:58:52	http://www.bankofengland.co.uk
08:58:52	http://www.debtation.org
08:58:52	http://laborstrategies.blogs.com
08:59:06	https://duckduckgo.com/?q=debt+crisis+labour
08:59:07	http://articles.economictimes.indiatimes.com
08:59:07	http://www.ilo.org
08:59:07	http://www.washingtonpost.com
08:59:08	http://articles.washingtonpost.com
08:59:08	http://www.thenation.com
08:59:08	http://www.nytimes.com
08:59:08	http://www.labour.ie
08:59:08	http://www.bloomberg.com
08:59:08	http://nhlabornews.com
08:59:08	http://www.e-ir.info
08:59:08	http://www.peoplesworld.org
08:59:08	http://in-other-news.com
08:59:08	http://laboureconomics.wordpress.com
08:59:31	http://en.wikipedia.org
08:59:31	http://www.voxeu.org
08:59:31	http://www.thetelegraphandargus.co.uk
08:59:58	https://duckduckgo.com/?q=UK+debt+crisis+labour
08:59:58	http://www.telegraph.co.uk
08:59:58	http://www.newstatesman.com
09:06:55	http://www.google.co.uk/search?q=Global+warming
09:15:51	http://www.jstor.org
09:25:47	http://www.google.co.uk/search?q=arguments+against+anthropogenic+causes+of+global+warming
09:29:03	http://www.google.co.uk/search?q=global+warming+is+it+lie

09:33:56	http://www.google.co.uk/search?site=&source=hp&q=uk+immigration
09:36:34	http://www.google.co.uk/search?q=refugees
09:38:33	http://www.google.co.uk/search?q=aspartame+cancer
09:50:46	http://www.google.co.uk/search?q=google+Page+rank
09:55:50	http://google.co.uk/search?q=governemnt+misleading+public
09:56:59	http://www.google.co.uk/search?q=cold+war+government+secret+published
09:57:23	http://www.google.co.uk/search?site=&source=hp&q=irag+wmds
10:01:35	http://www.google.co.uk/search?q=egypt+mubarak+propaganda
10:04:28	http://www.bing.com/search?q=egypt+election+riggering

This represents reflexive agency; a critical self-awareness and reasoning that is apparently invisible to Pariser et al. Crucially, for Introna’s treatment of discourse, Omar is engaging with the Pariser’s discourse on search engines in a way that requires further analysis. From further interview data we can see Omar’s identity was sustained by his reputation among his peer group as an expert user. This reputation was reinforced by his stated ambition to study Computer Science at Oxford and possibly his father’s status as a computer scientist. He was anxious to reinforce this identity in group situations. His statements about technology became ‘facts’ in the sense they were not, at least publically, contested by the group and his statements influenced other people’s practice. Omar’s use of discourse like this; to enhance his reputation contributes to Chapter 6’s theme.

I can see from the proxy logs DuckDuckGo spread around the room during the research session as other students were willing to either copy Omar or defer to his expertise. His reputation as an expert, confirmed in the interviews (his reputation not his expertise), amplified his agency. He encouraged other uses to escape their ‘filter bubbles’. As an effect of this, Omar and his adherents were much more likely to encounter contested information. Omar’s identity reconfigured the technical affordances/prohibitions of his peers as well as their practices. He had “sustained and transformed other agent’s field of possible action” (Rouse, 2004, p156 (quoted by Introna 2014)).

This was demonstrated again when we discussed Google’s functionality. In the Chancery School, when I questioned the students about how Google works none of young men apart from Omar was prepared to offer

an answer. He vaguely described *PageRank* as short-hand for Google’s functionality and this became uncontested knowledge within the young men’s community. For example, when I asked the students “How does Google prioritise its search results?” some students went looking for *PageRank*.

This evidence from their history logs.

Table 6: The Chancery cohort’s search in response to “How does Google prioritise its search results?”

User	Search term
Omar	how+does+google+prioritize+its+search+results
Saul	pagerank+system
Michael	how+google+page+rank+works
Zac	Pagerank

Omar’s intervention was crucial; his ability to influence his peers’ practice suppressed Google’s technical prohibitions/affordances and instead introduced the perceived prohibitions/affordances of alternative search engines. Scaled-up this would signify the end of Google’s market dominance as users fled its search engine for DuckDuckGo. This shows therefore “which of two or more technologies eventually succeed is not determined by their intrinsic characteristics alone, but also by their histories of adoption” (Mackenzie & Wajcman, 2012, p34).

I deliberately left some of the student’s research questions sensitive to interpretation. We can see in Omar’s proxy log and indeed the logs of his peers that often the Chancery students made their minds up about the topics before they used a search engine and they went looking for information that confirmed or expanded on what they knew already. Although the search engine was complicit in the process, we have to acknowledge the powerful social and cultural influences at work. For example, I asked the students to provide evidence from the Web of organised government deceptions. A student from a Jewish background

interpreted this through the lens of Israel's conflict with Palestinians; he looked for various combinations of "historic+government+missile+attack". Another student from an Egyptian background looked for "governemnt+misleading+public", "cold+war+government+secret+published", "iraq+wmds", "egypt+mubarak+propaganda", and "egypt+election+riggering".

These findings are not confined to search engines; further evidence emphasises the necessity of attending to 'the social' within a framework of distributed agency. The data shows the practice of using online social networks also coevolved through a complex, adaptive interrelationship between each student's social identity and the technology's prohibitions/affordances. For example, almost all the students were Facebook users; some had had an account for over half their lifetime. Facebook is constantly upgrading its technical affordances in response to its competitors for young people's attention (such as status updates, location tagging, trending topics, homophilous groupings, and multimedia sharing and tagging). At the time of writing, in an effort maintain its user's loyalty, Facebook has produced an app extension to its platform to rival Snapchat (Sparkes 2014). The adaptive potential of technology is apparent in Facebook's evolution. As Friedman et al. (2006) argue: "through human interaction" technology, like Facebook, "itself changes over time" (p13). This entails "an iterative process whereby technologies are first invented, and then redesigned based on user interactions, which then are reintroduced to users, further interactions occur, and further redesigns" (p13). Yet, despite all these upgrades, the students said, as they matured, they discontinued using Facebook for status updates, photo sharing and so on. There were a variety of normative reasons for this. Some didn't like sharing what was once a leisure space with their close relatives. For others, such as Lizzy, the culture of Facebook had turned sour. She said on her Facebook news feed (that included friends of friends) that there were frequent arguments, homophobic slurs and "ugly" views about rape. For example, "The reason why women are raped is because they are wearing slutty clothes and asking for it". She said there were also women trivialising rape by citing male celebrities they would "take down a dark alley (and

rape)”. As a result, Lizzy’s main digital platform was Instagram where there was “less negativity” and “people shared her sense of humour”. For all the students, Facebook was now a platform for the relatively passive maintenance of familial or social network ties that were a legacy from earlier in their lives. Yet there appears to be little in the technical affordances of these social networks to suggest they would produce different cultures. Indeed Instagram is developed by Facebook.

There is a stark contrast to the way students at each site used my simulated social network. Again, this was the same technology with same affordances yet it produced different socially shaped outcomes. This is a typical screen shot from the discussions at Calshot (I have colour covered the student’s names and colour coded the boxes to show individual contributions).

Figure 4: Extract from the Calshot social network



In Calshot the messages were quick-fire, short and full of vernacular phrases and hyperlinks to further content. The students were implicitly recognising this format involves churn; a rapid turnover of comments adding to a feed.

Figure 5: Extract from the Chancery social network



[REDACTED]

8:22 PM Jun 26, 2013 ↘

I'm very much in agreement with this statement. In fact I recently read an article about a young mathematician named Jacob Barnett. As a young child, it was believed Jacob would never learn to read or communicate properly because as a toddler, he would often focus on just one thing and didn't seem interested in anything else. In fact he was just so immersed in certain things that it appeared he was just doing nothing, and he's now in the running to possibly win a Nobel prize for mathematical models he developed at the age of nine [1]. If nothing else, this story convinced me that different people understand things differently and although it may appear that one person grasps a concept more readily than another, perhaps the other person is just deeply immersed in the concept and so has a greater understanding, even if it seems that they aren't able to grasp it at all. I notice in my friends even, that whilst I might be able to learn something from simply reading it in a book (something they find very ineffective), they're able to pick it up by discussing the topic or doing things that involve the topic (whereas those are methods that I find very ineffective).

[1] <http://tedxteen.com/speakers-performers/tedxteen-2012/93-jacob-barnett>

Reply

The Chancery student treated the application like a forum or a discussion board within which a lengthy formal debate was taking place. The young men suggested many of them used forums in this way to discuss finer points of languages or programming for example.

It emerged from both sites that each student had their own reasons for adopting and using certain websites, apps and social networks. Inrona is right to mobilise the concept of identity: the key to these reasons lay in each student's quest for an identity; through their online engagement they were looking to define who they are, what they believed and what they found offensive or funny. Twitter, at Calshot, was seen as a kinetic platform where they could "be themselves"; play with, develop and negotiate their identity; form new ties, away from the gaze of the extended family and the risk of potentially awkward transgressions of familial norms. Twitter too has prohibitions/affordances embedded in its technology, and it also takes a complex nexus of cultural reactions to mobilise them. Few students at the Chancery School used Twitter and when they did, they didn't Tweet. In contrast, Jessica was drawn to Twitter because it allowed her engage with users in the TV industry and she was using it in her effort to realise an ideal, future-self who is working as TV presenter. Similarly, Liam used Twitter because he was

able to interact with his footballing heroes; in particular Joey Barton. Liam's Twitter usage reflected how he liked to think of himself a playful agent provocateur and purveyor of "interesting" counter-cultural conspiracy theories. He separated his Twitter identity that from his Instagram identity which he used more earnestly to document his attendance at music gigs and events. For Phil social networks such as Twitter were crucial to his identity; he said when he "was a kid" he was "never able to get his point across" and he now thrived on social media. While Mel said she was thrilled by engaging with people outside their tight social networks using Twitter hashtags.

In the sense they had some sort of connection with other Twitter users offline; some students said they 'knew' most their followers. Liam for example differentiated his "540 odd" followers between "at least 300" who he "knew offline" and "maybe 200 of them" who are "just people who have the same interests or whatever like football". Jessica had just over 300 followers most of whom she said she "knew personally". Given the practicalities of sustaining that many relationships offline, this definition of "personally" is, at best, ambiguous. This shows, however, the offline/online dichotomy is problematic: an offline friendship does not necessarily mean a less emotionally superficial relationship than online connection. Meanwhile, Sarah said she only used email discreetly and privately among a tight group of friends because she was fearful of negative attention from strangers. Ryan would watch Twitter for news and commentary but he would never participate. For Saul the Web was not a significant presence in his life yet for learning new languages "he couldn't do without it".

The data tells a story of young people engaged in the process of 'becoming' in their transition to adulthood. Within this process Web technology for many was playing a fundamental function while for others it was a useful yet peripheral tool. Web technology is naturalised into all these young people's routines, but an analysis of how each individual used this technology emphasises their agency; it shows that these young people's web usage is defined by how they actively negotiate their identity within the affordances and confines of the social world they inhabit.

We can see from the data that there is, as Introna recommends, value in mobilising the concept of identity to explain socio-technical practice. This provides a critique of the technological determinism inherent in the digital literacy scholarship. In isolation, however, Introna's framework is insufficient to challenge the governmental nature of existing research in this domain; particularly the way it severs young people from their communities and wider society. If within socio-technical practice technology does not have predetermined effects then how do we know the social world that shapes technology does not have fixed effects? We need to look elsewhere for a conceptual vocabulary to explore this question because Introna does not substantiate and mobilise an effective definition of agency.

3.3 Conclusion

Agency is a polysemic term and its various meanings have been long contested by scholars. Moreover, it is the secular equivalent of free-will which has incited centuries of volatile theological struggles. The definition of agency is also disputed within the epistemological sub-traditions of sociology (Hitlin & Elder, 2007). Indeed, some such as Fuchs (2001) dispute its existence. Consequently, scholars who are apparently reluctant to define it can use agency as a "placeholder for some vague sense of human freedom or individual volition within a broader model" (Hitlin & Elder, 2007, p171). We therefore need a clear definition of agency as a foundation for further discussion on socio-technical agency before we flounder on vagaries.

Introna then compounds this problem by not describing the topography, affordances, and boundaries of an agent's "horizons of meaning" or "fields of possible action". We need to look beyond an agent's horizon of meaning and ask are there forms of human agency that impose affordances/prohibitions, define a user's horizon of meaning and configure the agent's field of possible actions. He assumes individuals have the power and freedom to enact their will on their social and material environment, yet he does not explore the possibility agency can be sustained, transformed and also *constrained* by organised and

enduring embodiments of collective human agency. According to Latour, sociology traditionally uses nebulous terms like ‘structures’ to describe such collective phenomenon for example ‘society’, ‘social order’, ‘social practice’, ‘social dimension’, or ‘social structure’ (Latour, 2005, p3). Collins (2004) suggests discussions about the relationship between individual actions and abstractly conceived collectives and institutionalised norms and values are therefore a “conceptual morass” (p5).

Yet these data show a more social and relational concept of identity than Introna’s is required. The evidence from different methods show the student’s approach to search engines and social media both within and between sites share patterns and contradictions that cannot be attributed to bio-physical, essentialist descriptions of young people or indeed simple categorisations such as socio-economic status. With Omar and Liam for example there was identity work going on, and these identities cannot be disengaged from the social environments that produce them:

“We make choices within the flow of situated activity, and emotions and personality traits—along with idiosyncratic personal histories, moral codes, and predispositions—influence the choices we make in emergent situations.” (Hitlin & Elder 2007, p178)

While describing them with precision is problematic, there are structures and systems that influence and organise these “flows of situated activity”, “personal histories”, and “moral codes and predispositions” as they emerge and interact with technology. The form and influence of these structures and systems are left unexplained by existing accounts of socio-technical agency. We do not “passively enact claimed identities” (p180): Through our agency we create and enact our identities. The questions are what the affordances and incentives that produce this form of agency and what are its structural or systemic constraints? As well as agency it is therefore crucial we establish a viable definition of these structures and systems as this according, to Hitlin and Elder (2007), allows us to ask;

“Is agency inherent to social action, or is it a differential property that some through “structural advantage” possesses more than others?” (p173).

Conversely, however, an overestimation of structural influences can subsume the role of the agent. Indeed, a clear distinction between structures and agency could be another false dichotomy; (as with the user, technology and society) structure and agency may produce each other. Coherent definitions of agency and structures will perform an important function in describing a narrow path between two rival descriptions of our relations with web technology. On the one hand there is the individualism and psychological reductionism that dominates research into the relationship between technology, young people, and society (research that detaches the actor from her social environment and blames the user for his or her lack of skill or understanding). And, on the other hand we have analysis that problematises the ‘structuring effects’ of technology, particularly the power of its algorithms both of which fail to account for individual agency in relation to society.

An analysis of my data demands an account of influential agents who are present *and* agents who, despite being absent from the staged exercises, nevertheless make their presence felt. These agents include teachers, parents, extended families, peer groups, as well online social networks and other media platforms that produce, organise, enable and limit young people’s social environment as well as helping to shape their the norms, values, and ways of seeing. For example, we can see, just from looking at the data on search engines, that teachers had important role in shaping practice.

My problematisation of agency and structure suggests ANT as a solution. The data to map all this agential influence using ANT is, however, beyond my reach. Moreover, I have two more substantive reasons for not using ANT. Firstly:

“In sociology of technology, there are at least three discrete standpoints in play. Namely, that of the technician who tells us about the physical behaviour of artefacts; that of social analysis aimed at interpreting the meanings people assign to the artefact

in use, and that of the normative critique aimed at evaluating actual uses against potential ones. Collapsing them, as Latour recommends, simply creates confusion.” (Kirkpatrick, 2008, p106)

Secondly, when any of us use technology we individually and collectively engage with wider society; its political and social history and the struggles that have preceded our temporal space. Misogyny on Twitter for example is technologically mediated symbolic violence that reengages modern patriarchy with centuries of discursive action intended to humiliate salient feminist voices. People, therefore, engage with the affordances and intentionalities of technology but within often abstract yet powerful social forces such as collectively held norms and values. These forces cannot be adequately explained, as ANT suggests, by indeterminately following atomised actors until a structure emerges. In its “infinite regress” ANT may conceptually dissolve “the more structural, systemic and diagonal dynamics that may organise” our behaviours (Lecomte, 2013, p463). In his book *Flash Boys*, Lewis (2014) shows us how a single fibreoptic cable from Chicago to New York that reduced transaction time from 17 milliseconds to 13, enabled the toxic high-frequency trading that contributed to the global financial crisis. Locating the cable’s agency in relation to all the agents implicated in the socio-technical history of capitalism using ANT would be prohibitively complicated and distract us from the powerful decision-makers who are insulated from culpability by society’s socio-economic power structures.

Introna’s framework; his alternative to ANT, makes progress towards identifying and apprehending powerful agents yet it reaches a premature terminus. He does not offer the conceptual vocabulary to explore how socially constructed identities, within their structural confines, produce agency. So where is the framework that does? In answering this question I want to offer more constructive definitions of agency, ‘the social’, and technology. In doing so, I want to build on the useful work Introna has done. Given its complexity and contradictions it is probably impossible to offer a coherent, unimpeachable meta-theory of society that resolves the tension between structure and agency. If we are careful in our definitions, we can, however, reveal how structure and agency are mobilised and

enacted in specific contexts in a way that offers a portal of insight into how these may be functioning on a larger, societal scale.

Ahearn (2001) distils a more effective definition of agency into “the socioculturally mediated capacity to act” (p112). This definition opens-up further analytical possibilities. Agency here can involve the habitual patterning of social behaviour; “following established ways of acting, role enactment, or identity performance, involves agentic action” (Hitlin & Elder 2007, p179). This form of agency allows me to challenge the governmentality of existing research and think of young people as socially-situated agents adapting to their environments (both digital and material). Crucially this definition also allows me to reconceptualise notions of inequality (that preoccupy scholars such as Hargittai (2010)) in terms of socio-cultural affordances, opportunities, and constraints that shape young people’s engagements with the Web. In this respect identity becomes a catalyst; young people exercise agency as they are developing their sense of self and their place in the world (Lawler 2014). This is not an individualist and psychologistic view of identity rather one that is socially produced:

“Instead of seeing identity as something located ‘within’ the person – a property of the person – identity is something produced through social relations” (Lawler, 2014, Kindle Locations 89-91).

For example, Butler (1988) conceives of gender as a “repetition of acts through time” (p520); the habitual patterning of social behaviour. These acts are responsive and contingent. An agent’s actions are shaped by his or her environment so what is called “gender identity is a performative accomplishment compelled by social sanction and taboo” (p520). These social sanctions and taboos can be structurally embodied in collective norms, codes of conduct, institutional rules, and so on. Agents have choices: play by the rules via performance or repetition of acts which reinforce these rules; play with the rules (occasionally subvert or challenge them) but ultimately remain in their limits; or contest and perhaps reject the rules completely. An agent’s decision will be informed by their relative relationship to power and resources, and the consequences of pursuing their choices.

This conceptual position allows me to merge the tributaries of my critique I set-out in Chapter 2 (where I described youth as socially-situated work-in-progress, the use of technology as a socially constructed practice, and information as a form of Foucauldian discourse). Discourses are “metalanguages that instruct people how to live as people” (Thrift, 2005, p33). They therefore must be understood in relation to power; discourses can be thought of power’s enactment and its vapour trails through our culture. It is clear from the data I have presented above that discourses are present in young people’s interactions with technology. For example, Pariser’s concept of the filter bubble (whatever his noble intentions are) is upheld by a series of ideologically-encoded statements that are intended to shape other people’s behaviour. Omar repeated and responded to this discourse and influenced others to do the same. He wanted to appear a scientific rationalist ready to evaluate competing claims for their validity.

In contrast, while slicing through the fog of constructs, Calshot’s Jessica embodied her group’s attitude to the Web’s echo-chambers of prejudice or filter bubbles. On being asked about seeing her views retweeted she said, “Well, who *doesn’t* want to be told they are right all the time?” Liam also liked having his conspiracy discourses reinforced online. The data suggests young people define themselves in relation to Foucauldian discourses circulating in wider society including discourses about technology. For Liam it was conspiracy theories for Omar it was the concept of the filter bubble. Chapter 6 will explore how discourse like this also cannot be understood in isolation as they often follow the contours of power in our society (Curran 2013).

Although Mason (2011) describes the analytical potential of her methodological approach, a more sophisticated theoretical framework is required to explain the relationship between “entwined problematics” (p83) of people technology and society. Introna’s use of Barad, particularly in describing the tendency of practical action to sustain and transform other agents’ field of possible action, suggests that there is a much broader social dimension to technological practice. A reading of Johnson (2006) (who Introna cites to support his theory) goes further than Introna by arguing:

“Could not and would not exist were it not for complex systems of knowledge and complex social, political, cultural institutions; computer systems are produced, distributed, and used by people engaged in social practices and meaningful pursuits.” (Johnson, 2006, p197)

SCOT scholars Mackenzie & Wajcman (1999) argue ‘social shaping’ does not necessarily involve reference to wider societal relations such as those of class, gender and ethnicity, but I will show, in this data, it does. To *fully* develop this position, I would, in this chapter, have to provide an analysis of Google that accounts for the neo-liberal economic models that made its market dominance possible, as well as its commercial partners (who pay to have their products promoted via its search engine). Moreover, I would have to account for the countless companies who attempt to game Google’s algorithms with their search optimisation strategies; and so on. This, however, is beyond the scope of this thesis. Instead I am examining traces, instances, and embodiments: ‘the micro’, in young people’s technological practices that tell us about young people’s lives as well as something about ‘the macro’ such as structured gender, class, and power relations. Challenging the governmental nature of existing research may reveal something interesting in young people’s “partial and provisional subjectivities” (Kelly, 2000, p303).

Introna’s Post-human Intra-actional Account of Sociomaterial Agency has been instrumental in challenging technological determinism as well as helping to take digital technology out its black box and introduce the concept of identity to technological practice. To fully appreciate the social dimensions to practice and addresses the meaning of the ‘socio’ in Introna’s phrase socio-material agency (in way that addresses the tension between structure and agency *and* accommodates the Foucauldian concept of discourse) I turn to Bourdieu’s social practice theory.

Chapter 4: Engaging with the Agency/Structure dilemma.

4.1 Introduction

Introna encourages us to open technology's black boxes so, armed with new insights, we can turn our attention to cultural and social fields within which we use that technology. Introna helped me explain Web as social technical construct: he shows no usage of Web technology is understandable without regard to the broader technical, social, and political environment. I need, however, to develop this analysis to account for these broader environments in full in a way Introna cannot. It is essential I explain the role of influential agents who affect the data: i.e. the influence of community and wider society. In doing so it is necessary to substantiate potentially nebulous concepts such as 'structures' and 'social orderings' in a way that allows users to be something other than passive, semi-digitally literate dupes that have been described elsewhere in digital literacy research. It follows on from this, I need a definition of agency that accounts for habitual patterning of social behaviour (such as the way the students used my simulated social network discussion feed) that involve "following established ways of acting, role enactment, or identity performance" (Hitlin & Elder, 2007, p179) *as well as* critical engagement with Web technology (such as Omar's deliberate attempt to avoid enclosing himself in a filter bubble). Finally, I need a framework that also accommodates the Foucauldian concept of discourse. We saw in the previous chapter's data that discourses (like the 'filter bubble effect') flow from books, TED talks, and other media channels to shape company policies and, at a local, personal and communal level, young people's web practices. To meet these requirements, I turn to social practice theory.

Social practice theory contrasts with accounts of problematic web usage that describe users as victims of structural disadvantage such as Hargittai (2010) and Robinson (2013). The data I have presented so far suggests the web practices of young people from working class backgrounds deserve more than the label of unskilled. Social practice theory is an approach that helps explain differentiated behaviour in relation to complex social order because it offers us something other than "judgmental dopes who conform to norms" (Reckwitz, 2002, p256).

Instead social practice theory “roots order in local contexts” (Schatzki, 1996. p12) and therefore allows me to make the micro/macro connection I outlined in the previous chapter. Later in this chapter I will reinforce this connection by synthesising Bourdieu’s social practice theory with Foucault’s cultural practice theory, before I do this however I need to explain how the various components of each theory can be harmonised.

Introna allowed me deconstruct the technological determinism that suggested young people are victims of the Web’s power to misinform them. My use of social practice theory signals my intention to build on this and study young people as individuals with particular backgrounds who act in *relation* to the social environment that incentivises, affords or limits certain practices on the Web and beyond. To paraphrase Savage & Silva (2013, p114) the behaviour of any individual must be analysed relationally according to the social context in which cultural agents are positioned.

Bourdieu’s social practice theory is particularly useful because it allows me to:

“Free activity from the determining grasp of objectified social structures and systems, to question individual actions and their status as the building-blocks of social phenomena, and to transcend rigid action-structure oppositions.” (Schatzki, 2000, p10)

Bourdieu’s social practice theory gives me the conceptual vocabulary to critique and transcend ‘rigid action-structure oppositions’ i.e. the apparent social reductionism that is suggested when we are told young people are constrained by their socio-economic status. Warde (2004) doubts Bourdieu’s status a practice theorist mainly because the components of Bourdieu’s social theory are distributed across Bourdieu’s life’s work and his various concepts are rarely unified in one text. Nevertheless, his concepts of habitus, field, capital and doxa form a coherent whole and help discuss the tensions between an individual’s agency (their socioculturally mediated capacity to act) and the effects of social structures that determine the limits of this agency. Moreover, a

Bourdieuian analysis can accommodate the Foucauldian concept of discourse; this chapter explains how. I begin with an overview of key concepts of Bourdieusian practice theory. I then acknowledge that Bourdieu has his critics; many suggest Bourdieu is, contrary to my interpretation, a social determinist who is unable to resolve the tension between agency and structure. By addressing these criticisms I reinforce Bourdieu's value to my data and this area of research.

4.2 Bourdieu's Social Practice Theory

In *The Logic of Practice*, Bourdieu tells us "the conditionings associated with a particular class of conditions of existence" produce habitus. This is the:

"System of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them."

(Bourdieu, 1992, p53)

The habitus therefore is "an infinite capacity for generating products; thoughts, perceptions, expressions, and actions" (p55). It represents and embodies a person's 'conditionings'; his or her worldview and norms and values that orchestrate their thinking and practical actions. As society "written into the body" (Bourdieu, 1990, p63) habitus; its conditionings, are so deep-seated it can be observed in an agent's body language (Wacquant, 2006).

The class of conditions refers to the external norms, values, rules, codes of conduct etc. an individual is required to negotiate during their daily lives. An agent's family, peers, education, geographical location, social class, race and gender will contribute to a class of conditions that is unique to that agent as well as conditions that overlap with other agents in similar circumstances. As there are many possible variations; everyone's habitus is unique, yet simultaneously we can observe practice

that indicates agents have shared or continue to share a certain class of conditions. Habitus then informs practice from within, however, the nature functioning of habitus cannot be fully understood without the related concepts of field and capital which conceptualise the nature of these classes of conditions.

For the term 'class of conditions' which I have used hitherto is more effectively, understood in Bourdieusian conceptual terms as field. I have used class of conditions as a place-holder while I described the concept of habitus before introducing field. A field is a relatively semi-autonomous structured domain or space, which has been socially instituted, thus having a definable but contingent history of development (Bourdieu 1995). One condition of the emergence of a field is that agents recognise and refer to its history. Some fields have more autonomy than others and some parts of fields more than autonomy than other parts (Bourdieu, 1995). Agents "orient themselves towards the field, or take their positions within a field, in light of their resources and dispositions" (Warde 2004, p12). The family, for example, is an instituted class of conditions with a history. Not every class of conditions is, however, a field. A field, by its definition, contains people from a range of different socioeconomic positions with access to different types, volumes and combinations of resources (Bourdieu,1995,1984). Groups and classes struggle within fields to improve their position and legitimacy by utilising these resources (Bourdieu,1986). The power and status structures in a field are therefore configured by specific types of resources, volumes or combinations of resources. This means people from similar socioeconomic backgrounds, who have similar levels of access to these resources, will often occupy similar positions in fields. Progress and success within a field is less feasible without access to certain resources. This lack of access will define the limits of an agent's practice. Practices are produced as agents attempt to improve their position and legitimacy according to resources they have at their disposal.

Despite Bourdieu's apparent reluctance to address habitus and field simultaneously (Warde, 2004), an individual's relationship to these resources can have a profound effect on habitus because habitus is the

substantiation of an agent's adaption to the reality and configurations of the field. Each agent operates in a field with an understanding that the struggles for ascendancy in his or her field are worthwhile. This commitment to the logic and values of any field corresponds to what Bourdieu calls an agent's "illusio"; a belief the game is worth an agent's investment (Bourdieu, 1986). Doxa is an agent's sense of place and tacit understanding of his or her life chances: a "sense of the limits" (Bourdieu, 1977, p164) of their aspirations. A lifetime of complete denial of access to resources will destroy an agent's illusio and produce a deeply nihilistic or fatalistic doxa. This will lead to an agent rejecting the logic of the field including its rules, presuppositions, and its system of incentives and rewards. Ultimately, a field would collapse if enough of its agents withdrew their doxic investment in its logic of practice: if its agents held no illusio. "Fields are only fully viable if their logics are durably embedded in agents' dispositions, in mostly unconscious ways" (Bourdieu, 1984, p101). We should not, however, assume every agent is equally invested in a field. It is feasible an agent's commitment to a field could be relatively fixed, conditional or transitory depending on how he/she reads or misrecognises their chances of success within the field's struggles for ascendancy. The co-constructive relationship between fields (what Bourdieu analogised as 'the game itself') and the incorporated structures of habitus or 'the feel for the game' (p101) is therefore crucial (Savage & Silva, 2013). Just as habitus informs practice from within, a field "structures action and representation from without" (Wacquant, 2006, p269). Practice produces the structure of a field because practice represents people adapting, reacting and both instinctively and strategically to the opportunities, incentives and limitations presented to them. These affordances are in turn configured by distributions and combinations of resources available in that field.

These resources that structure fields are capitals. Capital can refer to financial resources and more intangible resources such as social and cultural assets. These different forms of capital are symbiotic:

"It is impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms and

not solely in the one form recognized by economic theory.”
(Bourdieu, 1986, p46)

Economic capital is, however, the most transformative capital in that other forms of capital flow from it:

“Most material forms of capital, those which are economic in the restricted sense, can present themselves in immaterial form of cultural capital or social capital or vice versa” (Bourdieu, 1986, p46).

Cultural capital can exist in three forms. Firstly, in the embodied state in the form of durable dispositions of the mind and body (Bourdieu, 1986). This includes “verbal facilities, general cultural awareness, aesthetic preferences” as well as “intangible inflections of style” (Swartz, 1997, p75). One’s possession of cultural capital therefore informs the ‘distinctions’ (Bourdieu, 1984) made by individuals in various fields. In this sense habitus can embody a capital in itself by equipping “agents to cope with unforeseen and ever-changing situations” (Bourdieu, 1998, p72). Secondly, cultural capital can exist in an objectified state, in the form of cultural goods (books, computers etc.), and thirdly in the institutionalised state such as “informational and educational credentials” (Swartz, 1997, p75). As they offer the potential to be transformed, at some stage, into economic capital in Bourdieu’s model, cultural and social capitals can offer compound advantages to a field’s participants.

Understood in context of fields and the struggles for ascendancy they contain, capitals are only resources that afford an advantage in that field. Certain assets may be conferring status or advantage in other ways, but unless they offer leverage within a field, these assets are not capitals. Therefore, unless it is translatable into leverage, usually in combination with other forms of capital within a field, the concept of a capital-enhancing skill such as advanced search techniques is meaningless in isolation.

Addressing Bourdieu’s critics who argue his theory is social determinism in disguise only strengthens my justification for using him. For Jenkins (1992), LiPuma (1993), and Goldthorpe (2007) Bourdieu fails to explain

how people can transcend structures and think differently to members of their social class who occupy the same class of conditions or fields. For his critics, Bourdieu explains neither how people adapt their practices from within; configure their own habitus, nor how outside structural influences can configure habitus from without. According to Jenkins habitus embodies a tight, structuralist, determinism: objective social structures generate a habitus; this habitus generates practices which necessarily respect that objective social structure; and so “the objective social structure at the beginning of this circle is reproduced” (Jenkins quoted in Nash, 1999, p177). LiPuma (1993) agrees with Jenkins that Bourdieu provides no account of why the internalisation of the habitus is relative. For him it is self-evident that heterogeneous practices exist within classes and families yet Bourdieu fails to explain this interrelationship between culture and capital. LiPuma argues those with the same financial resources within fields do not necessarily behave in the same way, and Bourdieu’s theory fails explain why. Goldthorpe (2007) identifies Bourdieu’s apparent reluctance to acknowledge that habitus can be configured by external social structures or fields. For example:

“There is little place in Bourdieu’s approach for mainstream sociology’s concept of “re-socialisation,” and certainly not as this might occur through the agency of the educational system.” (p6)

Goldthorpe argues social reproduction in Bourdieu’s framework is, in effect, “doubly guaranteed” (p7) by habitus and field. For Bourdieu’s critics then, the relationship between individual agency and social classification is therefore “not developed, but simply assumed” (Nash, 1999, p178).

I will address the problems with habitus first. If we accept Bourdieu intended habitus and field to coexist in a theory of practice then predetermined, classed habitus is not evitable. To describe Bourdieu’s framework as determinism in disguise is to misinterpret him. Practices *are* generated by a certain habitus and, therefore, all practices give evidence of the structures of the habitus that generate them. No agent, however, experiences a field in the same way or nor does an agent experience the exact same combination of fields. Furthermore, fields, by

their nature; their constant shifting and redistribution of resources, demand corresponding modifications to habitus so every agent's habitus therefore embodies unique characteristics as well as shared experiences. As Nash (1999) observes; "if the trajectories of people within a class are in some respect not the same, then there is more than one identifiable habitus within a class" (Nash, 1999, p178).

It follows that the methodological challenge for a researcher working with the concept of habitus is to analyse social practices in such a way that the principles of the generative habitus and its nuances are disclosed. Reay et al. (2009) claim to have done this when examining how working-class state educated young people have successfully transferred to Oxford University by reconfiguring their practices with reflexive critical thinking. Equally, the relative success of public school students can, at least partially, be attributed to their shared habitus; an embodied mastery of the elite university's academic culture and selection system (Reay et al. 2009). The working class students Reay et al. studied were successful in the field of education because they simultaneously maintained and practiced dissonant norms, values; ways of speaking and seeing, to create what Bourdieu called a "cleft habitus" (Bourdieu, 2007). Somewhere during their life, these young people, argue Reay et al., have produced from their habitus a process of self-conscious reflexivity (McNay, 1999). The relative rarity of such success stories suggests a working class student's transition from school to elite university is not just a case of overcoming material disadvantages to get the right A levels: success is more likely if an agent's habitus is synchronised with the university's "institutional habitus" (Reay et al. 2001).

As Bourdieu and Wacquant (1992) write:

"Social reality exists, so to speak, twice, in things and in minds, in fields and in habitus, outside and inside social agents. And when habitus encounters a social world of which it is the product, it is like a 'fish in water': it does not feel the weight of the water and it takes the world about itself for granted." (p127)

This would suggest the doxic conditions of academia; its values incentives and rewards are more likely to be naturalised in the habitus of

a public school student and this produces practice necessary to achieve a place at a top tier university. Reay et al (2009) propose the successful working class student somewhere found the opportunity and incentive to practice self-conscious reflexivity and translate this to exam credentials and effective entrance interview responses. Bourdieu's concept of habitus allows an agent to make self-consciously reflexive adjustments to shifting conditions within fields; particularly the struggles in relation to capitals. Reay et al. do not pin point these adjustments, they just observe evidence of such historic adjustments in practice.

The question remains is there a divide between the practice of thinking and reflexive, critical thinking? Whether we can capture and measure different modes of thinking like this a matter for neuroscience and can eventually drill down to the question of free will, which in itself, is unresolved by psychology (Shepherd, 2014).

It is my position that no meaningful distinction can be made because, practiced often enough conceptual, theoretical reasoning can become habitual. Indeed, the very-well practiced expert will apply heuristics or a series of mental safety checks including an exercising an obligation to think critically. This can transfer across fields; an academic may apply a critical approach to the films he or she enjoys in their leisure time. Bauman (2000) calls this process a "praxeomorphic" (p56) interpretation; practices in one field translate to ways of seeing in another.

This is not to say some thinking is more effortful than others and this in turn raises the further question of cognitive ability but, to an extent, the problematic notion of cognitive ability is a distraction here. Moreover, it is impractical, perhaps impossible, given the mind's complexity to know when an informed judgement becomes conscious reflective thought required of theoretical reason. The disposition, motivation, or incentive to think with effort is also embodied in habitus and this generates practice that is informed by the cultural norms and values that shape an agent's epistemic values. An individual's field, the practice of thinking and the actions it produces, is informed from within and without.

This is supported by research in psychology. For example, Schommer (1990) and Kardash & Scholes (1996) found an agent's thinking

dispositions; his or her epistemic beliefs and values, predicted how they would interpret ambiguous evidence. My position is further reinforced by Klaczynski, Gordon, & Fauth (1997) who found that the degree to which adolescents criticized evidence that contradicted their beliefs was “unrelated to cognitive ability” (p483) (see also: Klaczynski & Gordon (1996) and Klaczynski & Robinson (2000) for how “cognitively able” young people can misinterpret information). Despite my recourse to psychology, the answers to questions about how young people interpret information lie in the social context within which these interpretations take place.

Bourdieu is crucial for my research because after removing technology from its black box with Introna’s framework we can think of the practice of using the Web as a product of the interaction between an individual’s habitus, the fields he or she encounters and the capitals available during these encounters. Bourdieu therefore helps expose practice within and without and the existence and development of complex and subtle internal and external influences on the way young people use the Web.

For instance, in my fieldwork, I observed subtle manifestations of habitus such as body language and I asked questions that drew out normative interpretations of information that embodied young people’s doxa. Simultaneously, I considered the institutional and cultural contexts within which young people interpret information. Although it draws on wider cultural influences, this research took place in the field of education but at two contrasting sites within this field. I have therefore included details about the educational institutions, the student’s educational history; their relationship with its staff and so on. This helped map-out the patterns and distributions of capitals in their various forms. In the analysis these concepts helped explain emergent themes.

Bourdieu affords the critical examination of the social space, in relation to my third research question (*How is a young person’s engagement with the Web configured by their social identities as these are mobilised in distinctive educational fields?*). The social space is the distinctive educational field. Each site in this study is local, structured space. Young people’s position in relation to this field is defined by their specific

stakes and interests. Their immersion in this field is crucial; how they entered the field; the school or college cannot be easily understood by someone who has not been shaped to enter that field. The individual here therefore needs to be located variably: historically, locally, relationally, and in the familial context (Reay et al., 2001). A young person's socially-produced identity reveals how he or she is adapting to their immersion in their fields and their doxic position in relation to the field's logic of practice. Moreover, schools and colleges "do not operate in vacuums; they reflect the wider dynamics" of money, politics and "power" (p191). Young people do not arrive at the educational field "neutrally" nor do they encounter the school or college "homogeneously": they bring with them "gradations of ways of engaging that field that marks them and by which they are marked" (p191).

Within Bourdieu's framework, since they are mutually defining, clear distinctions between structure and agency fade away. Young people's lack of abilities or skills cannot therefore be sufficiently attributed to their age or some vague shorthand for structural disadvantage such as socio-economic status. Alternatively, this study identifies and analyses how young people's web practices are defined by "the possibilities and impossibilities" (Bourdieu 1984, p100) that exist within their educational fields and beyond. These are revealed by young people's "dispositions, the schemes of perception, appreciation and action" (p100) which are mobilised by their adaptations to their fields and catalysed by their identities. If we observe web practices in their social context (according to an agent's norms, values and purposes and his or her interpretation of the incentives and limitations of the field within which this practice takes place) we can see how certain practices are rewarded. We can see which practices embody forms of capital valued in those fields. Alternatively, we can see which practices indicate a partial or total rejection of a field's logic of practice.

My third research question (with its aim of investigating the practice of using information by substituting the concept of information with discourse) requires a synthesis of Bourdieu's social practice theory and Foucault's cultural practice theory (Schatzki 2000). I intend, therefore, to conceptualise the use of discourse as a form practice within which the

ability to reproduce certain discourse is a form of capital that can be deployed or leveraged according to incentives provided by the field.

There are many competing discursive presentations and translations of evidence in newspapers, on television and on the Web all demanding our attention. We can observe many points of resistance and opposing strategies that show there are several competing discourses giving voice to the facts. Young people may judge these discursive statements in relation to their personal experiences, and the views of friends, family and significant adults in their lives. I will explore how young people access, contextualise and appraise information and how different forms of knowledge and experience produce different 'translations' of information. This analysis has wider implications; those uttering discursive statements are attempting to dominate the narrative, justify their own actions or influence those in power to affect changes in policy. As we saw in the previous chapter with, for example, Liam's interpretation of conspiracy theories, there are early indications in the data that, where language, culture, and power converge there are microcosmic enactments of contests for the truth that are being played out elsewhere at societal scales. How do young people engage with these discursive statements? What does this engagement say about them and our contemporary culture?

To answer these questions I explored several fields of discourse, including for example, climate change. The scientific discourse tells us global temperatures are rising at an unprecedented rate; the causes are anthropogenic and the consequences potentially catastrophic. The counter discourse tell us there is no real scientific consensus; many scientists, they say, are alarmists or worse conspirators who exaggerate the threat of climate change and any rise global temperatures is either short term or part of a trans-millennial natural cycle.

4.3 Synthesising Bourdieu and Foucault

As a "system of cognitive and motivating structures" that influence "things to do or not to do things to say or not to say" (Bourdieu, 1992, p53); habitus informs practice from within. Uttering discursive

statements can be one of those “things to do or not to do things to say or not to say” is specific contexts.

If the use of discourse is embedded in practice then habitus does not deny the possibility discourses may be reproduced habitually, unconsciously and unreflectively and it may help explain why. They may be rehearsed and well-practiced discourses within an individual’s fields. More importantly however, if ingenuity is also well established in practice then habitus accommodates the creative modification of beliefs. Habitus allows for the strategic use of discourse in response to how an individual reads a new situation.

The range of discourses available to an individual and his or her means of deploying them are determined by fields which offer the individual “a gamut of possible stances and moves that he or she can adopt each with its associated profits, costs, and subsequent potentialities” (Wacquant, 2006, p269). Within their fields agents acquire and learn to use certain discourses; adopt one of the range possible stances. The decision to use a discourse can be a strategic calculation but more often it is snap-estimation of the potential outcomes; an assessment of someone’s interests, status and power. The “fundamental presuppositions” which inform this assessment form our doxa (Bourdieu, 1992, p68).

The value of certain discourses is determined by the field; its history and logic. If an agent’s doxa leads him or her to misread this logic then the use of certain discourses may be counterproductive; reduce an agent’s status in a field. If, however, an agent can leverage certain discourses, deploy them strategically (whether consciously or unconsciously the result is the same) in their own interests then this can confer on the agent certain advantages within their field. The power and status structures in a field are therefore configured by specific types of resources or combinations of resources. A discourse, as one of these resources; is something an individual ‘knows’ will, in certain situations, be a valuable resource and the conditions will tell him or her when it is in their interests to use it. An agent, however, can only use discourses that are available or familiar. According to the Bourdieusian model such resources are not acquired easily: they are “accumulated through a long

process of acquisition or inculcation which includes the pedagogical action of the family or group members (family education), educated members of the social formation (diffuse education) and social institutions (institutionalized education)” (Johnson, 1993, p7). For Bourdieu (1996) these sites of education transmit or deny “economic, cultural and symbolic privilege” (p23). Once privilege is achieved an individual’s status can be further justified and legitimated by discourses: “within discourses stories are spun which legitimate certain kinds of constructs, subject positions, and affective states over others” (Thrift, 2005, p26). University of Oxford undergraduates, for example, discuss, in the language of meritocracy, their achievements as rewards (Warikoo & Fuhr, 2013) this reinforces their identity as high achievers. Discourses can therefore reinforce relative status arrangements as well as produce them.

Social practice theory moves the level of sociological attention ‘down’ from conscious ideas and values to the physical and the habitual. However, this move is complemented by cultural practice theory and its move ‘up,’ from ideas located in individual consciousness to the impersonal arena of discourse. A focus on discourses, or on ‘semiotic codes’ permits attention to meaning without having to focus on whether particular actors believe, think, or act on any specific ideas (Schatzki, 2000).

The existing research is governmental in its approach to young people. This is underpinned by a form of technological determinism that supposes digital technologies have certain transformative effects and by a form of reductionism that confirms young people, particularly young people from certain backgrounds, are vulnerable to these effects. While Introna gave me the framework to challenge the technological determinism, Bourdieu and Foucault offer me the ability to provide a more sophisticated analysis of the social world represented in the data generated using Mason’s (2011) facet methodology.

Chapter 5: Problem Users? Digital Literacy, Youth, and the Web.

5.1 Introduction

The purpose of this chapter is to challenge the current orthodoxy in this domain by combining the findings produced by the facet methodology with Bourdieusian social practice theory without forgetting Inrona's contribution. I aim to achieve this by exposing research cohort's web and digital information practices and then, by placing them in their social context, I intend to account for these practices as well as the influence of each group's community and wider society. To structure the chapter's narrative I will compare the data to the ideal digital literate citizen suggested in the digital literacy literature.

Advocates of digital literacy tell us an ideal web user must be a critical, creative thinker whose knowledge of new media ideologies and skill with digital technology affords his/her deep engagement in "capital enhancing" practices (see for example Howard, Rainie, & Jones (2001), Hargittai & Hinnant (2008) among others). For adults, these practices include advanced search engine techniques while "seeking political or government information, exploring career opportunities and consulting information about financial and health services" (van Deursen & van Dijk, 2013, p512). For young people the list of capital enhancing skills is growing all the time. The latest of which is the ability to program digital communication technologies (see for example The European Commission, 2014): this is a self-reinforcing 'good'; a process during which the more young people know about computers the more 'savvy' they become (see for example Belshaw (2013)). Coding has been assimilated into the wider digital literacy agenda that aims to 'up-skill' target populations; scaffold youth's precarious development with a programme of taught skills to create sociable, networked, self-motivated learners (described by, for instance, Rheingold (2012), who are able to equip themselves with further skills, knowledge, and expertise. For these learners, future, traditional instruction would therefore be redundant.

The current orthodoxy tells us the digital native rhetoric is partly to blame for adults abandoning young people to their own devices (as for example Boyd (2014) suggests). Since youth are not as clever, capable or savvy as this rhetoric suggests (see, for example, Hargittai (2010), and

Helsper & Eynon (2010)) we are told, as a society, we are therefore failing in our obligation to correct young people's web practices and address their ignorance. These discussions around digital literacy produce therefore, as well as an ideal user, a problematic user whose behaviours and patterns of usage require remedial action. In the absence of an effective digital literacy intervention during their life, the problematic user is largely self-taught; their usage is, as a result, unstructured, unproductive, and uncritical. It has the potential to impede their personal and professional development, render them vulnerable to misinformation and potentially cause self-inflicted harms. This user is incapable of self-censorship and conscientious, edifying usage; which in extreme cases, can lead to significant breaches of privacy or even (from, for example, posting inflammatory comments on open social networks) a criminal record. Most research to date uncovers problematic users with a test hypothesis such as; "Are youth vulnerable to misinformation?" (see for example Metaxes & Graham (2003) and Gui & Argentin (2011)). We are told the problem populations these tests identify are stratified: youth from certain socioeconomic groups (Robinson 2013) and cultures are said to be less skilled. For example; "African Americans and Hispanic students report knowing less about the Internet" (Robinson, 2013). We expect young people to combine a thirst for formal academic knowledge (such as in Robinson's (2013) research the origins of Sophocles' plays) with the ability to code, create meaningful content and use advanced search engine techniques, critically evaluate information, and build Putnam's (2001) concept of social capital by forming durable connections with similarly enlightened learners/digital citizens online.

The research used to identify young people's deficits, however, resembles a governmental process that categorises them: marks them out for corrective intervention. I am interested in what young people can do and how they use web technology in specific contexts and why: What is revealed about wider society by comparing the concept of a digital literate citizen and its opposite, shadow concept of a problematic user to the patterns of web usage that emerge from the practices I documented? More specifically I am interested in what a Bourdieusian analysis can tell us about these disclosures. An account of how the students at each site

responded to my study considered in relation to other sources of data, such as interviews, shows an idealised digital literate citizen is largely incompatible with the practices produced by our fragmented and stratified socio-cultures of our education system (I will unpack this statement using evidence as the chapter progresses). Neither the Chancery students nor the Calshot students conformed to the ideal of the digital literate citizen. The Chancery students presented many of the sophisticated practices and skills valorised by models of digital literacy; however the practices or skills they lacked were ones they did not necessarily need to improve their life chances. In a reflection of the Chancery data, the Calshot students were doing many of the things digital literate citizens are supposed to be doing. They did not, however, by the standards of the ideal, perform enough of the higher order digital skills such as coding (Belshaw, 2013) and sophisticated evaluations of information (see for example Clarke & Clarke (2009) and Dias et al. (2014)) that the Chancery students showed, to be acclaimed as advanced users of digital technology. By discussing the implications of this I will offer deeper insights into these young people's relative social status and transitions into adulthood.

I begin where digital literacy problematisations begin: where young people, via assumptions about their expertise, are left to their own devices. The digital literacy literature suggests problematic usage emerges from this. For example young people:

"Need to know how to grapple with the plethora of information that is easily accessible and rarely vetted. Given the uneven digital literacy skills of youth, we cannot abandon them to learn these lessons on their own." (Boyd 2014, p182)

Since digital technology, we are told, has the potential to transform young people's lives for the better, unstructured and unproductive usage is problematised by scholars.

For example:

"Ted...would appear to a superficial observer to multitask effectively, "whizzing around"....the benefits he gains from the

internet are curtailed first by his lack of interest in information, education, or exploration and, second, by his poor skills in searching and evaluating Web sites.” (Livingstone, 2007, p105)

The message is clear; we need young people to stop unstructured self-guided practice and engage in their own, directed, digital literacy education. If I compare such normative expectations to the data I captured the specific and broader social conditions of these young people’s practices are further revealed.

I asked the students to what extent were they self-taught both in the broader sense of using software to access the Web and specifically in using search engines to find information. A condition of the emergence of a field is that agents recognise and refer to its history; the students at both sites were able to coherently describe how the field of education, as they experienced it, had influenced their digital practices. All the Chancery School’s participants said they were largely self-taught with only limited formal intervention from school. Michael’s response was representative:

“I am definitely self-taught. Before I even came to school I had the basic fundamentals. I’ve just learnt by playing about. I taught myself Photoshop by just playing about with it and that kind of stuff. I learnt to touch-type a bit at school but the rest is just through constant use.”

From a young age, typically the Chancery School’s students had been given computers to use at home and after some initial instruction had been left alone by their parents; they had been “trusted to get on with it”. Omar and Daniel, having taught themselves to code at home, were coding for leisure and considering an entrepreneurial career in digital technology:

“I used to do stuff in C++, I’ve been using Python, recently I’ve been looking into Java because I want to develop apps for Android”,

said Daniel who was already making money from his Youtube profile.

Omar and Daniel had taught themselves a capital enhancing skill that could see them into a successful career. Searching for information with search engines (which according to Hargittai (2010) and Robinson (2013) is a capital enhancing skill) was, at the Chancery School, also mainly self-taught. This was often the case of learning through trial and or as one student said a matter of “common sense”. Despite being aware of logical operators and other advanced search options none of the students found these necessary. When queried about these advanced options, these were two typical responses:

“I haven’t found any need to use them. I know there are short-cuts but I don’t use them often enough to remember them.”

“I’ve seen lots of Web pages that say make your Google searches better by using these but I never really need them.”

A few of the students had seen “friends type in all of these long questions” and expressed surprise these individuals were treating Google as a natural language interface. Seb admitted he used to do this:

“When I first started using search engines I used to type out the whole questions – from friends and family giving me tips and advice I’ve learnt how to do it better.”

‘Doing it better’ involved the young men using various combinations of key words to refine their searches and filter out irrelevant content. This was evidenced in some of the proxy logs. All the students used key-words to find information. Several of them often initiated new searches using different keywords or different combinations of keywords. Contrary to self-reports, however, the some of the Chancery students *also* expected Google to answer questions. This exposes the limitations of using self-reporting to assess a user’s skills.

This, for example, is the search terms Saul used:

Table 7: Saul’s search terms

Topic	Search terms
Google	how+does+google+prioritize+its+search+results

	pagerank+system
Govt debt	labour+government+causes+debt
	did+the+last+labour+gov+cause+debt

And this is Seb's log:

Table 8: Seb's search log

Issue	Search terms
Immigration	should+immigration+be+restricted+uk
	immigration+should+be+increased
	should+immigration+be+restricted+uk
	should+immigration+be+increased+uk
Google	how+does+google+prioritize+search+results
Govt. Deception	uk+government+misleading
	scientific+consensus+on+global+warming
Debt	who+to+blame+for+debt+crisis
	who+to+blame+for+debt+crisis+uk
	labour+blame+for+debt+crisis+uk

Had the Chancery students really learnt to use the Web alone? I can only answer this question after examining the Calshot student's similar claims that they were self-taught. All the young people at Calshot College also described themselves as mainly self-taught. Despite coming from various schools in the area their common experience was learning how to use applications such as Excel and PowerPoint but relatively little about the Web or Internet. As Liam said:

"(In school) I learnt how to make PowerPoint presentations the best I can. Google, privacy things like that? No, I just learnt that myself."

Rob said he had only learnt something about databases in a lesson called "functional skills". Alfie agreed, at school he said; "We were taught nothing about the Internet only Excel; stuff like that using formats and stuff". He had taught himself to "use search engines" through "years and

years of doing research for my courses". Mel had also "worked that all out for herself" and then "taught her mum". Again, in school she had learnt only the "basics" which were "learning how to use software and things: spreadsheets". She said she remembered, as an audience member, being "told what not to do" during "talks on Internet safety" but she had "never actually been shown personally how to do it". Sarah "couldn't remember any lessons about the Internet in school". Mel, concluded, based on her experience, "I don't think many children are taught to use the Internet". Jessica, however, argued that "in some ways that's good because people can go on and find out for themselves". To illustrate her argument she said:

"When I first got Twitter I didn't have a clue how to use it. I just created an account and left it for a few months. It was mind-boggling for me. Eventually the more I used it the more I learnt."

Her conclusion was: "I think a lot of things on the Internet and computers are easily self-taught now". Yet no one learns to use the Web in isolation. This is especially true of these young people who routinely used the Web at home and at school or college.

I can illustrate this by building on the data in Chapter 3 to show, despite claiming to be self-taught, there were significant differences in the way the students at each site used and thought about search engines. At Calshot typing the whole question into Google was common practice: this was evidenced in the proxy logs. I had, on reflection, expedited this technique by giving the students a digital worksheet from which they could copy a paste the question. The students, during the interviews, confirmed this was something they do normally and would have done anyway. Liam said if he does use key words it is for "quick searches"; about football for instance, but if someone asked him to answer a question he would "type in the whole question into Google". A distinction emerged at Calshot between using key words in leisure orientated searches and typing out specific questions for educational purposes; "college work". The interviews took place during a class within which they had been asked by their tutor, "How do you start-up your own business?"

As well as others, the practice of typing out the question was confirmed by Alfie *in situ*:

“If I’m looking for a song I’ll type a few words from the song but if I’m asked how to set-up a small business better to ask Google a questions rather than type in ‘small business’”

“I learnt that myself” he added. Sarah also corroborated what her peers told me; “I type in keywords, but if it’s work I find it a lot more helpful if I type in the question”. Despite their reliance on Google in this way, none of the students at Calshot could offer an explanation of how Google retrieves or prioritises search results. As Sarah said, “I think the order is random: I don’t know how Google works”. “No one’s ever taught us about anything else”, said Lizzy.

Contrastingly, some of the young men in London were more willing offer an explanation of how search engines work. Omar, who prided himself on his technical knowledge, ventured a vague description of *PageRank*: no one mentioned any of Google’s more recent influential algorithms such as *PANDA*. This lack of knowledge was considered relatively inconsequential because as Tariq said, in agreement with Jessica, nowadays the Web is “pretty self-explanatory”. If he had to describe an expert user it would “maybe someone who was writing computer code to make their own websites, including programming and design”. This, however, seemed to reflect normative definitions of an expert that Tariq had acquired rather than something he had thought through.

We can see the conditions of this claimed autodidactic practice and these young people’s applied engagements with technology are very differently shaped by the social context of each site. The Calshot student’s current tutor speculated that throughout their secondary education they had been ‘trained’ to use search engines as a surrogate teacher that served-up a commodified form of knowledge and this was masquerading as independent learning. Using a search engine in this way could, therefore, have emerged from the habits, dispositions and expectations that were embedded in the logic of practice of Calshot’s student’s educational field. While the tutor of Calshot was only expressing an opinion, it is supported by my experience as a state secondary school teacher in

schools similar to ones the Calshot students attended. Many of my teaching colleagues felt under pressure from Ofsted to create independent learners as well as use ICT during all lessons. Often, in classes of 30 or more, where pupils had to be kept on task to avoid disruptive behaviour, this meant giving them questions to research online that met specific lesson objectives. Based on what they told me I can believe the students at Calshot had also learnt to use the Web in this way.

There were clear differences in the learnt patterns of practice then at each site. This reflects the fragmentation in the educational field as these young people experienced it. The logic of practice of the educational field for the Calshot students had apparently informed them that Google was a conduit for satisfying teacher's expectations. The young men at the Chancery School (both in the practical and epistemological sense) were much less reliant on search engines.

I can tell from the proxy logs many of the young men had made their minds up about the topics and they searched for evidence to validate their views. Ryan for example performed relatively few searches and visited few sites. He either knew already where to find the information or he knew already what he was going to write in response to my questions.

This is Ryan's history file for an hour's worth of browsing.

Table 9: Ryan's browsing history (browser history file)

09:01:00.454 UTC	http://www.ukpublicspending.co.uk/uk_welfare_spending_40.html
09:01:17.804 UTC	http://www.google.co.uk/search?q=how+much+money+is+spent+on+welfare+in+uk
09:32:51.668 UTC	http://www.google.co.uk/search?q=global+warming+hoax
09:33:08.547 UTC	http://www.google.co.uk/search?q=immigration+uk&oq=immigration+uk
09:49:54.809 UTC	http://google.co.uk/search?q=aspartame
09:49:55.121 UTC	http://www.google.co.uk/search?q=aspartame
09:52:45.739 UTC	http://google.co.uk/search?q=how+does+google+prioritise+results
09:52:53.865 UTC	http://www.googleguide.com/google_works.html
09:53:07.249 UTC	http://www.askdavetaylor.com/how_does_google_figure_out_what_pages_are_more_relevant_pagerank.html
10:02:19.533 UTC	http://www.google.co.uk/search?q=how+does+google+prioritise+results

And this is what the proxy log recorded from his IP address

Table 10: Ryan's history log (from the proxy server)

24/Jun/2013:09:01:01	http://www.ukpublicspending.co.uk/uk_welfare_spending_40.html
24/Jun/2013:09:14:52	http://en.wikipedia.org/wiki/Global_warming_conspiracy_theory
24/Jun/2013:09:15:05	http://en.wikipedia.org/wiki/Scientific_opinion_on_climate_change
24/Jun/2013:09:32:51	http://en.wikipedia.org/wiki/Global_warming_conspiracy_theory
24/Jun/2013:09:33:09	http://www.google.co.uk/search?
24/Jun/2013:09:33:36	http://www.guardian.co.uk/uk/2013/jun/13/male-employment-rate-immigrants-oecd
24/Jun/2013:09:49:55	http://www.google.co.uk/search?
24/Jun/2013:09:50:01	http://en.wikipedia.org/wiki/Aspartame
24/Jun/2013:09:53:07	http://www.askdaveytaylor.com/how_does_google_figure_out_what_pages_are_more_relevant_pagerank.html
24/Jun/2013:10:02:21	http://en.wikipedia.org/wiki/Aspartame

Since their school library paid for access to *Jstor* (<http://www.jstor.org/>) the students were encouraged by staff to use this as the first port of call for academic purposes. Moreover, many of the students were studying traditional subjects such as The Classics: here they would reference books rather than the latest research. When they had specific questions, the Chancery students did not have to rely on Google, they had other sources of knowledge such as parents (many of whom were experts in their field), and online trusted expert forums or knowledge bases. This develops Chapter 3's use of Introna. The student's search engine usage was configured by the affordances of the technology; social practice theory provides a fuller account than Introna of this usage's attendant social processes. We can see here the practice of using search engines is shaped by the agent's response to educational field because practice represents agents adapting and reacting both instinctively and strategically to the opportunities, incentives and limitations presented to them. Typing the 'whole question' into Google was the Calshot's student's response to their educational field.

The data about search engines is supported by further, contextual evidence. Although learning new skills is always important, the social context in which these skills are acquired and used is crucial. The social environment decides which skills are naturalised, incentivised, and rewarded. The video of the research exercise in the Chancery School shows the students, despite recently finishing their exams, treated the

exercise almost like exam. They applied themselves to the task for over ninety minutes and there was barely any conversation in the room. The video's soundtrack is dominated by the noise of keyboard strokes. The skills the Chancery students deployed during my research were assimilated into the doxic conditions of their educational field; the young men seemingly recognised this as a test of their academic reputation rather than a day-off from their formal studies: they appeared to have an unflinching investment in the logic of practice the educational field.

The first thirty minutes of the Calshot video shows the students appeared to be applying themselves to the task. The proxy logs, however, show the average time to complete the exercise was eleven minutes, during the session most students had multiple tabs (sometimes over 30) open simultaneously before they went on a game like Candy Crush, Facebook, the Daily Mail's website or Youtube to pursue their own interests. There were exceptions; Sarah for example was left behind doing research while the others went to buy snacks. The proxy logs, the group interview, the interview with their course leader and the individual interviews all suggest the students usually flitted about between web pages or sites, spent little time reading anything in depth. Many admitted to having Twitter, Facebook and The Daily Mail's website open while they working and having their smartphones constantly within reach. As Alfie said:

"I mainly have Twitter and Facebook open all the time - when I working or whatever I just flick back and fore to check up dates or whatever."

The student's tutor complained of her difficulty motivating the students and keeping them on task. By the end of my research a couple of students had dropped out of the course. With a couple of exceptions the student's tutor told me it was a constant struggle to keep the students up-to-date with their attendance and assessments. The tutor was therefore continuously grappling with her student's disengagement from their course. She commented that her student's approach to my study was entirely consistent with any of the formal tasks she gave them to progress towards their qualification. Her students, she said, were loquacious in groups but within directed individual activities such as

research online they would aim to do the minimum necessary to meet the task's basic assessment objectives. This would include copying answers from sites such as Wikipedia that satisfied the question's requirements.

We learn little, however, from individualising and labelling this behaviour; identifying its lack of capital enhancing qualities would only make a lazy contribution to existing digital literacy research. The majority of students at Calshot (whether they were conscious of it or not) were 'gaming' the system. Their doxic response to the educational field meant they were engaged enough to remain enrolled on their course but beyond this their illusio was weak; they did not think the rewards were worth the effort. While they would not say this explicitly; it was often revealed during the individual interviews; particularly when I asked them about their post-college plans. Many were unconvinced their future lay in education. At Calshot the students learnt to use the Web in a space defined by the tensions between their in/out investments in the educational field.

A further consideration of their wider Web usage beyond the educational field reveals the Calshot student's interest in using the Web were mobilised elsewhere. The Web represented another dimension to their personal and social lives. This is illustrated by the way they used Twitter. Apart from Alfie who said he didn't understand Twitter many of the students in Calshot were committed Tweeters. Twitter's main function for these students was not the low-level maintenance of traditional strong ties such as family; that was Facebook's job. Twitter was emerging for these young people as a cultural observatory that was superseding other news outlets and simultaneously functioning as normative laboratory where entered dialogues about news, current affairs and television. For example, Phil liked Twitter because he was "the kind of person who likes to know everything about what's going on" and Twitter, for him, was delivering that experience. Jessica agreed Twitter was a "really good way of finding news and information" as "it spreads news really well and really quickly". The Calshot students who used Twitter experienced news as a participatory, episodic series of social media events that softened distinctions between news and commentary. This means they would receive links to news stories in their Twitter feed but with another user's commentary attached. Similarly, Jessica said she would like to "Tweet

about current affairs” and her friends are the same; “they like to air their opinions”. The more provoking the news the more they likely they were to add commentary to it. In this way the students explored their identity and their morality in relation to news events. Rather than dumbly consuming news in their ‘filter bubble’ the young people from Calshot were using Twitter to propagate and comment on news events. In doing so they explored the normative boundaries of what was acceptable to them and others in their network and beyond. They negotiated or confirmed or asserted their norms or values; explored the collective conscience of Twitter and appraised their own positions in relation to it.

Further evidence reinforces the importance of social media to the Calshot students. Jessica, felt as a female unfairly judged by her appearance, she was often taken more seriously in conversations online. Phil felt similarly empowered: “When I was a kid I was never able to get my point across” and now he thrives on social media. Twitter allowed some of these young people to become their more confident selves or play with their identity. As Liam said, “I think when you’re on the Internet you’re kinda different person especially on social media”. He knew people who exploited their avatars differently; for example hid behind mediated identities to be obnoxious, however many of these people he said “post stuff but don’t really mean it”.

The more strongly these young people felt about a story or news event the more likely they were to use Twitter to publically comment on it. As Phil said, he would use Twitter to comment on “anything I have strong feelings about”. He was keen to project his moral code to a wider audience. He took pride in his claim that he was “very strongly opinionated” and liked to say “what he thinks”. Although many of these events the students commented on appear to be trivial, they mattered to the students. For example, Phil had recently tweeted about “Copenhagen zoo putting down that giraffe” and about his displeasure the Sochi Olympics were being overshadowed by discussions about gay rights. Jessica liked to Tweet about “gritty topics” in the news and respond to “shocking things” on reality TV. For Jessica these were acts of moral transgression: “When I believe something’s right I will stand by it no matter what”. For example, she referred to fellow contestants humiliating

Lionel Blair on *Celebrity Big Brother*. She would “click-on hashtags” and look at “what other people’s opinions are”. Mel said she had “hashtagged” *What Happens in Sunny Beach* to find out “what everyone else is saying about it”. After expressing her opinions about the show on Twitter, she was delighted that one of its participants had “tweeted me back”. Jessica had tweeted “a lot” using the hashtag #BenefitsStreet. She felt the unsympathetic Tweeters using the hashtag...

“Hadn’t understood the programme was showing a minority of people in one road there’s a lot more people who claim benefits in this country who need to in order to survive otherwise they’ll be below the poverty line.”

The object of Twitter for Phil was have to “have conversations” about news stories. He didn’t seem to mind that “most of the time people didn’t like his opinions”. He reassured me that, apart from being threatened on Youtube aged thirteen; this had not developed into anything malicious. Similarly, Jessica was relaxed about people disagreeing with her views. She said, “Obviously everyone likes it when someone agrees with them” but also “liked it when people disagree” because “it starts a conversation” and “people can create friends from differences and similarities”. The young people in this study were using Twitter to build social networks, but through exchanging opinions. Although these opinions were potentially polarising they didn’t see this as a barrier to a Twitter connection or what they called friendship. Phil, Mel, and Jessica were also all keen to highlight their celebrity encounters on Twitter namely retweets or replies from a verified celebrity’s accounts. For them, Twitter appeared to breaking down the “recognised division between the spectators and the professionals, virtuosos of an esoteric technique or ‘supermen’ of exceptional ability” such as a celebrity singers; divisions that were characteristic of pre-social web mass media (Bourdieu 1987, p386). Jessica suggested that such contact may expedite her progress towards a career as media presenter. We can see then that many of the Calshot students were investing their time in Putman’s social capital by developing their social networks on Twitter (although Jessica had a least a notion this was convertible to something that would improve her life chances, which I will discuss later). This form of social network building

is considered a key quality of a digitally literate citizen. For example; Hsieh (2012) dedicates a section to:

“The implications of online social networking skills for social capital enhancement.” (Hsieh, 2012, <http://firstmonday.org/article/view/3893/3192>)

Within this element of digital literacy the Calshot students were approximating the ideal. Rather than orientating their Web practices to educational goals the Calshot students were primarily doing identity work; establishing who they were and what they stood for through social engagements both on and offline. For instance, Liam said in the interview he admired footballer Joey Barton for his controversial persona and he was cultivating a similar persona to Barton’s Twitter identity. This identity work affected how they articulated their worldview. For example, in the group interview, Jake, who liked to cultivate an image as a rebellious skateboarder, said this about climate change:

“By the time anything happens to the world I’ll be dead so....it doesn’t bother me. All I know is that it rains in England too much.”

(Laughter)

To Jake: *“And you can’t skate.”*

“And I can’t skate, that’s why it angers me.”

In contrast almost none of the young men in London actively used Twitter. Some had Twitter accounts but no-one was a regular Tweeter. As evidenced in the interviews many had strong opinions about news and current affairs. For instance, Tariq had similar views to Jessica about Benefits Street. Tariq said:

“I question a lot of what I read on the Mail’s site because it tends to be quite biased; more sensationalised. What they also tend to do is find many anecdotes to try and big-up an agenda of theirs. Take benefits for example, they find a family who are on benefits and big-up their negatives and then gives the impression that all people on benefits are like that and they’ll continue with this

repeated story finding other families that fit the bill and ignoring families that don't..”

Yet, Tariq and his colleagues were not inclined to express such opinions on open social networks. The differences in Twitter activity between sites were unattributable to individual personality types (as is often suggested in psychology research see for example Panek et al. (2013)). Many of the young men in London who did not Tweet were confident and out-going. This was more about the relative grip the educational field had on these young people and the logic of practice of the fields they experienced outside of education including their cultural norms. For the Chancery students the logic of practice of the educational field was instructive both within and outside school. This logic was reflected in the proxy logs. The average number of sites visited in London was four per question; the average time between opening new pages was five minutes. None of the students went on games or visited Facebook or spent time watching and discussing You Tube videos. From their own accounts, these students' home use was also highly structured and strategic. Apart from carefully bounded leisure activities such as watching funny videos, the students said they used the Web purposefully, particularly to improve their knowledge; learn a language for example. Their usage was reported as targeted and specific; Michael for example used Gmail for communication, Google Calendar for organising his workload, Google Drive for storing files, Google Play for music, Reddit for news, Duolingo and Memorise to learn new languages, and Facebook for socialising. While Saul, apart from Facebook, used only language forums to discuss the finer points of French grammar and pronunciation. Some spoke of console gaming but it was inconceivable this would infringe on their education. Many of the young men were keen to point out they had little time for playful Web usage. Zac, for example said, "I've no time for games; they are *such* a waste of time". Only three students described frivolous usage: Ryan who watched Vines (satirical videos lasting fewer than 10 seconds); Seb who looked at Tickled.com for "funny pictures" and Stephen who watched "funny videos" on You Tube. Purposeful Web usage was the norm; Daniel for example had made instructional videos for You Tube from which he had made money. Ryan used Twitter but only to

follow interesting people; he didn't 'waste time' Tweeting. Many such as Ryan, Zac and Seb although they were careful not to say it explicitly felt Tweeting opinions was immodest behaviour. This has potentially important implications that I will discuss later in this chapter; not Tweeting may have been a question of taste.

Does all this mean that the Calshot students were naïve users while the Chancery students were savvy, critical thinkers? This depends on how we define and measure vulnerability and savvy and therefore shows how our judgements about young people can be unreliable. For example, it is possible to a design test to expose *anyone's* lack of digital literacy. I asked the Chancery Students if an article on The Times' website had claimed 36% of the UK's population lacked the cognitive ability to reach university what would they think about it. Although some students, such as Ryan, said he would question The Times' agenda, the statistic, the methodology, the sample size and the article's definition of cognitive ability, some of his peers were less sceptical and were wrong-footed by this question. Daniel for example said; "If it was The Times; I'd believe it just because of its reputation for good reporting".

Beyond judgements about whose activities were more capital enhancing. The ways of using the Web captured at both sites is *equally* structured by cultural norms, expectations and ways of seeing that young people bring with them to the Web then enact, negotiate and modify when they are on the Web. These processes have to be understood relationally as their adaptive response to educational and cultural fields as they experienced it. The Chancery students were immersed in the educational field and the doxic conditions of their lives outside of education were synchronised. The incentives and rewards available to them in educational field were embodied in a place at an elite university. Meanwhile, with the majority of the Calshot students there was a persistent tension in their relationship with the educational field; they were never fully invested in its promises and often sort fulfilment elsewhere. For example, Matt's relationship with the Web was dominated by his interest in gaming culture. He said he used the web; its search engines, knowledge bases and forums for advice, tips and walkthroughs. He claimed he didn't read any news websites unless told to by his tutor and found things out from

conversations within games. Similarly, Rob was invested in music cultures; he used the Web to promote his band, source music and engage with other fans of his preferred music genre. He participated in music groups on Facebook, documented gigs on Instagram, and interacted with other fans on Twitter.

Given, however, the general level of sophistication in their answers, particularly their ability to recognise bias and propaganda and apply critical thinking, it is safe to conclude, within the terms of how digital literacy is normatively defined in the literature, that the Chancery students were savvy. This, for example, is Ryan's answer to the question; *"Can be the last Labour government be blamed for the debt crisis? Use evidence from the Web to support your arguments."*

Almost every year since the end of World War II, the United Kingdom, along with most other developed European nations have run a budget deficit along Keynesian economic consensus. In the 1930s, Keynes famously said that the deficit can be solved by sorting out the employment crisis because the more people there are working, the more tax revenue the government can bring in – basic economics. However, over the last 30 years, the neoliberal economic model based upon laissez-faire dogma has left workers at the mercy of the free market. Businesses, in order to make more profit, want a small workforce and so will often lay off high numbers of workers in order to do so. That is why welfare spending, which has soared over the last thirty years, constitutes such a large amount of public spending – because unemployment has never gone below 1 million since the 1970s. An ageing population also contributes because the government has to spend more on pensions, bus fares, winter fuel allowance and the NHS. The free market is also to blame for the debt crisis because the financial sector, the lynchpin of the global capitalist system, was allowed to gamble vast amounts of public money during the subprime housing bubble. In 2008, the bubble burst. The collapse of Lehman Brothers ushered in two years of exorbitant government spending on bailing out banks, which were "too big to fail". New Labour were obviously the government to do this,

however it would be ridiculous to lay “blame” upon a single government, when the casino culture of the banks has been prevalent for over 30 years. Had Labour not recapitalised the banks, there would have been a catastrophic global depression, causing much higher levels of debt and, indeed, destitution as people would have lost all their savings. Therefore, the last Labour government is not to blame; rather the deregulation of the financial sector and the failure of the neoliberal economic model to provide adequate employment. Despite this unequivocal fact, right wing politicians have sought to blame “dependent” people on welfare for our debt woes, thus moving society even further in the direction of capital.

I can see from the proxy log that Ryan looked at a web site called UK Public Spending

(http://www.ukpublicspending.co.uk/uk_welfare_spending_40.html)

which appears to offer objective statistics on government spending.

Ryan, however, did not trust this website because it is run by a self-confessed “conservative” thinker living in the US who evidently was pushing an agenda.

Although probably the most sophisticated answer to this question, Ryan’s ability to articulate a position like this was by no means unique among the Chancery cohort. This is a clear example of what Bourdieu (1987) called political opinion formation:

“First, a class ethos, a generative formula not constituted as such which enables objectively coherent responses, compatible with the practical premises of a practical relation to the world, to be generated for all the problems of everyday existence.

“Secondly, it may be a systematic political ‘slant’ (parti), a system of explicit, specifically political principles, amenable to logical control and reflexive scrutiny, in short, a sort of political ‘axiomatics’ (in ordinary language, a ‘line’ or a ‘programme’).

“Thirdly, it may be a two-stage choice, i.e., the identification, in the mode of knowledge, of the answers consistent with the ‘line’ of a

political party, this time in the sense of an organisation providing a political 'line' on a set of problems which it constitutes as political." (p418)

Ryan articulates an 'objectively coherent response', he deconstructs 'a political slant' on the recent financial crisis; his 'mode of knowledge' is political and economic theory. This represents one of the key components of digital literate citizenry; the ability to detect bias and propaganda (Miller, 2012).

As with their use of search engines, their responses to my research exercise, and their use of games and social networks we have to put the student's critical thinking in a wider social context. Further data suggests such thinking is naturalised in Ryan's background; his father is a civil judge and his mother is a professor. Ryan mentioned he read the Guardian on his commute to school and his household subscribes to political magazines such as the New Statesman and The Economist. In many respects, the availability of these papers and magazines defined his relationship to the Web. He considered these superior sources to, for example blogs, because in established media "there are structures in place" to hold journalists and commentators to account. He said:

"Although our racial hate laws for example apply to the Web - it's difficult to hold someone to account for lies on their own blog."

Stephen agreed, he still read newspapers and trusted established media more because:

"Often websites just say experts say or scientists say and that doesn't mean anything - they could be just making it up."

Omar was also seemingly influence by his parents. His father is a computer scientist. Omar was teaching himself to code and he had applied to Oxford to do computer science. His desire to be a better coder structured how he used the Web. Omar used *Quora* for specific technical queries. Similarly Daniel used a website *Stackoverflow* for when he was "doing anything to do with programming and have a problem or something". Yet, this was no blind trust. As Omar told me,

“A lot of the answers can’t be trusted especially sites like Quora where the answers are from a single user and it’s incredibly easy to make an account. If it’s not verified by other users you really have to look-up what you see there elsewhere.”

He was sceptical about “the forum format” because he “has to be able to verify people’s opinions”. Omar was more likely to trust websites that encouraged users to “list their sources”. He said “the comments on hacker news” for example enabled people to quote their sources.

Often the affordances of their broader educational field including their domestic arrangements superseded what the young men had learnt at school. They had been told throughout their school careers Wikipedia was a “suspect” source and they were initially distrustful of its open source architecture. Experience, they said, had led them to a different conclusion: it has always been useful starting point to look-up facts but as their expertise developed they have been able to conclude Wikipedia is generally reliable. As Zac said:

“Wikipedia is by and large reliable and really you know through context and your own knowledge whether something’s accurate or it’s not something scientific.”

Caleb’s parents were both medical professionals. On his work experience at a hospital he was afforded the opportunity to re-evaluate Wikipedia. Caleb told me when on his placement he had even seen doctors using it on wards. This surprised him but also he said it attested to Wikipedia’s accuracy and utility.

All this evidence suggests the Chancery students were digital literate citizens in the sense they would mistrust unverified information and they could articulately problematise the Web as source of information. They were less preoccupied, however, with developing other forms digital literacy such as Putman’s social capital online. Daniel added content to You Tube; but he was an exception rather than the norm. The Web, for these young men, was more like a resource library rather than a communal space, where via one-to-many engagements, for example

using Twitter hashtags, they could build social networks. I will explore the implications of this in the conclusion.

If we consider the research exercise in isolation it is difficult, however, to make any substantive claims about the Calshot's student's vulnerability to biased misinformation. This is because almost all them copied and pasted from a website that appeared to satisfy the terms of question or exercise as the Calshot students interpreted it. They spent so little time on the exercise it is difficult to see if any of them read the material they copied. I had to refer to the video, the online discussions and interviews to get fuller picture. For example <http://www.returnofkings.com>, a website that appears in a few proxy logs and in some answer sheets:

“Aims to usher the return of the masculine man in a world where masculinity is being increasingly punished and shamed in favor of creating an androgynous and politically-correct society that allows women to assert superiority and control over men.”

The value of addressing information with multi-faceted methods is revealed when we reflected on the purpose of the Return of Kings website in the individual interviews; some of the students who had referenced it found its purpose objectionable. The Daily Mail Online also appears frequently in the Calshot proxy logs and the Calshot's student's answers. The group interview suggested the paper's website was a shared cultural reference point. The majority of students discussed checking it first thing in the morning or having it open during the day while they should be working. As Mel said, “I normally check the Daily Mail (Online) everyday”. Liam liked the Daily Mail's site because its stories were “out of the ordinary”; Phil said its news stories prompt “conversations”. Lizzy argued the Daily Mail Online was “not as good as BBC stories” but was “laid out better and easier to read”. Given some of the responses in the Calshot group interview; particularly some the student's anti-immigration sentiments, for example this from Liam:

“People like that come over and they get benefits and everything and do no work then you hear stories of people who have fought in the war, who've been having to sell their medals so they're able to pay for their home costs.”

This evidence suggests many of the Calshot students, like Liam, lived in a “filter bubble” (Pariser 2011) within which they were influenced by the Daily Mail’s ideology. This, however, does not confirm the Web’s or the Daily Mail Online’s effects; is it not example technological or social determinism.

Liam said in the individual interview when he was discussing the Daily Mail:

“Do be fair I don’t even read the stories in depth I just – I kinda read the headline then look at the picture then read the paragraph underneath.”

His views and narratives on immigration were a creatively assembled collage of hearsay, prejudice, myths, half-read newspaper stories, Facebook newsfeeds and conversations within his social network as this extract from the group interview shows:

Liam: “I think, my main point of view is, sorry if anyone finds this racist, I don’t mean it to be racist and in my ‘ed it’s not racist but if somebody from, I dunno, say Somalia comes over to England then they get full benefits then they’ve got however many kids then I think personally I think they should have to work a year and half and then on minimum benefits work a year and half and when they’ve given something like back into the economy and the country then they should get benefits.”

William: “Pisses me off. And when they get housing, a lot of them get housing in Westminster and central London but there’s like plenty of housing in Manchester and Birmingham. “

Liam: “There’s this like single woman from wherever, I dunno where’s she’s from, she from Afghanistan or wherever like that she got eight children she lives in a four million pound mansion in London.”

William: “Yeah, I saw that, it came-up on Facebook. Send her home – it’s not our problem.”

This is not technological determinism because while Liam and William formed their opinions by accessing information online, the Web is entangled in their wider social communities; and they only selected sources or stories that resonated with or validated their beliefs. Social practice theory, and in the next chapter, cultural practice theory becomes increasingly vital here as I am unable to develop this analysis with Introna's reference to "horizons of meaning" (Introna, 2014, Kindle Locations 966-967). It is not social determinism because the other students read the same sources and did not arrive at the same conclusions as Liam and William. Jessica, Phil, Mel and Alfie, for example, said they had no problem with immigrants. Whether this is because they felt more able to express themselves away from possible censorious comments by, particularly, their male peers, or they had calculated this is what I wanted to hear is difficult to establish. Liam and William for example dominated the group interview's heated discussion about immigration and it is unlikely they would have tolerated disagreement with their views. Nevertheless, the interview data shows the students did reflect on the Daily Mail Online's content. Mel said she disliked the Daily Mail because it was "well bad for slating people's bodies", "like (its treatment of) Gemma from the Only Way is Essex"; "that was horrible". She concluded it was a "really bad place to get news from". Jessica Tweets links "especially from the Daily Mail" as she "read the Daily Mail online a lot". Yet, again, this was not an endorsement; she thought its coverage of Benefits Street was particularly unfair. Similarly, Phil who subscribed, among others, to the Daily Mail's newsfeed was aware "all their stories are one-sided "and that "they are biased for the government but try to hide it" and "some of the journalists are not very nice people".

The Calshot students also reflected on their social media engagements. As Phil said, "I'm always careful of what I post". Because he was aware of Edward Snowden revelations about governmental surveillance, Phil was particularly concerned what he said online "could be misinterpreted" as "it's not just my friends who read it". The ability to self-censor on Twitter; rehearse his thoughts, appealed to Phil. He said, "I find it easier to talk about things on social media rather than in person because I can think about what I say before I say it". Similarly, Jessica said "I am wary

of what I tweet". She remembered during the London riots "lots of people got in trouble for their tweets". Jessica had a career plan a part of which was to use Twitter to engage with people in the media industry; presenters and casting directors, she was therefore curating a persona that she believed would yield the most gains. For Liam, controversy was a form of currency on Twitter; he liked showing his ability to animate people. He imagined his skill satisfied his audience of followers as well as other participants in the discussion; "I may be controversial but it's because people like controversy". But this too was within reportedly self-monitored boundaries. For example, he says he is "very careful" not to post anything "racist or sexist".

My simulated social network provided some further evidence of reflection. Here the students show they do think about information online, this, for example, is an extract from the discussion online about global warming (which I cover in more detail in the next chapter):

Figure 6: Extract from Calshot social network



Yet, how do we account for general differences between sites in engagements with the Web? Why did the Chancery students treat it more like a semi-reliable library and the Calshot students as an arena for them to explore their identities? Beyond any specific domestic arrangements

that I have identified, how did the social spaces these young people inhabit structure their web practices?

5.2 Conclusion

At the end of Chapter 3 I said we need a definition of agency that explains how young people follow “established ways of acting, role enactment, or identity performance” (Hitlin & Elder 2007, p179) *as well as* critical engagement with Web technology. Initially I called this “the socioculturally mediated capacity to act” (Ahearn, p112). The data in this chapter helps me explore, expand and empirically ground this definition. I have explained how, as they adapt to the field of education and beyond, the Calshot and Chancery students’ web practices were equally structured by social norms and expectations. Using Bourdieu’s conceptual vocabulary I accounted for established ways of acting as adaptations to field that become embodied in habitus. There is no doubt, however, that the Chancery students evidenced more critical engagement with the Web’s information. Apart from a more critical approach to search engines (evidenced in their attempts to avoid being trapped in filter bubbles), the Chancery students were more able and willing than the Calshot students to recognise and articulately describe media ideologies, problematise sources, and identify inaccuracies in Wikipedia.

For all the Chancery students, to an extent, thinking and acting through academic norms such as critical thinking was a way of life that was incentivised, valued and rewarded as a form of capital in the educational field. The young men in London were burdened with high expectations. Web usage such as high-frequency Tweeting would be, for them, only a frivolous self-indulgence. Their recent education at school and more broadly had been a preparation for gaining entry to a prestigious university. For example, for their compulsory extended project they had been required to aspire to what their tutor told me was a “university-standard essay” and they had, just before I met them for the research exercise, finished their portfolio of ‘A’ level exams. In a “praxeomorphic” (Bauman, 2000, p56) transition where practice learnt in one situation is transferred to a new situation, the students approached my research

exercise as a project or exam; they concentrated and applied themselves because they were motivated to give a good account of their abilities. They relaxed afterwards but the research activity in London was marked by its lack of frivolity. Despite no deliberate guidance from me the young men had a clear sense of the standards expected from them.

Bourdieu (1992) described the “proleptic adjustment to the demands of a field in the language of sport, as a “feel for the game” (p66) which is conducted by an agent’s doxa and *illusio*; his or her “investment in the game” and its outcome, “interest in the game”, and “commitment to the presuppositions of the game” (p66). My research revealed the student’s doxic investment in the logic of practice of the institutional and broader field of education as they experienced it. Moreover, all the young men had grown-up in households within which both parents were university educated; many at post-grad level: Almost all of these parents were career academics, scientists and doctors whose livelihood depended on the epistemological principles and skills they had sent their children to school to acquire. Therefore, this doxic investment; their motivation to perform praxeomorphically and show their academic skills, was embedded in the young men’s habitus; the norms and values that orchestrate their thinking and practical actions. The answers the young men provided therefore reflected their “basic or meta-dispositions towards ways of perceiving, knowing and appreciating the world” (Fowler, 1996, p10). Being rational and academically rigorous was crucial to their emerging sense of identity.

Habitus does not emerge in isolation; the young men had not been simply conditioned to behave and act in predetermined ways. They were not vessels of institutional habitus. Within other methodological contexts the young men were willing to criticise the school and its staff; during the group interview they, for example, scoffed at climate sceptics in the staff and one young man complained his chemistry teacher knew less about the subject than he did. It was clear they were not following a script from the school’s prospectus: There were more intricate cultural influences at work.

Each agent operates in a field with an understanding that the struggles for ascendancy in his or her field are worthwhile. These students were following the logic of practice of the field of education because they decided its system of incentivisation and rewards was acting in their interests. Moreover, since the logic of practice of their home and school life were largely synchronised these young men consistently experienced the same incentives and rewards to perform across their social domains. The result is a few young men, such as Saul and Michael, led fairly solitary or insular lives that were focussed on academic learning. They seemingly had little interest in (or indeed any time for) the type of identity work the Calshot students were doing in their social networks: their education was their identity work and proving they were critical thinkers was a crucial part of this.

As I wrote earlier in this chapter, the Calshot student's practices were not structured around educational activities because they were relatively disinvested in their education. They were more preoccupied by identity work that was not compatible with objective educational goals set out by their course tutor (such as developing and demonstrating their academic skills while working towards a distinction grade). This has echoes of Willis' (1977) *Learning to Labour*. The difference here was there was no antagonism to education and Calshot students had, unlike Willis' cohort, achieved good exam results: they were now just doing enough maintain their current lifestyle somewhere in a zone between the institutional demands of the college (such as attendance and assessment targets) and a fulltime job. The one student who was working towards a distinction was the most reserved and socially isolated student in the group.

An agent's reaction to a field's doxa is generated by his or her tacit sense of where they fit within a field. While many of the Calshot students felt in their social lives empowered by Web technology, in the field of education they appeared to feel disempowered. They would, for example, expect Google to serve-up ready-made answers. They were more engaged with football, gaming, music and fashion subcultures, and jobs outside of college. The Calshot students were not wholly invested in education's promise of a better future. They were implicitly recognising that formal educational skills and qualifications were not guaranteed to be

convertible into other forms of valuable capital. Arguably, the Calshot students were committed to developing other forms of capital such as social capital in their social networks. This, however, does not agree with the Bourdieusian framework. For Bourdieu social capital acts only enhances other forms of capital in expediting advantage, power, and privilege. Capital becomes capital when it is recognised as such in a field: what Bourdieu calls “the transfiguration of a power relation into a sense relation” (Bourdieu 1986, p242). And since capital is symbolic it has to be recognised and rewarded before it becomes convertible. Often, during college hours and at home, when they could have been working on coursework, the Calshot students were more concerned with acquiring forms of capital that were not valued in the field of education’s hierarchical structures which rewards high achievers. Given many of them benefitted little from other capitals such as economic capital; it was at least theoretically unlikely that their form of social capital was convertible to anything other than more friends. In contrast, the Chancery students, in rejecting platforms such as Twitter, were implicitly recognising they did not need to build Putman’s social capital online. Since they were on their way to elite universities they were already fulfilling the expectations of their educational field and wider community.

Was this then just another exercise in “symbolic violence” (Bourdieu & Passeron 1977) that merely confirmed the working class students were not as able or as well educated as the young men on their way to elite universities? At aged 16-17, during my study, the young men at Chancery could call upon significant resources of embodied cultural capital; communication skills, cultural awareness and epistemic values that had already seen them all rewarded with a place at a illustrious university and was I just confirming the disparities between sites? The answer, if the research exercise was taken out of its context, is yes, but this study is saved from such condemnation by its multifaceted methodology and its use of social and cultural practice theory to understand rather than judge young people’s Web practices.

We can see some decisions that inform the practices of a digital literate citizen are not necessarily about skills or competencies but a question of taste embodied in habitus. This is evidenced in the different responses to

the Daily Mail's website. Many of the young men at Chancery were children of immigrants with advanced degrees who were professionals working in higher education or the public sector: these families were unlikely to be Daily Mail readers. Many of the students in the research exercise, like Ryan, expressed a left-wing interpretation of the financial crisis. It is unsurprising therefore that at the Chancery school, during the interviews, The Daily Mail Online and offline was ridiculed for its right-wing ideology and journalistic standards. Data from the proxy log and the group interview shows the Calshot students read the Daily Mail Online: a lot. I could conclude this shows the Calshot students dumbly consumed the Daily Mail's codified messages but data from the individual interviews shows they were often critical of its content. The Calshot students did, however, enjoy reading the Mail Online; as well as consuming and discussing on social networks other forms of popular culture such as reality TV. Consumption such as this is not inherently trivial. It can be:

"A stage in a process of communication, that is, an act of deciphering, decoding, which presupposes practical or explicit mastery of a cipher or code." (Bourdieu & Passeron, 1977)

Jessica, Mel, Phil, and so on were trying to master the codes of their culture. I said in Chapter 4 a well-practiced expert will apply heuristics or a series of mental safety checks including exercising an obligation to think critically. Part of this process means mastering the code of the heuristics that tell us some sources of information are better than sources. In this instance, if the Calshot students were to become more like the Chancery students in their approach to information on the Web (and broader culture) they would have to make the same interpretations of cultural products as the Daily Mail Online or reality TV. They would have to master the same cipher or code that would tell them the some sources of information are normatively inferior and the only way to read them would be at an objective, critical distance: anything else would show poor taste.

If we describe agency as socioculturally mediated capacity to act then differences in the quality of these socio-cultural mediums (as they are

normatively defined) affect the relative status of this agency. Within the socio-cultural hierarchies of our educational system it is better to be able to express critical thinking through deconstructing Homer's Iliad while studying the Classics at A level than it is analysing the reality TV as part of BTEC Media Studies: only one of these options is valued by a top-tier university.

The context of socioculturally mediated actions is also crucial. The Chancery students had been told Wikipedia was a poor source of knowledge yet through his direct experience (watching doctors use it during his work placement on hospital wards) Michael had found Wikipedia had value in the 'real world'. While Jessica said she had also been taught at school and college "not to trust Wikipedia" because "anyone can change things on it" she accepted this as conventional wisdom. The heuristic; Wikipedia was untrustworthy because it is open source, seemed to be the only form of knowledge she had been afforded. Within the fields Jessica occupies she had not been presented with opportunities to adapt or re-evaluate her knowledge of Wikipedia. Through his broader education Michael had been made privy to information that contradicted what his over-anxious teachers had told him: a privilege denied to Jessica and her peers. Michael was able to call upon embodied cultural capital from his broader educational field that transmitted the logic of practice of that field in a way that differentiated him from the Calshot students.

Given the right conditions and incentives, young people will adapt their skills and knowledge to the demands of the field. Michael's class of conditions were configured towards reproducing cultural capital that would be recognised and rewarded on his journey through an elite university's selection process. Capital has value because:

'It only exists through esteem, recognition, belief, credit, confidence of others, and can only be perpetuated so long as it succeeds in obtaining belief in its existence' (Bourdieu, 1986, p166).

Michael and his peers possessed forms of cultural capital for which they were being rewarded and they believed, through their parent's

experience and wider evidence, that these capitals were convertible to other forms of capital such as economic capital. Calshot students spent time and effort working on forms of capital that were less convertible. They were too busy trying to be successful within the terms of their own culture. Although given the opportunity they could reflect on the bias in the Daily Mail, the Calshot students possessed little expertise that within the top tiers of our education system could be converted to other forms of capital and therefore status. Whether learning more technical skills would transcend this socio-cultural divide is a question I will address in the conclusion.

The next chapter will look at a particular form of information: the discursive statement, as form of cultural capital that embodies or transmits the logic of practice of the field in a way that differentiates and therefore further establishes the educational and social hierarchies I have described.

Chapter 6: Youth, Identity, and Web Discourses.

6.1 Introduction

Introna helped me explain Web as social technical construct and show no usage of Web technology is understandable without regard to the broader technical, social, and political environment. Bourdieu helped me conceptualise and account for these broader social environments in terms of agents internalising and adapting to the conditions of their fields. Foucault's cultural practice theory (Schatzki, (2000)), (particularly his concept of discourse, deployed in tandem with Bourdieu's social practice theory) extends this analysis further to address broader political environments and show how discourse flows through technology and culture by following the contours of power: power that is structured by the arrangements of capitals within fields. I will explore how agency, as the socioculturally mediated capacity to act, can challenge or reinforce existing power relations.

In previous chapters, I have problematised the existing research that addresses young people's appraisal of information and used my critique of this research as a platform from which to develop an alternative methodological and theoretical approach. To recap, previous research suggests that discerning fact from fiction; misinformation from information; propaganda from truth requires contextual knowledge and certain cognitive capacities that many young people lack. It is claimed they therefore have difficulty in finding information and evaluating it for its validity; particularly on publishing free-for-all we call the Web. The results of specific tests within these studies show that this difficulty can be attributed to someone's age, social class, gender, ethnicity or level of education. Research to date therefore identifies a cause for concern: an absence of certain skills such as advanced search techniques and a lack of qualities such as critical thinking.

This research, however, treats the Web is a discrete source of information like a library we go to look-up facts and assumes misinformation and information are unproblematic binaries. With their taken-for-granted, loaded definitions of information, these tests *are* acts of what Bourdieu would call "symbolic violence" (Bourdieu & Passeron 1977) that can predetermine a participant's failure. In a *fait accompli*, the positivist

nature of existing research objectifies young people and allocates them to problem categories. We are told to mistrust youth's "partial and provisional subjectivities" (Kelly, 2000, p303).

The positivist methodology in this domain that tests a hypothesis (such as are young people 'savvy' or not) boycotts complexity and nuance. Its attendant analysis terminates with the declaration young people believe information is true while its authors seemingly remain incurious as to *whether* young people *really* believe it is true or *why* they believe it is true. A simple picture emerges of certain groups of people are too unskilled or naïve to be left alone with the Web. This leaves us with very little understanding of how and why young people, relative to more so called skilled users, use the Web for information. Moreover, the concept of belief previously deployed in existing research implies a passive, unreflective, individualistic account of how young people who lack digital and other literacies interpret their reality; including the Web. This only offers discursive closure and a label for young people that can be used to further justify interventions such as digital literacy programmes.

From this perspective, selective interpretations of my data *could* tell us working class students are naïve, unskilled users while middle class students are much savvier. In this chapter, however, I present an analysis that shows, while I could use the data I collected to confirm what existing research already tells us or even identify further digital divides for policy makers and educators to address. This would be a crude and unambitious interpretation of my data and represent an injustice to the young people who participated in my study. Moreover, if I claimed an individual 'believes' something just because he or she read it on the Web I would be disingenuously deploying problematic, if not useless, concepts of 'belief' and 'the Web' that suggest these concepts exist outside the social spaces that create them.

Contrastingly, this chapter builds on previous chapters to show that it is problematic to label *any* group of young people as either naïve or savvy. Rather than identify superficial similarities between the individuals and some wider, unitary population I have sought to draw attention to contradiction and granularity by explicitly operationalising adult

normative, ideologically-encoded information statements: i.e. by operationalising the concept of discourse in my research. This chapter addresses my third research question:

While engaging with the Web when and why do young people discuss, confirm or reject contested, controversial or ideologically encoded forms of information they encountered circulating on the Web?

The analysis builds on the argument I made in previous chapter that web practices have to be analysed relationally according to the social context in which cultural agents are positioned. When investigating why young people practice discourses we should ask what are the social affordances, incentives and limitations that shape this practice? What is the right or wrong thing to think or say and how do young people know when to say or not say it?

I have adopted a relativist Foucauldian perspective to show, in practice, that there are no objective tests for information evaluation. Indeed, methods of investigation (both in existing research and this research) are not external to the normative stratification of information (the process of defining what information is important, legitimate and deserves the status of truth). The use of Bourdieu, and now Foucault, in my analysis gives me the conceptual vocabulary to question whether or not young people are passive couriers of discourse or to paraphrase (Willis, 1983), they actively and collectively use and explore received symbolic, ideological and cultural resources to interpret, adapt and respond creatively to their social domains.

Rather than a discrete source of misinformation, the Web is more meaningfully understood as a source that is entangled in a wider information network: it is socialised into people's lives. Foucault and Bourdieu offer a conceptual framework to describe how young people's use of the Web shapes and is shaped by wider society and its structures. **How young people actively and collectively use discourse has important consequences.** Powerful conventions and institutions legitimise and reward some discourses and discipline or exclude others (Foucault, 1980). In certain circumstances an ability to call upon a legitimised

discourse affords the speaker certain advantages which can open doors or increase an individual's status. While the same discourse produced in different circumstances can have negative effects. The ability to use discourse strategically then is a form of capital. Yet, as I argued in the previous chapter, it is only a valuable or convertible form of capital if it is recognised and rewarded with a field. There has to be an alignment where the discourse is appropriate to logic of practice of the field; its axiomatic individuals must make a habit of saying the right things in the right circumstances. For example, Willis in *Learning to Labour* (1977) observed how young men who achieved power and status in their working class subculture found the same tactics and modes of communication, post-school, locked them into low-status manual work and powerlessness. By rejecting the field of education's logic of practice these young men possessed no convertible form of capital such as educational credentials.

During interviews, I explored a range of contested discourses with the students and made enquiries about the sources of discursive statements. Following Mason's (2011) facet methodology, I therefore explored the reasons young people are actively using discourses (many of which they sourced on the Web) within different methodological situations: on and offline, and in different social contexts. Through the questions I explored with the students I mobilised three topics which involve culturally contested 'truths': the existence and causes of global warming, the existence and nature of organised deception by power elites, and the benefits and disadvantages of immigration.

I have dealt with each subject in turn here because, as I explained in Chapter 2, each topic has been previously associated with social cultural explanations for their controversies. The explanations are relevant to this research. For example, negative views about immigration have been associated with the white working class cultures (Rhodes, 2012). People who have studied science are more concerned about climate change (Kahan, Jenkins-Smith, & Braman, 2011) and belief in conspiracy theories have been attributed to political alienation (Jolley & Douglas, 2013). Furthermore, like the concept of the ideal digital literate citizen,

comparing my data to current thinking helps me structure the chapter's narrative.

6.2 Climate Change

In London, the student's thoughts about climate change often reflected the epistemic values embedded in the logic of practice of their broader educational field (I say broader field because the young men told me a few of their teachers were climate sceptics). Zac, a humanities student, said; "We don't know whether global warming would be happening naturally anyway". Stephen, also a humanities student travelled further into denialist territory by saying; "We don't know whether it's having an effect". Daniel, a science student, somewhat frustrated by these two comments interjected emphatically with; "We *do* know". He elaborated in a tone which implied one only needed a basic knowledge of science some common sense to know the truth:

"We do know the chemicals that we pump out when we're burning fuel in our cars and planes. We know those chemicals and those gases are going to cause harm – they'll break down the ozone layer, they are gases that will trap radiation in the atmosphere. We know that they are going to do that so it's not a question of whether it is or isn't happening and even whether it is or isn't human because we are both producing those gases and know that we are producing those gases that are causing this impact."

Both Zac and Stephen come from humanities households; Zac's father is a lawyer and Stephen's mother is a humanities professor. Both young men, well-schooled in Socratic, dialectical methods, were keen to acknowledge different arguments and interpretations of evidence. Meanwhile, Daniel as a staunch scientist was more positivist in his outlook; he was intent on asserting scientific facts.

It may be a coincidence that the young men from similar backgrounds shared views, however, this data allows for the possibility the young men's specific cultural and academic background affected how they

interpreted climate change discourse. As the discussion became an argument, Tariq attempted to appease it by saying:

“To be fair there is a lot of evidence both for and against none of us are top of the range scientists so it’s really difficult for the average person to come to an informed view about it.”

Michael agreed: “If the best scientists are still arguing about it I mean what hope do we have?” This only irritated Daniel more; he said insistently “Are they arguing?” As with others, Tariq and Michael viewed the climate change ‘debate’ through their epistemic lens.

In an effort to locate the source of these various climate change discourses, online or elsewhere, I asked the students what had influenced their views. Tom claimed “there’s a lot of spin in modern society and education that we do contribute to climate change.” He seemed to suggest Daniel had been influenced by this ‘spin’. I followed-up by with a more specific question; “Where do you hear sceptical voices about global warming?” There were some nervous laughs that suggested a transgressive admission when a few of the students said, “teachers”. Daniel said he “doesn’t really hear them (sceptical voices) anymore” because “there’s so much overwhelming evidence.” Stephen suggested “Nigel Farage” this was followed by a few more laughs; this time the register of the conversation suggested UKIP’s leader was, for them, a ridiculous figure. Zac said he had heard the Republican Party in the USA come out “firmly against it (global warming)”. To find out whether the students had been exposed to denialist discourses on the Web I asked them “Do read it on the Web much?” I was told “Not much” because “it’s probably the kind of thing you won’t find unless you go looking for it unless you’re really interesting in global warming conspiracy theories.”

In London, three months later I put this to test. If the students researched climate change during a school-based research exercise would they encounter denialist discourse and how would they interpret it? When reaching the same question online most students searched for information by entering key words into Google. In which case the students were presented with web sites that supported the scientific consensus such as, for example, Wikipedia. Some, like Zac, remained

unconvinced. He quotes a website stating an “almost total consensus among experts that the earth’s climate is changing as a result of the build-up of artificial greenhouse gases”. His interpretation of this on his answer sheet somewhat downgrades this consensus to a “general agreement” because “some scientists would argue that a rise in global temperatures is simply part of a natural cycle”.

Indeed some students, Tariq for example, felt access to the Web was unrequired. He repeated his views on his answer sheets and the proxy log show he did not access any sites about climate change. Few students encountered sceptical voices when searching and browsing. If they did so, it was, as Omar and Caleb showed, because DuckDuckGo presented SERPs that questioned the scientific consensus. Omar and Caleb read for example high-profile sceptic James Denningpole’s blog. Caleb refers to Denningpole’s claim that “enhanced solar forcing” produces temperate rises on Earth but he dismisses this because it “masks the fact that there is conclusive evidence that humans release huge amounts of greenhouses gases all the time”.

The evidence suggests the students were not uniquely persuaded by anything they read online. Although none of the students would call themselves sceptics let alone denialists, they did rehearse the some of the softer denialist discourse. Since the students had heard scepticism from the teachers and the mainstream media, this cannot be attributed to the Web alone. Daniel, as well as the students who agreed with him, suggested these teachers were wrong. They argued that knowledge of science and confidence in science made climate scepticism an absurd position to adopt. This then was not a mechanical reproduction of misinformation; or a simple challenging of discourse. Rather the data suggests a complex socially-shaped *and* individual interpretation of the world as they saw it within which the Web, as a source of information, is entangled with other sources as well as naturalised and embedded in their everyday lives. The discussion in London was dominated by notions of expertise and questions about the existence of a scientific consensus; the students were concerned with what the experts were saying. The logic of practice of the educational field as they experienced was

sustained by **the concept of intellectual authority**. The discussions reflect the student's doxic investment in this logic.

Contrastingly, during their group interview the students at Calshot expressed a more anecdotal account of climate change based on first hand or second hand experience rather than scientific accounts. For example Alfie said; "Well my dad's been up to the Antarctic and he's seen it for himself so I can agree with it". Josh added half-jokingly; "It's pretty cold for March." Jake concluded with: "All I know is that it rains in England too much." This suggests the Calshot students preferred informal and anecdotally supported evidence to climate science. The mood in Calshot was one of defensive nihilism. They remembered watching Al Gore's *Inconvenient Truth* at a time where, "people believed in" the threat of climate change. But now "I don't really care" said Jake.

This apathy towards climate change may be due to a perceived lack of proximity to its effects; "It's not going to happen in my lifetime" said Alex. "By the time the Earth fries we are all going to be long dead" concluded Liam. They recognised how egocentric their position appeared: "It may sound really selfish but if it doesn't affect me in my life then I won't take interest." Jake continued in a register that appealed for laughs; "If I can't skate, it angers me." William claimed it "matters more" to a sub-section of the population called "environmentalists" rather than it does to people "like, us" and "a lot of young people don't care about global warming." Lizzy confirmed a perceived lack of power produced her apathy; "What are we going to do about it?" she said plaintively; "I feel bad for the animals living there but what can we do about it?"

This suggests in relation to global risks such as climate change students in Calshot felt a fatalist lack of power which exists in sharp contrast to the London students' sense of agency when they discussed what 'we' should be doing to address climate change. When the students in Calshot did reproduce denialist discourse about climate change being 'natural' it was, in context, to justify what they believed to an inappropriate response. They had a sense they should care but fatalism and lack of power overwhelmed this concern. To them, I may have represented a judgemental, middle class liberal 'environmentalist' to

whom an indifference to climate change required justification. Nevertheless, the differences between the two sites require an explanation.

This explanation could be achieved with well-established descriptions of working class culture. The working classes are said to prefer informal, subjective information from people they know rather than formal objective information from 'official' or 'expert' sources (see for example Ball & Vincent (1998) who suggest that people from different class backgrounds process information through a consistent epistemic lens. And Willis (1977) and Bourdieu & Passeron (1977) argue that people from a working class background have a fatalistic and pessimistic attitude to their destiny).

There are two reasons this apparent consensus about working class outlooks is limited in its utility here. Since it is a "global risk" (Beck, 1992) requiring internationally coordinated governmental action, feelings of powerlessness are arguably the most rational response to climate change. More importantly there were often no universal, clean distinctions in the data between how people from different class backgrounds process information. Students at both sites for instance said they would avoid self-diagnosing on "dodgy" health websites or listen to people on forums and instead they would refer to NHS direct. If it was high-stakes information, the students at both sites told me during the individual interviews they would go to trusted sources such as the BBC. Moreover, many students at Calshot were not wholly pessimistic; a few such as Sarah were working hard towards a distinction on her course. Alfie said learning HTML would help him become a digital radio entrepreneur. Both Jessica and Phil thought using Twitter and blogging could build connections that could advance their career ambitions.

When explaining the student's use of discourse we have to look at the logic of practice of the field within which the agent is operating. The Calshot students had little doxic investment in discussions about climate change this did not necessarily mean they were fatalistic or irrational. For them, they had nothing to prove by showing they had carefully

considered the scientific evidence or that they were on the side of science.

6.3 Conspiracies

Conspiracy theories circulating on the Web are said have corrosive social effects. It is widely believed young people are particularly receptive to such theories (Millar 2012). Most, if not all, conspiracy theories depend on descriptions of clandestine and organised deception by power elites. At both research sites, during each stage of the research I explored the discourses surrounding such claims of deception.

Since the students copied and pasted content from websites they had found via Google, specifically the word-processed outputs from the research exercise in Calshot yielded relatively limited relevant data. It is possible the Calshot students selected websites they considered the most credible; however the proxy logs show there was little deliberation time and it is more likely they were discharging a perceived obligation to complete the exercise in minimum time. If this was true, it would confirm what the student's tutor said about how her students usually approach online research. The proxy logs, however, show students lingered on some websites and videos after completing the exercise and the audio recordings reveal conversations about what they were looking at on their screens. This was a group incursion into the problematic domain of misinformation that generates widespread anxiety. These include committed conspiracy websites, such as, for example:

<http://www.darkgovernment.com>,

<http://world-awakening.blogspot.com>

<http://vigilantcitizen.com>

The group, particularly three young women can be heard, while looking at these sites and watching related Youtube videos, discussing a group known as the Illuminati. This is a fictional secret fraternal power-elite that it is claimed organises a global conspiracy. As a construct, the term has become a repository for anyone searching for hidden agency in events

from 9/11 to the recent banking crisis. The concept of the Illuminati offers cohesion to many conspiratorial anti-establishment discourses. An initial reading of the data would suggest many of the students in Calshot 'believed' in the Illuminati. Indeed, the student's tutor said, in a good-natured complaint, that, for weeks afterwards, the students were distracted from their work by conversations about the Illuminati. If the students did believe in conspiracy theories then it would be consistent with feelings of powerlessness expressed in the climate change discussions. Conspiracy theories could then be interpreted as a modern Joshua discourse (Thrift, 2005) for a post-Fordist working class struggling to assimilate globalised risks.

There is, however, a playful tone in the discussions; that spoke of the student's peer group norms: they are trying to out-shock each other with sensational revelations such as Beyoncé's membership of the Illuminati and other so called 'Easter Eggs' (hidden messages in the media to people with privileged or 'inside knowledge' of the conspiracy). There is evidence in the proxy logs that some Calshot students used the Web to investigate claims made by their peers. Liam for example found the so called 'thermite hypothesis' convincing and Lizzy looked a website that debunks this myth: <http://www.debunking911.com>.

Once again, the value of facet methodology is evident because in private, during the individual interviews, the students were much more restrained and considered. This revealed many of the Calshot students tacitly understood the Illuminati as a trans-Atlantic pop-cultural trope in media circulation rather than a belief system of discourse. The conspiracy was more a piece of sub-cultural currency the students were using for social titillation within their peer group. As Lizzy said:

"I only found out about it when I started this college course because Mel went on about it. Oh Beyoncé is part of the Illuminati sort of thing."

Some students suggested there were people in power manipulating the truth in more subtle ways than the caricatures offered by conspiracy theorists. Lizzy wasn't convinced by the all the 9/11 conspiracies but she did say, "I am convinced the government knew something about it and

didn't act". Closer to home, Jessica for example argued stereotypical representations of benefits claimants on TV made government welfare cuts more justifiable. Alfie agreed "they only look at certain people - they get their stories from a handful of people pick and choose people who tell the story they want to tell". And Mel cited the Daily Mail's draconian attitudes to female body shapes.

The different behaviours I captured between methods suggest a performative aspect to the way some individuals in the group interpreted information. In the research exercises females such as Jessica and Mel made a show of being shocked by revelations about the Illuminati. Their histrionic credulity seemed to be for benefit of others in the room: "much of what we do, consciously or not, is done for the benefit of the social group of which we are a part" (Lawler 2014, Kindle Location 2533). Far from being monadic, our characters are, to an extent, what Goffman calls "dramatic realization" (Goffman, 1959, p30). "We improvise" our identities but crucially within "scenes of constraint" (Butler, 2004, p1). Identity is therefore 'achieved' when individual actions and responses are negotiated within a wider social order that permits some actions and disallows others (Lawler, 2014).

As Ann Branaman observes, for Goffman:

"Our sense of self arises as a result of publicly validated performances. Yet, even though individuals play an active role in fashioning these self-indicating performances, they are generally constrained to present images of themselves that can be socially supported in the context of a given status hierarchy. Thus, the self is a social product in the sense that it depends upon validation awarded and withheld in accordance with the norms of a stratified society." (Branaman, 1997, p xlvi)

This suggests the excitable, credulous commentator was the only role available to the young women within the constraints of the situation. It was a role that seemed to meet gender expectations that were culturally embedded in logic of practice of the young women's wider fields because these roles were sanctioned and validated by others in the room. In the group interview the young women were more diffident and willing to be

interrupted by self-confident males such as Liam. It was clear the same young women framed the individual interviews differently in which they more thoughtful and articulate.

The logic of practice of gender relations as they experienced influenced the young women's behaviour. Despite the educational context; there was no desire to demonstrate any of the thoughtfulness they showed in privacy of the interviews. Only Liam was consistent in his views between research stages. In the group interview he referred to his suspicions about the 9/11 terror attacks. In the individual interview he said he had "spent hours and hours" watching a variety of films online about 9/11 and he described why he found some of the evidence convincing. He said, however, he rarely discussed this with others; his friends and family were not interested in his findings so he would return to discussing football. If we are looking for an explanation beyond 'belief' his revelations about 9/11 would fit within Liam's wider identity work where he was cultivating his counter-cultural or controversial Joey Barton-like persona. More generally however, in all the group situations the students played at merging fact and fiction. This is because discussions about Area 51, the Moon landings etc. had no immediate bearing in their lives. Conspiracy theories were a performative resource rather than something that the students put their faith in. There was little or no investment. The evidence threshold was not high as it didn't need to be.

The approach to conspiracy theories and government deception in London reflected higher stakes. A belief in conspiracy theories was a threat to the logic of practice of the young men's educational field: The academic standards which were scaffolding their sense of identity and upon which many of their parents had built their careers. Nevertheless, once again some expressed sympathy with conspiracy theories which I could use to argue they were susceptible to misinformation. Tariq said some of the same videos that Liam had watched were "pretty convincing". He argued that there was a "controlled explosion" during 9/11 the other students however, particularly Daniel and Omar offered some robust counter evidence based on science and expertise. Tariq eventually conceded ground when his beliefs invited ridicule; "Yeah and Satan's

Rhianna's wife" said Daniel in parody of an Illuminati Easter Egg. Tariq, in response, tried to recover some dignity:

"The majority of conspiracy theories are nonsense but there are some that are not showing the truth but show the government are hiding a few things. Like Area 51 it's not aliens but there's some secret testing there."

It was clear from the group interview for the students in London the term conspiracy theory had ridiculous connotations. Like the Daily Mail, conspiracy cultures evoked heuristic reactions that suggested they transgressed the logic of practice of the young men's field. Conspiracy theory discourse was not permitted; it was a violation of the young men's the doxic values. I therefore didn't use the term conspiracy in the follow-up exercise; instead I referred to government deception:

Do you have any examples where the government (or any elite group) has recently or in history has misled the general public?

The examples the young men offered in response spoke further of their cultural background, education, and political values. During the pre-Web hand-writing stage, for this group, the case for war in Iraq is the most significant deception of our time. All but one of the students describes our government's deliberate fabrications to justify its participation in the American-led invasion. Stephen, Michael, Tom, Omar, Saul and Caleb all refer to Edwards Snowden's revelation about America's National Security Agency's PRISM program which was, when the exercise took place, a salient news story.

Many of the answers suggest in the young men's minds the American government and UK government was sometimes synonymous or at least intricately enmeshed. Stephen and Ryan stand-out for their references to specific UK government or establishment deceptions. Stephen makes references to various recent "cover-ups" including "lies" about "the banking crisis" and "the phone hacking scandal". He also accuses the Coalition of producing economic disinformation and "the Lib Dems" of "lying about university tuition fees". Similarly, Ryan refers to Ian Duncan Smith's Department of Work and Pensions producing misleading statistics

to justify its benefits policy. This interest in party politics and their political stance was, for both young men, confirmed in the individual interviews.

When it came to researching deception on the Web, however, the proxy logs show none of the students searched for details about PRISM and none referred to it when writing-up their answers. Some students used the Web to find new examples of government deception. The proxy logs show, for example, Seb used information from the Huffington Post's website to argue, despite David Cameron's denials, our national debt is rising. Michael searched for "government misleading people" on Google and in his write-up referred to a Daily Telegraph article that argued the government was producing misleading statistics about the number of homeless people on Britain's streets. Meanwhile, students such as Tom chose to focus on the "in history" component of my question. He entered "Government+deception+examples" into Google and produced the 1939 Gleiwitz Incident in Poland for his evidence. This also illustrates the range of normative definitions of government deception the students deployed. Other students looked-up more detail on their previous examples; Daniel typed in "Cuban+missile+crisis" and Zac "Watergate+scandal", while some, like Stephen, didn't refer to the Web; he just added the MPs expenses scandal to his list of establishment transgressions.

On reflection, the use of the term 'conspiracy theory' in my questions in Calshot and the term 'government deception' in London is problematic. The words 'government deception' influenced the students in London to produce more adult-normative, conservative and less contested cover-ups in history. Taken in context of the rest of the data however, the student's responses to these questions reinforce the contrast between the ways the students at each site engaged with the field of education. The logic of practice of a traditional form of education informed the young men's practice across other aspects of their lives. The data suggests for the London students culture was more canonical and adult-normative which suggested inter-generational continuity; their cultural consumption would be familiar to their parents and teachers. One young man subscribed to the New Statesmen magazine, others mentioned they read the broadsheets on the Tube. The Guardian, The Spectator, The Telegraph

and The Economist all appear in the proxy logs far more than in Calshot. In the interviews they said they had watched documentaries on Watergate and the Cuban Missile Crisis and read about PRISM in newspapers. This was not, however, a rejection of modern technology, students such as Michael used news aggregators including Reddit, some students consumed culture through smart-phones and tablets; they were all still on Facebook and some watched Vines in their spare time. The young men, had, however, clear, value-laden distinctions in thought and practice between different forms of culture. Unlike in Calshot, there was no interest in Tweeting about celebrities or reality TV. This tacit distinction between superior and inferior culture is embodied in the young men's attitude to The Daily Mail. The paper's URL appears often in the proxy logs but only in response to the search about Aspartame and none of the students reproduce it as a source. Only Tariq admits to reading it but only then, he claims, as intellectual exercise to contrast its stance with that of The Guardian. The ability to engage in adult discourses in this way; appear well-informed and rational, seemed imperative to the young men and integral to their identity. This suggests these norms were highly incentivised with the young men's field and my presence was an opportunity to present their competencies to a representative of the academy.

The students in Calshot were not generally interested in the government and politics broadsheets cover. For them, politics was more personal, localised and centred on perceived injustices within their communities (real, virtual, and imagined) rather than more abstract concerns such as foreign policy or data privacy. These themes are especially pronounced in the data relating to immigration.

6.4 Immigration

Contemporary debates about immigration are infused with deeply encoded discursive statements that embody or camouflage ideological positions. There is discourse that describes the failure of multiculturalism and the undermining of British identity. British indigents are said to be denied welfare entitlements such as housing by the ideologically

motivated privileging of immigrant's rights by local councils. Softer discursive problematisations of immigration refer to localised overcrowding, pressure on public services, and wage deflation.

Alternative interpretations of immigration refer to its benefits to the economy, its production of cultural and economic enrichments and the morality of offering a better life to the persecuted. These were the dominant discourses in London. There was particular concern for 'the economy'. Ryan argued the "free movement of labour in EU greatly aids business. He added:

"An immigration cap would slam the door in the faces of skilled workers who help our economy and further scientific progress".

And, as "300,000 people" leave Britain every year Ryan said "we need immigrants to top-up our workforce". Seb was concerned about the overall tax take; he argued there should be fewer restrictions on immigration because "our ageing population will cost more in pensions but will not be paying tax". Omar agreed more immigration was "good from an economic perspective"; so did Tariq who said immigrants "bring skills to the economy". Concern about the economy from individuals yet to pay tax reflects the normative nature of their worldview.

Arguably, the young men were endorsing a neo-liberal political agenda which advocates minimal restrictions on market participants in the economy by the territorial governments of the international state system. However, a healthy economy was, for these young men, synonymous with notions of the collective good. They were making an appeal to an imagined audience's sense of morality. Moreover, many were the sons of successful immigrants who could have been referring to their parents when they said immigrants can be "intelligent", "ambitious" and "highly-skilled" "innovators" who "enrich British culture". The students also made a moral case for open borders; "we should be more willing to accept refugees", or immigrants fleeing "oppressive governments" because "from a moral standpoint we have no right to restrict people staying in any land providing they abide by the laws of the land".

During the research exercise the students looked for websites to support this moral case; usually with quantitative evidence. The proxy logs show the most popular websites were The Guardian and Oxford University's Migration Observatory which showed "that immigration has had a net positive effect to UK public finances". There was a clear consensus that was carried between research methods: an immigrant is someone to be valued for his or her potential to contribute to the public good.

Very different normative models of the immigrant emerged in Calshot. Within the group discussion the students expressed indifference to mainstream politics. When I asked them if they had strong feelings about immigration the emphatic answer from some of the young men at Calshot who went on to dominate the discussion was "Yes!" and "Yeah, yeah, yeah." The young women were much more ambivalent; "I have feelings but they are not strong" said Lizzy. The young men were keen to get their point across and simultaneously keep on the right side of their conceptual boundary between racist and acceptable. As Liam said, if it was unintentional racism that, for him, was excusable: "Sorry if anyone finds this racist, I don't mean it to be racist and in my 'ed it's not racist".

When the discussions took place March 2013 debates about housing entitlements, benefit caps and the 'bedroom tax' as well as usual privileged immigrant discourse were circulating in the media. From the young men at least, a consensus emerged those immigrants who were given housing had not earned their privileges. While in London immigrants were considered net contributors to our prosperity, in Calshot they were described as an underserving burden.

As William said;

"If somebody from, I dunno, say Somalia comes over to England then they get full benefits then they've got however many kids then I think personally I think they should have to work a year and half and then on minimum benefits work a year and half and when they've given something like back into the economy and the country then they should get benefits"

As their sense of injustice intensified these 'benefits' were amplified to become luxury properties; "We pay for their big houses in Westminster and central London". This phenomenon and the young men's imagined immigrant was epitomised in Liam's illustrative case study:

"There's this like single woman from wherever, I dunno where's she's from, she's from Afghanistan or wherever like that, she got eight children she lives in a four million pound mansion in London."

As the discussion progressed the figure of the wronged British indigent became more deserving. This deepened the sense of moral injustice; immigrants have been given houses at the expense of people Liam said "who have fought in the war, who've been having to sell their medals so they're able to pay for their home costs." The students knew it was unacceptable to dislike immigrants as this would make them vulnerable to racist labelling. Therefore an imagined facilitator of injustice who privileged immigrants (such as the left wing councillor who moved immigrants up the housing list) was legitimate target for the young men's frustration; a proxy repository for anger whom it was acceptable to dislike. This discussion escalated and culminated in the conflict metaphors:

"We can't win this immigration war..."

"We'll never win this battle."

Ultimately, Lizzy claimed this is because;

"Britain is too polite."

I wanted to explore the place of the Web in this production of discourse that is used to conceptualise immigration as a problem. Jake said he had the story about the "woman from Afghanistan" when "it came-up on Facebook". Liam said he also saw such cases online. Meanwhile, Paul claimed evidence from his social network:

"I just hear it from friends! (Both on and offline). "I have friends you know who live in council houses and they're working still, they're like working basically all day and they don't see their kids

and like my friends, who are living in flats, they're going to be kicked out, it's they're two parents and three kids and they are trying to move them into like two bedroom flat, just to bring in immigrants who are like a married couple and only like one kid and they're going to get a three bedroom flat."

The evidence shows how the Web is one tributary in many criss-crossing and merging flows of information and the students requisitioned and assimilated the discourses that suited their purposes within their structured fields. During the individual interviews many of the students who were not afforded the opportunity to speak in the group interview were able to articulate their views. They offered a different discursive construction of the immigrant. It suited their purposes to attribute an increase in immigration to the members of the working class who refuse work.

As Jessica said:

"If immigrants are coming to do the jobs people here won't do then that's absolutely fine. People say they are taking our jobs but they are jobs that need doing and there's nobody willing to do them."

Phil meanwhile had:

"Mixed feelings about immigration" – "It's getting out of control but they are doing the jobs that we pretty much turn our noses up at like cleaning; we don't like doing that anymore"

Some of these students did low-status work such as cleaning or had family members in precarious relatively low-status work. They were emphasising the moral distinction between people who were willing to do unappealing jobs and those who would 'refuse' work. Effectively this was a narrative of self-justification. The student's incentive was, where appropriate, to use discourse to describe who they are and their place in the world: express their doxa. We can see the logic of practice of the economic field is more conspicuous here and it is sustained by discourses that entwine morality with economic logic. The students in London defined immigration in a relation to abstract entities such as 'the economy', our 'culture' or the 'public good'. Practices are produced as

agents attempt to improve their position and legitimacy according to the resources they are able to access. The Calshot students saw immigrants as well other members of their social class as competitors for resources in the economic field.

Rather than questioning the ideology enacted in the logic of practice of the economic field, moral judgements (dividing people into discursive constructions of deserving or undeserving) offered the Calshot students a way of legitimately allocating limited resources such as housing or jobs. They individualised economic structural conditions that threatened their life chances. Although their parents may have experienced the struggle for a position in the economic field, the Chancery student's doxic interpretation of immigration discourses suggest they were insulated from these struggles: They conceived of more abstract public 'goods' rather than how immigration affected their life chances.

6.5 Conclusion

In this chapter's opening I suggested that young people may not be unreflective couriers of discourse but instead they be actively using cultural resources such as statistics and stories to interpret, adapt, and respond creatively to their social domains. Bourdieu's reflexive sociology demands I ask: have I misinterpreted the data through my ideological lens? This exchange with Liam suggests I may be wrong and concern about young people's lazy, superficial usage of information and lack of critical thinking is justified.

Liam:

"I'm not racist at all in any way but the minority in Birmingham at the moment is English people – which I think is a bit of joke really in England – know what I mean. If you come over to England you should work at least 3 years before you get benefits because I've seen people with 7 kids who've come over from Africa, India or whatever and they're getting this nice benefit council house just because they've got 6 kids and just because they want to give it to them.

Me:

"Where do you hear these stories?"

Liam:

"Sky News and The Daily Mail's website."

He continues:

"Half of immigrants go straight to benefits. I get that opinion from reading The Daily Mail but I don't know hard facts or whatever but politics doesn't really interest me; that's just my view."

Me:

"Do you know any other websites that may be biased?"

Liam:

"No because I only read the Daily Mail. I read it because the news is more interesting and they have a different variety of news on it."

Me:

"Do you ever check the stories?"

Liam:

"To be fair I don't even read the stories in depth I just kinda read the headline then look at the picture then read the paragraph underneath. I don't really read news in depth as some people I just like hearing about the stories"

As I said in the introduction rather than make judgements about youth's failings and deficits my aim is to understand exchanges such as this. I am therefore using the contextual data I collected using the facet methodology about the students including tone of speech, body language, and biographical details to suggest the use of discourse can be understood as a form of practice. In the sense, it can be rehearsed or improvised: discourse is a modifiable script for practice. I began by looking at the practice of using the Web to find and evaluate information.

It emerges from the data; however, this practice is included in and shaped by the more holistic practice of young people's identity formation and maintenance. My interviews suggested that if young people were to read misinformation or a biased accounts online, they were exposed to it via referrals from friends and family in social networks or during chat sessions or via automated news feeds. The Web, therefore, is actively embedded within these homophilous networks. This can dissolve any meaningful distinction between off and online worlds. Bourdieu and Foucault help extend this analysis to explore the norms, values; ways of seeing that inform practice and traverse the distinctions we have constructed between online and offline spaces.

As Bayart (2005) argues; "There is no such thing as identity, only operational acts of identification" (p92). What seem to be inner, interior states such as identity are simply aspects of subjectivity produced as such through relations of power/knowledge (Lawler, 2014). An ability to produce a validated discourse would establish your sense of belonging in the community that validated it. This explains differentiated Web practices; why people 'read' the Web differently. Patterns of usage are structured by the fields within which they are enacted. There was no incentive for Liam to check the facts. His identity was developing around notions of Englishness and masculinity as a purveyor of 'truths'. In emulating his favourite Tweeter, Joey Barton, Liam liked to be regarded as a controversial figure who would tell it like it is. He dominated conversations, his body language and tone were authoritative and he was afforded monologues. In this local setting he was allowed to dominate the field of gender relations. His only concessions were to the liberal boundaries or 'political correctness' my presence apparently embodied.

This suggests for Liam to hold these views they have been positively sanctioned elsewhere in his wider social network. His anti-immigrant discourse while, validated in some settings, would elsewhere (especially within in the spaces the young men from the Chancery School inhabited) lead to revulsion and exclusion. Like the boys in Willis' study, Liam was developing forms of capital that were unconvertible to other forms of capital that were valued outside his fields of operation; particularly higher education. Unless he could codify his controversial views into

more acceptable discourse; into what politicians call 'legitimate concerns' (for example: "Shadow Home Secretary Yvette Cooper said there were "legitimate concerns" about immigration." (BBC, 2014)), as such, these forms of capital would only reinforce Liam's status in wider society as a self-marginalising, angry, white working class youth.

Chapter 7: Conclusion

To answer my research questions I began by locating the Web in young people's lives. This was difficult because what the Web is and what the Web does is impossible to separate. Partly, this is because materialisations of the Web such as Google's server farms may contain an index of the Web's pages but do not represent the Web. Our progress towards a mature analysis of the Web's place in anyone's life and, indeed, wider society, is therefore impeded because the Web is easier to misrecognise than other technologies. We often confuse the Web with the Internet. When we are on Facebook are we on the Web or the Internet? Facebook is hosted by the Internet and works using the Web's http protocol yet its content is inaccessible to search engines. Berners-Lee, the Web's 'inventor', therefore argues Facebook (and similar closed networks such as LinkedIn) is "not the Web" (Berners-Lee, 2010). Similarly, smart phone or smart TV apps are closed proprietary platforms and are not the Web (Zittrain 2009). Berners-Lee, however, initiated rather than invented the Web. He synthesised two technologies; hypertext and the Internet. To demonstrate the Web's potential, he initially required only two machines, a client and a server, connected via the Internet to share data by activating a hyperlink. The Web we have today with its billions of hyperlinks to petabytes of data is what humanity has done with that technology.

The main reason why it is difficult to separate what the Web *is* from the Web *does* is that the Web is a flexible technology that is produced in the process of its own evolution: One initial technical breakthrough unleashed a world-wide complex, inter-dependent ecosystem of information that is continuously and pluralistically growing. Statements a decade ago about the Web being an information free-for-all are (even assuming that they did at the time) no longer generalisable to the whole Web: it is too diverse and fragmented. Wikipedia is as reliable as expertly edited encyclopaedias (Giles, 2005) yet groups unhappy with Wikipedia's epistemology have created their own versions such as Conservapedia (<http://www.conservapedia.com>) that calls itself "The Trustworthy Encyclopaedia".

The Web is not a fixed technology but one that is performed, repurposed and reinterpreted to become an expression of why we use it: who we are

and how we see ourselves in the world. It is a seemingly chaotic expression of our shifting identities and social relations. The Web's potential can be powerfully mobilised in any setting from war to health care to education to propaganda. For example, providing laptops and Wi-Fi to a community in an economically developing country could release many powerful positive and negative social forces. It could be used to educate children, exchange farming produce as well allow people traffickers to profit from the illegal slave trade. Since the Web is many things to many people its meaning and purposes are contested in discourse.

Chapter 6 discusses how discourses flow through technology and society but discourses *about* technology also flow through society. I have suggested this in Chapter 1, but I deliberately used words such as rhetoric rather than the Foucauldian concept of discourse to save addressing discourses about technology to my conclusion. There are many competing discourses about what the Web is, what its standards and laws should be, and how it should be utilised. There is mounting anxiety that the wrong actors are influencing the Web's growth; using it for the wrong things and growing it in the wrong direction. Various antagonists with a vested interest in the Web's future mobilise discourses that channel their worldview. We have the optimists who argue the Web unleashes our individual potential and produces a more socially inclusive, networked society. The argument continues: the Web can revolutionise politics; closing the gap between the public and elites and driving democracy movements (see for example Labour's Digital Government Review, <http://www.digitalgovernmentreview.org.uk>, which promises "technology can empower citizens in their relationship with government"). Further claims suggest that the Web is empowering the poor and their isolated rural communities by allowing them to connect with civilisation (see for example The Web Film; <http://webthefilm.com>). Indeed, in describing the Web as a "liberal artefact" Berners-Lee et al. (2006) mobilise the connotations of the European Enlightenment to suggest the Web's principles are liberty and equality. From this perspective, the Web is a civilising engine. There are those who want to preserve these founding principles and, by using the language of

empowerment to connect the Web to the wider project of universal human rights. They see the Web as unlimited and unregulated: The Web We Want (https://webwewant.org/about_us) is a movement intent on preserving this vision. As the movement's patron, Berners-Lee is concerned that the application of his gift to humanity has been comprised or even corrupted:

"Suddenly the power to abuse the open internet has become too tempting both for government and big companies." (Berners-Lee, 2014)

The enemies of this vision then are governments and the Web's big companies such as Facebook, Google, Amazon, Apple, Twitter and their equivalents which have become economic powerhouses with a global reach and political influence. These companies seek to monetise our engagements with the Web with paywalls and they harvest the data we generate and trade it with other commercial 'partners'. They aim to shape our behaviours so we view targeted adverts; then shop, repeat shop and remain loyal: locked in. These companies also use the discourse of empowerment. They use 'personalisation' or 'customisation' techniques to provide 'enhanced user-experiences': products become 'recommendations' rather than something that intrudes on our viewing spaces.

Meanwhile, governments mobilise discourses of risk and security to justify their interventions (Barnard-Wills & Ashenden, 2012)(Neagu, 2013). By intercepting Web and Internet traffic, GCHQ is, we are told, protecting us from terrorists (Legrand, 2014). Governments put pressure on Internet Service Providers to filter key words and block URLs (DeNardis, 2012). By responding to polls, surveys, newspapers sales, social media and high profile legal cases, government is often responding to shifts in a construct referred to as public opinion. It is, however, sometimes difficult to distinguish the public good from party-political gestures.

We are the objects of these struggles for the future of the Web: power's point of application. As I said in Chapter 1, because there are systems and institutions as well as pre-existing moral justifications for intervening

in their lives, young people are at one of these points of application. The widespread anxiety that many young people are not using the Web in the 'right' way has to be understood in this context. I am not referring to criminal or malicious behaviours but activities that are framed as socially corrosive such as spreading misinformation, or young people enclosing themselves in filter bubbles of ignorance. This thesis focusses on the space where, buffeted by the various vested interests who are concerned about how the Web is being utilised; young people are using the Web in ways that suit their purposes. My research has found young people are not free to use the Web as they please nor do they always consciously or critically reflect on their own practices. Yet, they do describe complex patterns of usage that help them explore their sense of self as well as society's norms and values. My data shows young people's Web usage emerges from the tensions between how they want to use the Web; how they have learnt to use it; how they have been taught to use it; how they have been allowed to use it; and how these tensions are played-out in context of their contingent social reality: A reality shaped by their economic resources, social class, gender and ethnicity.

Young people are active agents who express a complex and shifting mix of gender, class and cultural norms and values through engagements with Web technology and the information it hosts. I found, therefore, the socio-technical Web is deeply implicated in specific and wider social relations. The relationship between young people and the Web; the affordances and constraints young people encounter online and offline required three forms of practice theory to unravel.

According to Schatzki the "central core" of practice theory is that practice embodies "materially mediated arrays of human activity centrally organized around shared practical understanding" (Schatzki, 2000, p11). The concept of materially mediated arrays connects practice theory to variety of materialist approaches "in highlighting how bundled activities interweave with ordered constellations of nonhuman entities" (Schatzki, 2000, p12). The Web is essentially a mass of 'bundled activities', the Internet and the Web's technology is a set of 'ordered constellations of nonhuman entities': servers, databases, and algorithms. Web practice is a 'materially mediated array of human activity'. Introna, by the way he

integrates STS and augments its concept of distributed agency with the philosophy of Barad and Heidegger, has helped me describe Web practice as a 'materially mediated array of human activity'. I argued we needed social theorist practice theory to accommodate the complexities, differences and particularities of Web usage and offer "pluralistic and flexible pictures" (Schatzki, 1996. p12) within which "forms of bodily activities, forms of mental activities, "things" and their use" (Reckwitz, 2002, p249) co-constitute our socio-technical lives.

As Bourdieu and Wacquant (1992) write:

"Social reality exists, so to speak, twice, in things and in minds, in fields and in habitus, outside and inside social agents. And when habitus encounters a social world of which it is the product, it is like a 'fish in water': it does not feel the weight of the water and it takes the world about itself for granted." (p127)

If agency is "the socioculturally mediated capacity to act" (Ahearn, 2001, p112) then the Web, in Bourdieu and Wacquant's metaphor, is infused in the fish's water. I have stitched Inrona, Bourdieu and Foucault together to make sense of this ecosystem. I have shown we must understand that the Web is performed: It is therefore a deep expression of existing and evolving social relations. For young people the Web is implicated in the social processes of becoming. When we think of young people's problematic Web usage they are in darkened rooms, mesmerised by a soft neon screen with only a malign digital presence for company that is influencing their thoughts. This study shows we also have to consider the Web as an agent young people interact with within and during engagements with their wider social circles off as well as online. If, for example, a young person looks something up on Wikipedia or watches a video on Youtube this is only the beginning of the process; he or she will sometimes discuss it with their friends and confirm or evaluate what they found. Crucially sharing does not always mean endorsement or belief. I saw evidence of ironic sharing or sharing to provoke a histrionic reaction from an audience, for example; "OMG Beyoncé is in the Illuminati!" Some students read the Daily Mail avidly; we easily could pigeonhole them as

Daily Mail readers, but many of them did not agree with its treatment of women or its stance on benefits.

I began this thesis by problematising existing research associated with young people's skills and competencies online. This is not to say that young people, and indeed all of us, cannot be better educated about the Web. It is to say that if anyone aims to influence what young people do online, it won't be through identifying, targeting, up-skilling, and 're-educating' digitally illiterate populations. To completely change the Web practices of the young people who participated in my study we would have to extract them from the social worlds, online and offline, that reinforce and encourage what they do. Yet the skills tests and taxonomies of skills keep on coming. As I have been working on this thesis, conceptualisations of a skilled Internet/Web user have evolved (Internet/Web are often used imprecisely see for example, Hargittai & Hsieh (2011) who measure "Web skills" with "Internet-related terms"). In 2011, Hargittai & Hsieh proposed list included "27 Internet-related terms" which they asked survey respondents "to rate their level of understanding on a 1-5-point scale". The words or concepts were:

"Reload, Advanced search, Favorites, Bookmark, Spyware, Preference setting, Blog, Firewall, PDF, JPG, Tagging, Weblog, Newsgroup, Tabbed browsing, Frames, Podcasting, Web feeds, Torrent, cc (on-email), Bookmarklet, Wiki, Cache, Widget, Malware, Social bookmarking, and RSS" (p15).

The latest thinking from van Deursen, Helpser, & Eyon (2014) is:

"We now have a great deal of research that demonstrates the complexity of factors that help us understand how and why people use the Internet. However, there is recognition amongst researchers in this field that the measures typically used in empirical work are not sufficiently nuanced. They do not fully reflect current theoretical thinking about digital inclusion and have not kept up with the changes in the ways that people use and understand the Internet." (p7)

In response to this “recognition amongst researchers” Van Deursen et al. present a new taxonomy of Internet Skills in their report (see appendix for full list). They divide skills into Operational, Information Navigation, Social, and Creative. These measures would fail to capture the gradations and variety I captured during my study. Jessica was a proficient social networker but does that mean she was more or less skilled than Saul at finding and evaluating information (who didn’t use social networks at all)? Phil was an established blogger and Alfie was learning HTML but does that mean that they are more or less skilled than Daniel who was uploading instructional videos to Youtube or Omar who was programming in C++? The technical and socio-cultural complexities of such questions are not captured by such skills/knowledge taxonomies.

It is very difficult to access questions of inclusion, participation and capital enhancing skills via skills/knowledge taxonomies. Here, for example, is an extract from the group interview at The Chancery School:

Me:

“Does anyone know what http means?”

Omar:

“hype...hyper text”

Teacher whispers:

“hypertext transfer protocol”

Tom:

“It’s something hyper...”

Omar:

“hypertext transfer protocol”

Me:

“And html?”

Daniel:

"I've no idea"

Omar:

"Mark-up language?"

(There are laughs in the room while I signified to the teacher to be quiet.)

Similarly, during the Chancery School group interview no one could accurately describe the difference between the Internet and the Web.

This was the best effort:

"Um, so the Internet is the system on which the World Wide Web works" (Inflection, high rise terminal, suggests he's asking me if he's got the right answer). It's loads of computers connected via the networking protocol. Whereas the World Wide Web is a specific way of having static web pages or services that we visit; websites etc. Am I right? (Nervous laugh)

After blank looks and shaking of heads, Seb concluded:

"I think they are used interchangeably in media and between us so the distinction is not very clear to the average user."

Yet the scientists in the room, calling on complex physics, were able to tell me how digital data travelled through fibre optic cables, Wi-Fi transmitters and satellites. By the time the individual interviews took place, all these young men were on their way to elite universities. The majority were going to Oxford or Cambridge. Omar had just passed an interview to study Computer Science at Oxford. These institution's graduates populate all the top echelons of business, culture, science and politics. It is unlikely that any ignorance of Web/Internet related terms would disadvantage or exclude these young men from the opportunities our society offers. This shows when describing anyone's Internet/Web/digital skills and competencies it is crucial we locate them within their social worlds; the trajectories of their lives and their relative position to wealth, status, and power.

If knowledge of web technology, advanced search techniques and other so called 'capital enhancing skills' would have little impact on the

Chancery student's biographical trajectories would such knowledge and skills improve the Calshot student's life chances? This is a complex question that gets to the heart of purpose of our education system. If education is to help young people understand the world around them then knowledge of how the Web and its technologies work is fundamental. This should be delivered with socially and culturally relevant pedagogy that is acutely sensitive to how and why these young people use the Web. For a while, culturally relevant pedagogy has been recognised in education research as the key to reaching disaffected students who are disinvested in their education (see, for example, Ladson-Billings (1995)). This means customising teaching methods and materials so that young people can access more traditional forms of knowledge via cultural artefacts they know and like.

“Teaching critical ability does not mean unmasking popular culture as ‘rubbish’, or disabusing young people of their taste for reality television and violent computer games. It might mean that we help attune young people to how their lives are increasingly mediated by these texts and technologies, and assisting them in investigating the kinds of rhetorical work done by such artefacts.”
(Bulfin & North, 2007, p260)

The same approach is necessary to teach critical thinking about the Web; it must flow from how young people use the Web within the context of their lives. Yet the educational tide is flowing in the opposite direction.

Knowledge is organised into a hierarchy of traditional, difficult subjects and soft options. Russell Group Universities publish lists of preferred subjects that reflect these hierarchies. Computer Science is one the harder subjects that has become compulsory for all pupils in English and Welsh schools from the age of five while alternative channels for digital skills and knowledge (such as ICT and Media Studies) are being marginalised or discontinued altogether (see Stewart (2014)). For many observers, including me, the campaign to getting coding on the national curriculum was expedited too quickly. Many other campaigns, such as calls to provide a coherent sex-education policy, have been frustrated for years. The time between Google's Eric Schmidt's declaration that English

and Welsh schools were failing in their duty equip children with coding skills (BBC, 2011) to coding becoming compulsory for five year olds was a remarkable three years. This is because powerful commercial and political interests and the “legislated reason” (Bauman, 1990) of more benevolent interests of people who advocate digital literacy have converged to make this happen and coding is sold as a universal and self-reinforcing personal and public ‘good’ (see for example Belshaw (2013)). According to the Department of Education’s the “Purpose of Study” statement digital literacy happens as a consequence of Computing:

“Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.” (Department of Education, 2013)

There is, however, no clear definition of what digital literacy means in this context. At Key Stage 3 (ages 13-14) the government recommends young people learn about “protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns” (Department of Education, 2013). This suggests a form of digital literacy orientated towards safety on the Web. After Key Stage 3 young people choose their GCSEs. Schools are free to choose their exam boards. The most popular exam board for Computing is OCR’s syllabus (<http://www.ocr.org.uk/Images/72936-specification.pdf>). On this syllabus there is only one section that addresses the Web or Internet. According to this, after studying Computing at GCSE young people should be able to:

- Describe the nature of the internet as a worldwide collection of computer networks
- Describe the hardware needed to connect to the internet including modems and routers
- Explain the need for IP addressing of resources on the internet and how this can be facilitated by the role of DNS services

- Explain the importance of HTML and its derivatives as a standard for the creation of web pages
- Describe common file standards associated with the internet such as JPG, GIF, PDF, MP3, MPEG
- Explain the importance of compressing files that are transmitted via the internet
- Describe the differences between lossy and lossless compression.

(OCR GCSE Computing p10 section 2.1.6)

Elsewhere within the specification, while no specific language is recommended, there is an opportunity to learn the languages used to programme Web applications such as Java. There is, however, no opportunity to learn about how to use the Web in a way that reflected needs of the young people study. They were primarily using it as means of self-expression, communication and as a source of knowledge: there is nothing on the computing curriculum about these.

Advocates of digital literacy like the concept of coding because it promises young people “access to the fundamental logic of how software shapes our lives” and gives them “the tools to creatively shape their digital environment” (Department of Education, 2013): coding, we are told, fulfils an essential purpose of education as it helps young people understand *and* manipulate the world around them. The discourses that enabled this dramatic change in the curriculum suggest schooling in England and Wales has two further purposes.

Firstly, the system must equip young people for the demands of the economy. The concept of capital enhancing skills suggests coding is particularly capital enhancing because it qualifies young people for jobs of the future and improves their life chances. According to the discourse around coding, education should drive economic growth by providing established businesses and industry with a skilled labour force (see Southworth (2014)) or by creating entrepreneurs who start small businesses (see Spanier (2014)). But this is not just any type of growth: it is the best kind of growth. A growth produced by people with an entrepreneurial spirit and the creativity to make apps or organise digital

start-ups or provide value-added digital services to existing companies. Such activity creates hubs of innovation or ‘silicon zones’ that regenerate deprived and depressed areas. Best of all, this growth requires little or no investment from the state. When governments invest in large public projects such as the NHS patient database or cross country high speed rail there can be wastage, public resistance, and unionised inertia that all generate negative political headlines. To produce growth in the digital economy the government only has to incentivise private investment and provide skilled workers for digital companies. I have said young people, via governmental practices, are at power’s point of application. This thesis provides empirical evidence to substantiate this claim. Otherwise;

“It makes little sense to use power in the non-evaluative sense because the term always carries the implication that things would be different in its absence and they would be so in a way that would matter.” (Kirkpatrick, 2008, p89)

It is clear power, embodied in government and its agencies, wants young people to use the Web and its technology in certain normatively defined ways. Through teaching them technical skills such as coding we are said to be investing in young people as potential vehicles of this new, unsullied form of economic growth. The expectations of how young people should utilise these skills is encoded in the recent transformation of the term ‘hacking’. It used to have deviant connotations; now phrases such as ‘life hack’ or ‘place hack’ or ‘hack-a-thon’ represent a sanitised version of hacking that suggest self-empowerment through coding to effect change for social and/or economic advantages. The intention of the coding revolution is to produce friendly hackers who want to monetise their hacks rather than create more recruits for rogue hackers and self-proclaimed revolutionaries such as Anonymous.

Secondly, the discourses around compulsory computer science in schools suggest coding could fulfil another purpose of our education system: help get more students from state schools to reach an elite university. Earlier this year, The House of Commons debated ‘Oxbridge elitism’ (Bolton, 2014). The debate showed elite universities are criticised for being inaccessible to young people from disadvantaged backgrounds and

state schools are criticised for providing too few Oxbridge students. The message is that Oxbridge represents the apotheosis of educational achievement against which all other educational institutions should be measured. State schools are therefore incentivised to provide opportunities for students to orientate their studies to the Oxbridge ideal. This includes a rejection of 'softer' or vocational subjects, such as Media Studies and Business Studies, for 'harder' scientific and more rigorous subjects such as Further Maths and Physics or traditional canonical subjects such as Law, Latin, and English Literature. Ofqual, the agency responsible for education's assessment system announced recently it is withdrawing its support from twenty-four softer subjects later this year (Stewart, 2014). The harder 'A' levels are regarded as a better objective measure of standards and better preparation for the demands of an elite university. According to Ian Hope, co-author the influential "Next Gen" report (Livingstone & Hope, 2011), coding is the "new Latin" (Cellan-Jones, 2011a). Coding is, we are told, as potentially valuable to young people as the subjects Oxbridge and indeed Russell Group universities prefer.

Let us examine these claims in relation to the data I collected during my study. The Calshot students are a typical target population who could, it is claimed, benefit from coding. They were sent to school to understand the world around them. They are from low income or working class homes; they should therefore be acquiring more capital enhancing digital skills and aspiring to transcend their social class origins by setting-up a small digital business; and they all came from state schools that, according to government and charities such as the Sutton Trust, should have sent more of its students to Oxbridge.

Would coding help the Calshot students better understand the world around them? It is undoubtable algorithms, and the databases they access, are affecting our lives influencing everything from our insurance premiums to the content of our Facebook news feeds. Yet, perhaps, the alternative question could be, would these young people be interested in coding as a way of understanding the world? The students were on a modular course that offered web development as an option. Few chose this option. From the interviews I concluded some students had little or

no interest in how computers and software worked. This may be a reflection of how they were taught ICT in schools but for them these were primarily communications technologies. They were more interested in the norms and values that defined how this technology was used rather than how it functioned at code level. This suggests not every young person will want to learn to code and, for them understanding communication between people is more important. It also implies a tension between those who understand technology through making it and those who understand technology through using it. Indeed, this tension is being played-out in Google's attempts to get its Google Glass product into mainstream usage. People are rejecting this technology on superficial terms because the glasses look 'geeky'. More fundamentally Google seems oblivious to people's revulsion to potentially having their everyday encounters filmed by a miniature CCTV device (Hennessy, 2014). In this context, 'understanding the world around them' implies a narrow, technological determinist idea of society that the new computing curriculum does little to address.

Would coding be a capital enhancing skill for Calshot students? At Calshot, Alfie said he was learning to make websites using HTML and he had ambitions of making a business out of a web site. In London, Omar and Daniel could code in variety of sophisticated languages such as C++. Given value of knowing how to program in C++, their parents' social class, assets and contacts, Omar and Daniel theoretically are more likely to convert their digital skills into other forms of capital and wealth. From a Bourdieusian perspective no form of capital is leverageable in isolation. Forms of capital flow from each other but the primary source is economic capital. It is no accident, for example, Facebook began at Harvard where social, economic and cultural capital converged (Facebook's back-end is incidentally written in C++). Mark Zuckerberg had access to the embodied forms of capital; hardware, compilers and network access that allowed him to make his system. His Ivy League university was a financially secure incubator for his product. He had access to the venture capital money to invest in servers. He piloted his system within a pre-existing network of highly-connected users: other students at Harvard and students at other Ivy League colleges recommended his system to each other. Then the

network effects were amplified by Harvard's symbolic capital as Facebook caught-on in junior colleges around America then spread globally (Cellan-Jones, 2011b). Given this, Omar (who was destined for Oxford) and Daniel (who was destined for Princeton) are more likely to convert their coding skills into a business. Meanwhile, those Chancery students who could not code, as they were destined for elite universities to study a traditional subject, did not see coding as performing any necessary function in their lives. Although Alfie could go on to be a business success, this analysis at least challenges assumptions about becoming a digital entrepreneur through the transformative power of learning to code.

Let us assume all the Calshot students wanted to code and became competent coders. If the Calshot students then wanted to enter the job market with their hypothetical coding skills, they would, along with a generation of young coders the new policy initiatives promises to release, have to find their place in a well-established, heterogeneous and highly stratified industry. Depending on its function and its relative proximity to the hardware or the user, software can be programmed by a variety of languages. C is used for instructions closer to the machine interface, than for example, scripting languages such as Python. Coding has many layers of complexity; some forms of coding are more difficult and therefore more valued than others. Indeed some languages that are referred to as coding such as HTML are not coding at all. Although the generic structures of many programming languages are a form of transferable knowledge (loops, functions and arrays are used in most languages) some languages are valued more highly in the market place. Sophisticated games engines, for example, require a synthesis between coding in languages such as C++ and complex maths and physics. Coding is contextually sensitive. Coding experience of banking back-end systems is very different to coding in the public sector. Employers therefore want coding skills in combination with specific industry applied experience of coding such as banking or defence. Moreover, employers want specific combinations of languages, platforms and development methodologies such as Scrum. New school leavers and graduates who can code will have to enter and navigate through this pre-existing field.

The same capitals and combination of capitals that organise other job sectors will be mobilised. Although the entrepreneurial bedroom coder is an albeit rare reality; most people will have to rely on their university's reputation, the ability to work for free to gain experience or social contacts that provide access to the first rung on the ladder. The coding rhetoric assumes a super-abundance of jobs and opportunities in the IT sector. As more new coders enter the market the hierarchies will be rearranged and rudimentary coding without specific experience or expertise will become less valuable and the affordances of social and economic capital will come even more important. If everyone could code then programming would be downgraded to a disposal service such as touch-typing. Furthermore, as more coding solutions are made and packaged the more code becomes reusable; in this instance coding becomes less a creative job and more about support and maintenance. While learning to code may make smarter users any promises beyond that, when they meet social reality, become less sustainable.

Finally, if the Calshot students were studying Computer Science 'A' Level, since it is said to be a harder 'A' level and indeed the "the new Latin" (Cellan-Jones, 2011b), would it, along with other hard 'A' levels, get them to Oxbridge? Oxford and Cambridge do not select on exams alone; they assesses students with interviews and through aptitude tests and they test a student's subject knowledge and evaluate his or her extracurricular 'character-building' activities (Warikoo & Fuhr, 2013). When students from state schools are rejected it is because admission tutors often have concerns about the individual's ability to meet the institution's demanding study regime (Warikoo & Fuhr, 2013). It follows that a sixth form student is at an advantage if the culture of his or her school is synchronised with the culture of Oxbridge (Davey, 2012). If the school provides practice interviews, practice tests, traditional 'A' levels, teachers who went to Oxbridge, expensive extra-curricular enrichment programmes and extended academic projects, its leavers are well prepared for Oxbridge's selection process. We are left with a system that valorises a particular set of skills, competencies and practices that prepare students for life at Oxbridge. Unless the Calshot students have

these, on top of their ability to code, they would be less likely to ascend to Oxbridge.

7.1 Young coders as homo oeconomicus

This analysis suggests that the benevolent interests who want more young people to code have become unwittingly complicit in a wider neo-liberal agenda that ignores or abrades social reality. What is neoliberalism and how did the noble coding project becoming entangled in it? Eric Schmidt's accusation that our education system was failing to meet the needs of business apparently catalysed the government into action. It is typical of "neoliberalism's articulation" that:

"Comes through endlessly unfolding failures and successes in the relations between peoples and their socially constructed realities as they are (re)imagined, (re)interpreted, and (re)assembled to influence forms of knowledge through 'the conduct of conduct'."
(Springer, 2012, p137)

By articulating the failure of education to meet the needs of business Google's executive chairman was using two constructs to try to influence the government's policy: education and business. There were already educational institutions teaching young people to code and industries such as gaming that were sustained by young coders that these constructions ignored. Neoliberalism is an ideological hegemonic project. This understanding maintains that:

"Elite actors and dominant groups organized around transnational class-based alliances have the capacity to project and circulate a coherent program of interpretations and images of the world onto others."

Eric Schmidt, the former Education Secretary Michael Gove as well as less visible business leaders are "elite actors" who have formed "transnational class-based alliances" who, by pushing their ideas of coding, have "projected and circulated a coherent program of interpretations"(Springer, 2012, p136). This statement from Saul Perkins

of Index Ventures (more from about this company shortly) is typical of such an interpretation:

“My thesis is that 21st century parents should teach their kids three languages: English, Mandarin and coding. Software is so much a part of our lives today that this is just a fundamental skill that people need.” (Forbes, 2012)

According to neoliberalism states must purposefully engage in public policy “to remain economically competitive within a transnational playing field of similarly minded states” (Springer, 2012, p137): We must churn-out young coders to gain ground on our economic competitors such as China. Statements such as these turn each young person into a “homo oeconomicus”: an agent who is “not just a partner in economic exchange but an entrepreneurial being who is the subject of enterprise and production” (Gane, 2013, p2).

Some of the most high-profile actors in the coding space are behind the “Year of Code” (<http://www.yearofcode.org>). This is “an independent, non-profit campaign to encourage people across the country to get coding for the first time in 2014”. Its chairman is Rohan Silva, who was until recently “entrepreneur in residence” at Index Ventures (<https://www.linkedin.com/pub/rohan-silva/45/91/810>). Silva is a former policy adviser to the Prime Minister David Cameron (BBC 2013). The Year of Code has many commercial partners including Google. One of the routes to coding Year of Code provides is facilitated by the New York based “educational company” called Code Academy which is financially supported by Index Ventures (among others such as Richard Branson (see <http://www.codecademy.com/about>)). Code Academy provides services to schools and teachers in England and Wales. Perhaps this is the reality of today’s policy landscape, that, to achieve change, a group of otherwise disparate interests are mobilised towards benevolent ends. Here, however, philanthropy, state education, government economic policy and specific business interests are tightly entwined. Philanthropy only becomes possible if it is “market conforming” (Peck 2010, p23). Benevolent interests are only selected if they represent flexible, low-cost, non-state service providers that can be “managed by audit and devolved

governance to the embrace the values of public-private partnership” (p23). Neoliberalism is characterised by “the emergence of new governmental configurations that run in a loop between the market and the state” (Gane, 2013, p2). It “focuses on the transfer of ownership from the state or public holdings to the private sector or corporate interests”(Springer, 2012, p136). Given that: over half of schools in the UK are academies and the UK’s largest academy provider, AET, recently put its non-teaching roles and functions out to private tender (Vaughan 2014); private companies such as Code Academy provide services to schools; and the purpose of schools is to produce skilled workers for the economy, then ‘the loop’ between market and state is apparently set to become even more tightly entwined.

In many ways the data here is shaped by how the students responded to neoliberalism. The Chancery students, as its beneficiaries, saw a globalised open market, within which immigrants could monetise their skills, as a moral good. Their parents by paying a premium for education were only seeking to insulate their children from the inherent risks neoliberalism embodies; the evidence suggests, in our political and economic system, an Oxbridge education is the ultimate source of insulating capital. Calshot students also looked at immigrants through a neoliberal lens; either immigration was a moral good because immigrants do jobs British people won’t do or morally bad because immigrants were being offered privileged access to resources they didn’t deserve.

7.2 The Illusion of Meritocracy

We have arrived here because in our culture neoliberalism is morally justified by using the all-pervasive language of meritocracy. When Young (1970) conceived of the meritocracy it was a satirical device to draw attention to a possible dystopian future where everyone is stratified in concrete by their I.Q.: the sub optimal intelligent condemned to a meaningless existence. The meaning of meritocracy has evolved (Allen, 2011) to become a discursive device. Politicians from all major parties now clamour for the moral high ground by claiming that making society more meritocratic is their political *raison d'etre*. The former Deputy Prime

Minister, for example said exactly that; "It's the reason I do this job" (Clegg, 2012). Indeed meritocracy's conceptual power is far reaching:

"Meritocracy as an abstract ideal is also a measure of progress, where more advanced societies are held to be those that are more meritocratic. They make fewer decisions based on prejudice and extend opportunity further. Meritocracy is sometimes used as a measure of corruption, where corrupt societies or corrupt institutions are thought to be those that disobey the formula: merit = ability + effort. Meritocratic societies are open and fair, non-meritocratic ones are obscure and underhand. Justice, social cohesion, progress, fairness and transparency, these are the timeless ideas upon which meritocracy is presumed to rest." (Allen 2011, p2)

Yet despite the political conviction supporting the meritocracy, according to the most recent "State of the Nation" report written by the government's Nation Social Mobility and Child Commission:

"The most talented in our society are not getting equal opportunities to access the top, which is disproportionately dominated by the most advantaged"

And;

"Top employers recruit from an average of only 20 out of >115 universities". (Shephard, 2014)

Littler (2013) argues it is not;

"Merely a coincidence that the common idea that we live, or should live, in a meritocratic age co-exists with a pronounced lack of social mobility and the continuation of vested hereditary economic interests." (p53)

This is because within the discourse of inequality the concept of meritocracy has been appropriated and shaped by neo-liberal ideology. For Foucault (2010), neoliberalism's project is "the overall exercise of political power modelled on the principles of a market economy" (p131).

Moreover, “the only ‘true’ aims of social policy for neoliberalism can be economic growth and privatisation; thus the multiplication of the ‘enterprise’ form within the social body” (p148). Neo-liberals want us to believe if we are sufficiently empowered, incentivised and aspirational we can and should transform or transcend our class of conditions. The responsibility to act and the blame for failure falls upon the individual. As the elite experience compound growth in their incomes:

“Entrepreneurialism and celebrity rags-to-riches tales become highlighted, or rendered ‘luminous’, they become publicly visible opportunities to ‘escape’ an otherwise entrenched position of social subordination”. (Littler 2013, p55)

I can code, it is therefore my lack of entrepreneurial spirit or my lack of inspiration; my failure to produce a killer app like Angry Birds or Tinder that means I am yet to be socially acclaimed because I am not a millionaire wealth-creator. Many advocates of digital literacy would be horrified at this suggestion. The way advocates of digital literacy utilise the social capital or discuss capital enhancing skills, however, turns capital into “little more than a useful heuristic device, a descriptive construct or a metaphor for elaborating their concerns” (Grenfell, 2009, p25). The benevolent, “legislated reason” (Bauman, 1990) of digital literacy campaigns extracts a concept that belongs to practice theory from its full theoretical logic and affords discourse about the power of quick-fix technological solutions to transform lives.

Essentially, however, anyone who has young people’s interests at heart has no choice but attempt to empower them in this way. Post-financial crash the concept of the state is changing. Now the discourse of policy is all about reducing the public’s dependency with supportive yet ‘light-touch’ interventions through enabling, empowering, scaffolding, encouraging, and nudging. Digital technology is crucial here; it has allowed public services to be ‘streamlined’ and made more ‘efficient’ and allowed the responsibility for our wellbeing and education to be pushed-out to us. The services and opportunities are there for us on the Web; the only thing missing now is the skills to access and use this technology. Addressing structural inequalities by reevaluating the logic of

neoliberalism is off the mainstream political agenda; we are asked to take inequality for granted: that capital reproduces capital because:

"The entrepreneur inevitably tends to become a rentier, more and more dominant over those who own nothing but their labour. Once constituted, capital reproduces itself faster than output increases."
(Piketty 2014, p571)

Is digital literacy rescuing young abandoned, aimless, and deceptively unsophisticated users from the new Wild West? No, it is attempting to produce normatively valued users we can reward with badges, certificates, and money: users who want to better themselves and boost the economy. The campaign for coding and the wider call for digital skills is a tacit acceptance we can only offer young people the promise of empowerment to change their own lives; via primarily learning to code at school, or elsewhere learning to use search engines; accessing MOOCs, blogging, curating a Twitter presence to build social capital online etc. The solution to social problems has been outsourced to technology. There are social, self-improvement machines being provided for us: we just need the aptitude, skills, and aspiration to mobilise their power to transform our lives for the better.

Appendices

Gaining access

The greatest *practical* difficulty with this thesis has been negotiating access to the research sites. Via a growing array of publically available performance metrics, schools and college are now under intense pressure to deliver results. On paper, my research would only distract the students and deploy the school or college's resources to unproductive ends. I had to persuade the institutions that my research was somehow in their interests.

Since my former teaching colleague is a member of the college's senior management, gaining access to Calshot College was *relatively* straightforward. I had access to this site secured from September 2011. This initial gain was followed by a series of false starts and time-consuming waits. Next, I had to negotiate the terms of the study to minimise disruption to the course leader and her students as well as accommodate some of the student's erratic attendance and volatile commitment to their course.

Gaining access to an independent school was more problematic from the outset. I wrote to several schools across southern England without success. In retrospect, I disincentivised the school's participation in my study by asking for too much time to complete each stage. My intention was to negotiate down from an ambitious request, however the immediate response from each institution was either a polite or, on one occasion, a rude rejection letter.

In the meantime I did preparatory work with a local independent school including a Web Science workshop for its students and pro bono conference appearance for national ICT teachers. Citing disruption to the student's timetable, this school withdrew from its engagement at the last minute. This work did, however, produce a dividend; one of the attendees at my conference talk was an ICT teacher at a prestigious independent school in London and she was interested in my research. After further negotiations with her school's senior management the school agreed to participate in my study.

An example of an email exchange with parents at the Chancery School

Dear Huw,

I am writing to you regarding your research project on how young people use the Web for information.

We were delighted to receive the letter from [REDACTED], that our son was one of those chosen to participate in your research project.

Although we are very happy for our son to be part of this exciting project, I have a logistical issue that I wish to discuss with you and was hoping that we could have a quick chat before we have to respond to the kind invitation.

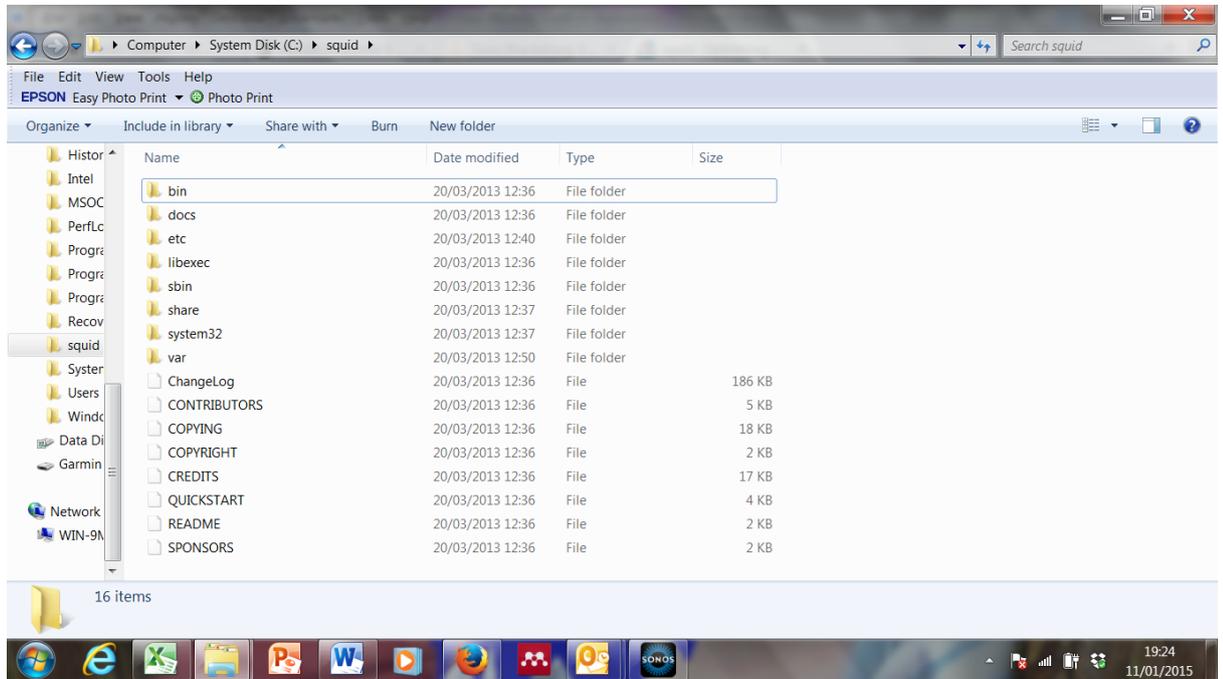
Please would you let me know when would be a good time to call you.

Best wishes

The Proxy Server

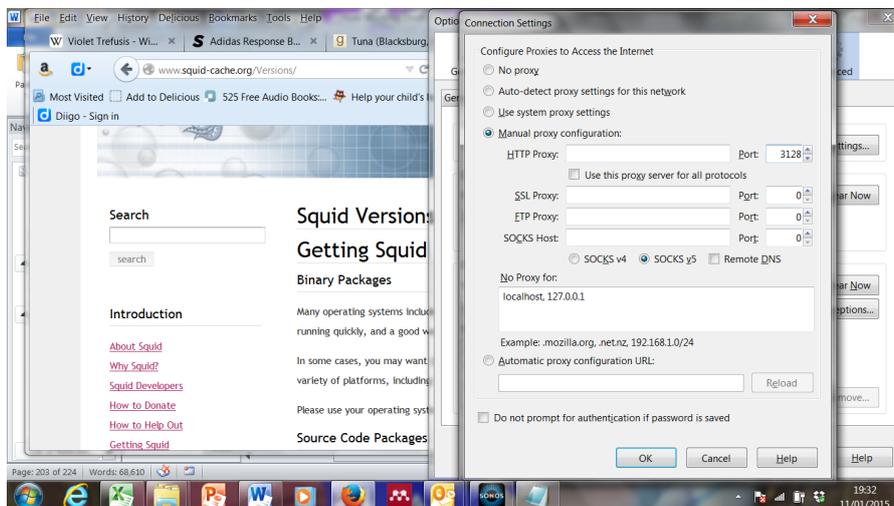
For the proxy server I used an open source software package called Squid from <http://www.squid-cache.org/Download/>

I installed the files in on my C: drive.



In the configuration file, I set Squid to listen to http port 3128. I then directed each browser that the students used to access http traffic via port 3128.

For example:



The ICT staff at each institution issued my laptop with an IP address on their network and configured their system's firewall so that each client browser allowed access to my laptop. Squid records http traffic and outputs the results to a text file called access.txt.

Squid offers the following codes that signify options for its outputs.

- >a Client source IP address
- >A Client FQDN
- >p Client source port
- <A Server IP address or peer name
- la Local IP address (http_port)
- lp Local port number (http_port)
- oa Our outgoing IP address (tcp_outgoing_address)
- ts Seconds since epoch
- tu subsecond time (milliseconds)
- tl Local time. Optional strftime format argument
- tg GMT time. Optional strftime format argument
- tr Response time (milliseconds)
- >h Request header. Optional header name argument on the format header[:[separator]element]
- <h Reply header. Optional header name argument
- un User name
- ul User name from authentication
- ui User name from ident
- us User name from SSL
- ue User name from external acl helper

Hs	HTTP status code
Ss	Squid request status (TCP_MISS etc)
Sh	Squid hierarchy status (DEFAULT_PARENT etc)
mt	MIME content type
rm	Request method (GET/POST etc)
ru	Request URL
rp	Request URL-Path excluding hostname
rv	Request protocol version
ea	Log string returned by external acl
<st	Reply size including HTTP headers
>st	Request size including HTTP headers
st	Request+Reply size including HTTP headers
sn	Unique sequence number per log line entry
%	a literal % character

I formatted my log file to give me:

%>a Client source IP address

%tg GMT time

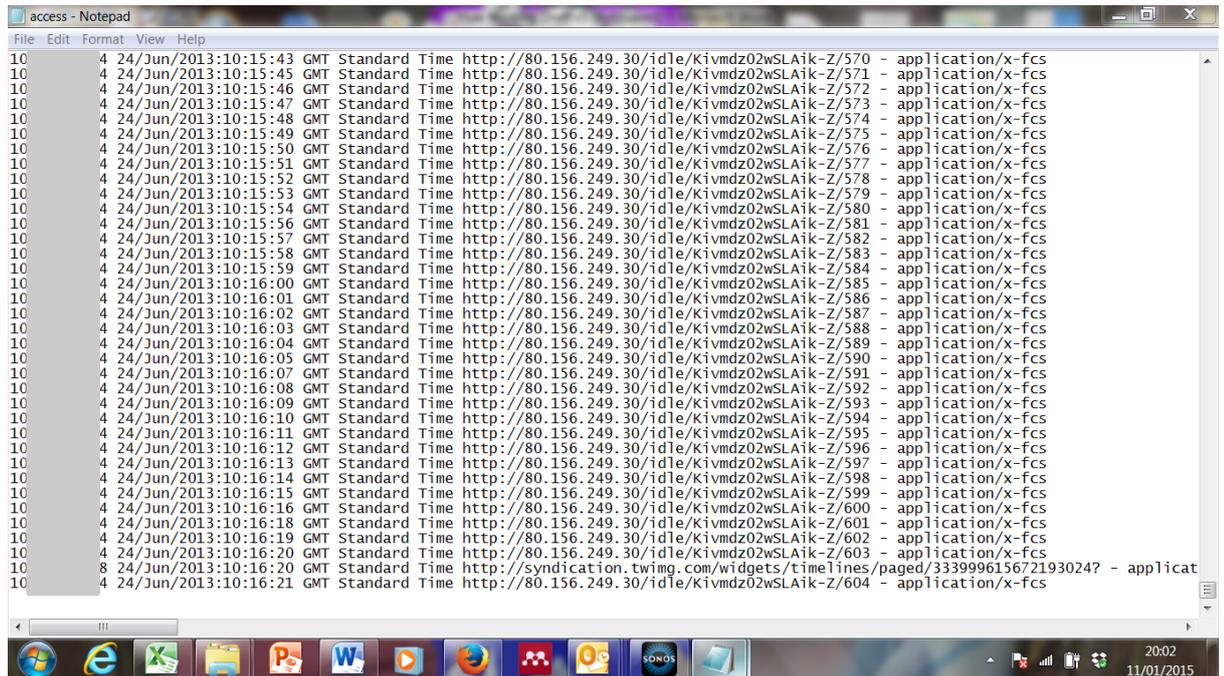
%ru Request URL

%un User name

%mt MIME content type – this told me what file type was requested by the client browser such as .html, .gif, or .js.

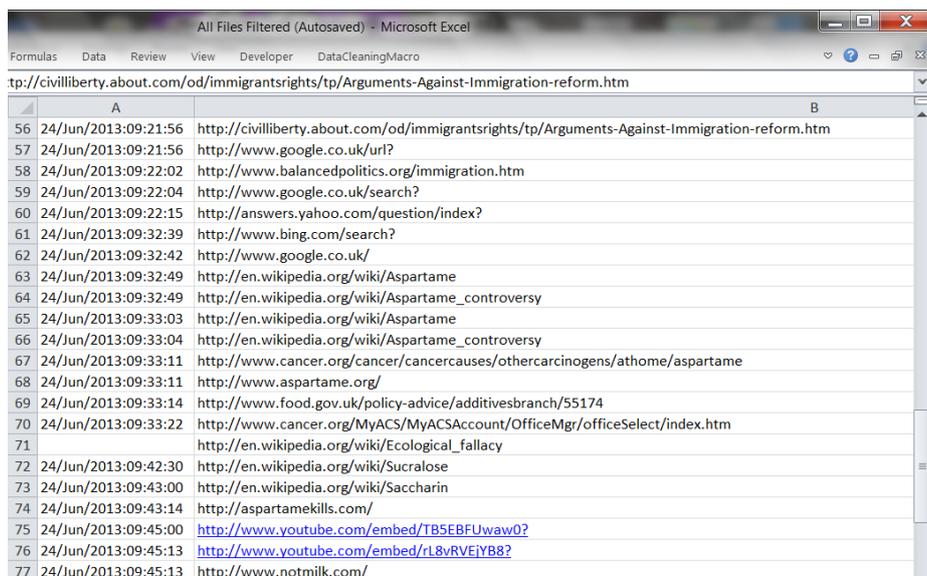
Once I had configured the browsers, I ran the squid.exe contained in the sbin folder using a series of DOS commands from the Windows command line interface. The traffic from the proxy logs was logged in the access.txt file.

Here is an example from one of the logs that contained 10s of thousands of lines of text. I've greyed out the IP address for ethical reasons.



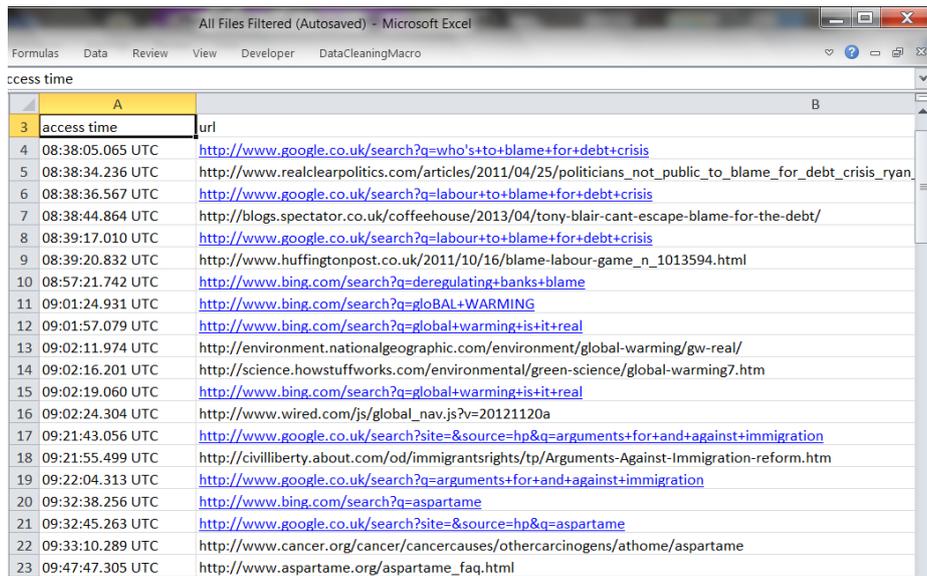
I then exported the text file to an Excel spreadsheet and filtered-out all the files I didn't need such as image files (.gif, .jpeg etc. and scripts such as .js) so that I was left with all the urls the students visited.

For example:



I was able to compare these results with the student's history files that I exported from the client browsers before the students logged-off.

For example:



The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B
3	access time	url
4	08:38:05.065 UTC	http://www.google.co.uk/search?q=who's+to+blame+for+debt+crisis
5	08:38:34.236 UTC	http://www.realclearpolitics.com/articles/2011/04/25/politicians_not_public_to_blame_for_debt_crisis_ryan
6	08:38:36.567 UTC	http://www.google.co.uk/search?q=labour+to+blame+for+debt+crisis
7	08:38:44.864 UTC	http://blogs.spectator.co.uk/coffeehouse/2013/04/tony-blair-cant-escape-blame-for-the-debt/
8	08:39:17.010 UTC	http://www.google.co.uk/search?q=labour+to+blame+for+debt+crisis
9	08:39:20.832 UTC	http://www.huffingtonpost.co.uk/2011/10/16/blame-labour-game_n_1013594.html
10	08:57:21.742 UTC	http://www.bing.com/search?q=deregulating+banks+blame
11	09:01:24.931 UTC	http://www.bing.com/search?q=global+WARMING
12	09:01:57.079 UTC	http://www.bing.com/search?q=global+warming+is+it+real
13	09:02:11.974 UTC	http://environment.nationalgeographic.com/environment/global-warming/gw-real/
14	09:02:16.201 UTC	http://science.howstuffworks.com/environmental/green-science/global-warming7.htm
15	09:02:19.060 UTC	http://www.bing.com/search?q=global+warming+is+it+real
16	09:02:24.304 UTC	http://www.wired.com/js/global_nav.js?v=20121120a
17	09:21:43.056 UTC	http://www.google.co.uk/search?site=&source=hp&q=arguments+for+and+against+immigration
18	09:21:55.499 UTC	http://civilliberty.about.com/od/immigrantsrights/tp/Arguments-Against-Immigration-reform.htm
19	09:22:04.313 UTC	http://www.google.co.uk/search?q=arguments+for+and+against+immigration
20	09:32:38.256 UTC	http://www.bing.com/search?q=aspartame
21	09:32:45.263 UTC	http://www.google.co.uk/search?site=&source=hp&q=aspartame
22	09:33:10.289 UTC	http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/aspartame
23	09:47:47.305 UTC	http://www.aspartame.org/aspartame_faq.html

SSEGM ETHICS SUB-COMMITTEE APPLICATION FORM

Please note:

- *You must not begin your study until ethical approval has been obtained.*
- *You must complete a risk assessment form prior to commencing your study.*
- *It is your responsibility to follow the University of Southampton's Ethics Policy and any relevant academic or professional guidelines in the conduct of your study. This includes providing appropriate information sheets and consent forms, and ensuring confidentiality in the storage and use of data.*
- *It is also your responsibility to provide full and accurate information in completing this form.*

1. **Name(s):** Huw C. Davies

2. **Current Position** Web Science PhD Student

3. **Contact Details:**

Division/School Sociology and Social Policy, Social Sciences/Web Science DTC

Email hcd1g10@soton.ac.uk

Phone

4. **Is your study being conducted as part of an education qualification?**

Yes **No**

5. **If Yes, please give the name of your supervisor**

Professor Susan Halford

6. **Title of your project:**

Youth, Credibility and the Web

7. **What are the proposed start and end dates of your study?**

October 2012 to June 2014

8. Describe the rationale, study aims and the relevant research questions of your study

To find out:

When and why young people use the web to search for information.

How young people search for information; for example their choice of search engine and search query.

How young people judge credibility by discriminating between various sources of information

Are young people persuaded by contested information they find online?

If a young person's socioeconomic status and education has any influence on these questions.

9. Describe the design of your study

I have recruited two institutions to take part in this study. I will be working with a member of the management team at each college who also teaches. They have volunteered their students for this study and integrated my research methods with their student's learning objectives.

These institutions are distinguished by their student's socioeconomic status and journey through our education system.

Stage 1: Group interviews

Previous research in this area suggests young people need to be motivated by their interest in a topic before they research it thoroughly online. If I give them topics in which they have no interest, then they will perform perfunctory searches. The purpose of the group interviews is to discover which topics interest the students. In groups of 15 I will ask the students:

- When and why do you use the web for search information?
- What are the issues, topics, and questions would you look to the web to resolve?

During the interview, I will suggest examples and ask the students if they would use to the web to investigate them. For instance, is global warming man-made?

(See interview schedule)

Group selection will depend on:

The members of staff and students from each institution who are willing to participate.

Which students under the age of 18 who, having volunteered, have obtained consent from their parents to participate.

Stage 2: Collaborative writing project

The questions produced during the group interviews will be used for a collaborative writing project.

This will involve 3 sub stages:

- a) The students will be asked to record their responses individually (to the issues discussed during stage 1) in Word before any online research has taken place. These responses will be uploaded to a secure, password protected server at the University of Southampton.
- b) Next, the students will be asked to construct responses again individually in Word, but this time using the web as resource. These responses will be uploaded to a secure, password protected server at the University of Southampton. The search queries will be captured for analysis via a proxy server. When students use the web at each college their search history (the addresses of web pages they visited) is stored on a central computer on the college's network called a web server. I will set-up a proxy server that will perform this function for students participating in my study. The proxy server will only capture data (search logs) that each institution captures already on its web servers but just for the students (or rather their machines) participating in the study.
- c) For the final stage, the students will be asked to integrate their individual responses written during stage 3b into a wiki that reflects a group consensus on each topic. This stage will be videoed to observe the deliberations and interactions between the students during this process.

The wiki will be hosted by the University of Southampton.

A similar wiki can be seen here <https://secure.ecs.soton.ac.uk/wiki/w/WAIS>

The students asked to create the wiki will be given pseudonyms for log-ins and explicit instructions not to identify themselves or the institution at which they study. Only I, as the wiki's administrator, will be privy to this information.

The wiki will be written at each institution within the student's normal timetable. It will be locked by me, as administrator, for editing outside these hours to prevent any contamination or abuse.

Each wiki page will have a discussion page within which the students will be encouraged to discuss and justify their choice of source.

Observation and Recording of Collaborative writing project

As well as asking students to document their deliberations, while they write the wiki, I will observe and video the project in progress and record my discussions with them about their choice of sources and credibility decisions.

The video is intended as an objective 'memory' of the process. I need to see who spoke to whom and when and compare this to the timeline of edits on the Wiki. During the debrief interviews I can also refer to the videos.

Stage 3: Debrief individual interviews

The dual purpose of the debrief interviews to assess each volunteer's experience after they have time to reflect on the project and capture any thoughts or processes that were not revealed during the observations.

10. Who are the research participants?

Approximately 30 post-secondary school students age 16-19 and specific teachers who have agreed to take part in the study.

11. If you are going to analyse secondary data, from where are you obtaining it?

From the institutions at which the students are attending. For example student fees and any anonymised demographic data each institution can provide.

12. If you are collecting primary data, how will you identify and approach the participants to recruit them to your study?

Recruitment will result from a process during which my point-of-contact at each institution will volunteer classes to participate. I will ask all the members of these classes if they are happy and willing to participate. If any of the students are aged under 18 I will seek parental consent before proceeding.

13. Will participants be taking part in your study without their knowledge and consent at the time (e.g. covert observation of people)? If yes, please explain why this is necessary.

No

14. If you answered 'no' to question 13, how will you obtain the consent of participants?

For each stage of the study I will seek the written consent of a member of each institution with the appropriate level of authority to do so, the teachers involved in the study, the students participating in the study and if necessary their parents (see consent forms).

15. Is there any reason to believe participants may not be able to give full informed consent? If yes, what steps do you propose to take to safeguard their interests?

No

16. If participants are under the responsibility or care of others (such as parents/carers, teachers or medical staff) what plans do you have to obtain permission to approach the participants to take part in the study?

For participating under-eighteens I will seek parental consent by writing to each participant's parent (see parental consent form).

17. Describe what participation in your study will involve for study participants. Please attach copies of any questionnaires and/or interview schedules and/or observation topic list to be used

Participation for young people would involve:

An hour long interview with approximately 15 of their peers to discuss how and why they use the web to find information. This is an opportunity to discuss topics or arguments they would use the web to help resolve.

A five hour collaborative writing project to be done within normal college hours within which they discuss and document sources that support their arguments.

A fifteen minute individual debrief interview to discuss their participation in the project.

18. How will you make it clear to participants that they may withdraw consent to participate at any point during the research without penalty?

On the information sheets I will inform participants that there will be no repercussions if, at any time they wish to withdraw from the study by speaking to me; during the group interviews, during observations of the collaborative writing project or specifically from the debrief interviews. I will also give the participants my university email address so they can withdraw at any time via email. In case they feel uncomfortable addressing me, participants will be able to indirectly withdraw from the study by informing a member of staff at their institution or parent or guardian.

19. Detail any possible distress, discomfort, inconvenience or other adverse effects the participants may experience, including after the study, and you will deal with this.

Stage 1: Group Interviews

Although I will make every effort to avoid sensitive topics for the wiki, I am unable to predict how individual students may react to all possible topics. I will inform the students, from the outset, that if they find a topic problematic they should inform me or a member of staff at the institution so I can withdraw the topic and/or the student from the study. For example, the students may want to research the link between mental illness and marijuana use and an individual in the group may have personal experience of this.

The interviews will be digitally recorded, removed from the recording device and transferred to a secure, password protected server at the University of Southampton.

During the transcription and analysis of the recordings all the participants will be referred to by pseudonyms.

At all times during the study a member of staff from the institution will be present or in earshot.

Stage 2: Collaborative Writing Project

It is possible the participants may abuse the anonymous collaborative writing space with harmful behaviour such as bullying, flaming and trolling. I will closely monitor the wiki for such behaviour. As the wiki's administrator I will have access to participant's real identities. If any participant is behaving inappropriately I will use this access to inform the participating institution's member of staff of the participant's identity and negotiate appropriate action (for example issue a warning and if necessary remove any offenders from the study).

A member of staff from the institution will be present or in audible range.

The writing of the wiki will be video recorded. It is possible individual or all the students will become uncomfortable with this at which point I will cease recording.

Stage 3: Individual Interviews

These will be individual interviews it is therefore possible participants will be uncomfortable in a one-to-one with a relative stranger.

I am an experienced teacher. I will use any opportunity to reassure the students and develop a working relationship prior to the individual interviews.

The interviews will be held in an open space or a room with an open door. A member of staff will be present or in earshot.

20. How will you maintain participant anonymity and confidentiality in collecting, analysing and writing up your data?

The institutions will be given pseudonyms. The participants will be asked to create their own usernames. These usernames will be sanctioned by the member of staff representing the institution for appropriateness.

The participants will be referred to throughout by their usernames. If a username can be interpreted in such a way that can lead to a user's real identity I will provide an alternative.

The search logs on the proxy server will only record searches performed by the machines and not the user. I will only be able to identify who searched what when by referring to the video.

21. How will you store your data securely during and after the study?

The digital recordings of the group interviews, the offline discussions during observations and the debrief interviews will be removed from the recording device and uploaded to a password protected secure server hosted by the University of Southampton.

The proxy server will be my laptop. Immediately after each session, the data files will be transferred to password protected secure server hosted by the University of Southampton then removed from my laptop.

The videos will be recorded on a tape. Immediately after the recordings, the tape's content will be uploaded to a password protected secure server hosted by the University of Southampton then deleted.

The wiki and all its data will be password protected. Only registered users will be able to view or edit its content. The wiki and its data cache will be encrypted and stored securely on a University of Southampton server.

22. Describe any plans you have for feeding back the findings of the study to participants.

I will publish the study's findings on ePrints and distribute the url to all participants by letter addressed to their institution.

<http://eprints.websci.net/>

23. What are the main ethical issues raised by your research and how do you intend to manage these?

The main ethical issues are:

- I will be working with under-18s.
- I may discuss of potentially ethically sensitive topics
- I will be using primary data i.e. search logs, audio and video recordings.
- The abuse of the wiki and its discussion pages.

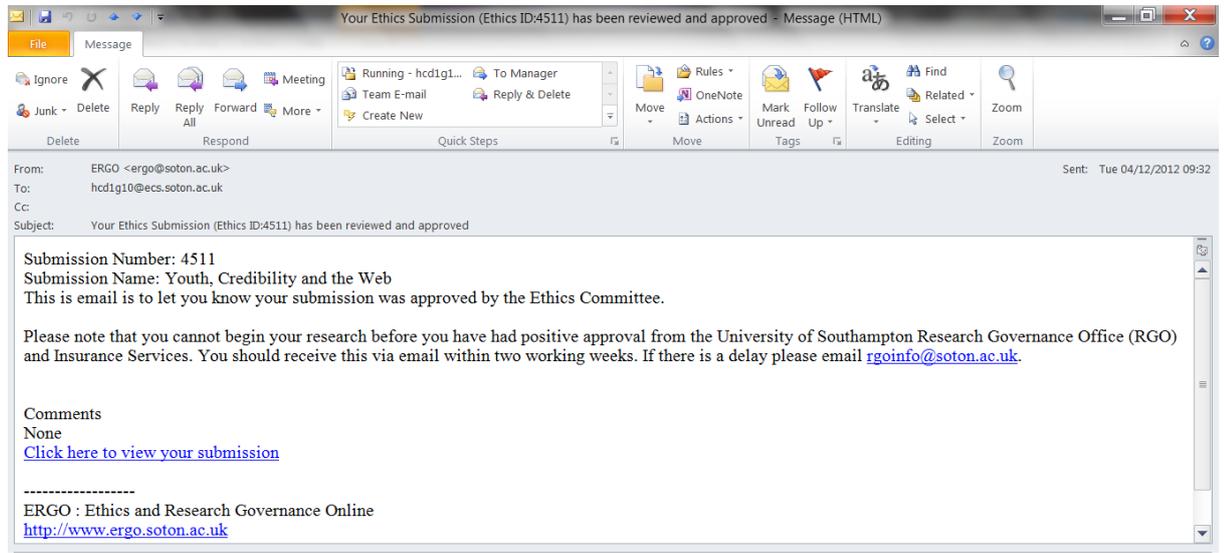
Strategies to manage these risks are described above.

24. Please outline any other information you feel may be relevant to this submission.

I am a former secondary school teacher with a PGCE from Southampton in ICT and 7 years of post-16 teaching experience, including head of media studies. I am CRB checked. My training and experience will help identify and manage many of the risks identified above.

The use of search logs and video is unprecedented in this field of research and is therefore important to the overall thesis. For the searches I need a record of what the students searched and when; one I can use to discuss their choices during the interviews. During deliberations that influence the wiki's content, I need to see who talked to whom and when. The video will be an objective record of how knowledge is socially constructed which I can refer to when interviewing the students.

Ethics Approval



Proposed items and factors to measure Internet skills by van Deursen, Helpser, & Eyon (2014)

Skill

- I know how to open downloaded files
- I know how to download/save a photo I found online
- I know how to use shortcut keys (e.g. CTRL-C for copy, CTRL-S for save)
- I know how to open a new tab in my browser
- I know how to bookmark a website

Operational

- I know where to click to go to a different webpage
- I know how to complete online forms
- I know how to upload files
- I know how to adjust privacy settings
- I know how to connect to a WIFI network
- I find it hard to decide what the best keywords are to use for online searches
- I find it hard to find a website I visited before
- I get tired when looking for information online
- Sometimes I end up on websites without knowing how I got there

Information Navigation

- I find the way in which many websites are designed confusing
- All the different website layouts make working with the internet difficult for me
- I should take a course on finding information online
- Sometimes I find it hard to verify information I have retrieved
- I know which information I should and shouldn't share online
- I know when I should and shouldn't share information online
- I am careful to make my comments and behaviours appropriate to the situation I find myself in online

Social

- I know how to change who I share content with (e.g. friends, friends of friends or public)
- I know how to remove friends from my contact lists
- I feel comfortable deciding who to follow online (e.g. on services like Twitter or Tumblr)
- I know how to create something new from existing online images, music or video
- I know how to make basic changes to the content that others have produced
- I know how to design a website
- I know which different types of licences apply to online content

Creative

- I know how to create something new from existing online images, music or video
- I know how to make basic changes to the content that others have produced
- I know how to design a website I know which different types of licences apply to online content
- I would feel confident putting video content I have created online I know which apps/software are safe to download I am confident about writing a comment on a blog, website or forum
- I know which apps/software are safe to download I am confident about writing a comment on a blog, website or forum I would feel confident writing and commenting online

Mobile

- I know how to install apps on a mobile device
- I know how to download apps to my mobile device
- I know how to keep track of the costs of mobile app use

List of References

- Ahearn, L. M. (2001). Language and Agency. *Annual Review of Anthropology*, 30, 109–137. Retrieved from <http://www.jstor.org/discover/3069211?sid=21105021088801&uid=3738032&uid=2134&uid=2&uid=70&uid=4>
- Allen, A. (2011). Michael Young's The Rise of the Meritocracy: A Philosophical Critique. *British Journal of Educational Studies*, 59(4), 367–382. doi:10.1080/00071005.2011.582852
- Alvesson, M. (2012). *Interpreting Interviews*. Sage Publications.
- Arthur, S., & Nazroo, J. (2003). Designing Fieldwork Strategies and Materials. In J. Ritchie & J. Lewis (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London: Sage.
- Ashby, S. (2010). The Turner Review on the Global Banking Crisis: A Response from the Financial Services Research Forum, 1–37. Retrieved from <http://www.nottingham.ac.uk/business/businesscentres/crbfs/documents/researchreports/paper61.pdf>
- Baird, D. E., & Fisher, M. (2009). Pedagogical Mashup: Gen Y, Social Media, and Learning in the Digital Age. In L. Tan Wee Hin & R. Subramaniam (Eds.), *Handbook of Research on New Media Literacy at the K-12 Level: Issues and Challenges* (pp. 48–71). Hershey, PA: IGI Global. Retrieved from <http://www.igi-global.com/bookstore/chapter.aspx?titleid=35906>
- Baker, P., & Potts, A. (2013). "Why do white people have thin lips?" Google and the perpetuation of stereotypes via auto-complete search forms. *Critical Discourse Studies*, 10(2), 187–204. doi:10.1080/17405904.2012.744320
- Ball, S. J., & Vincent, C. (1998). 'I Heard It on the Grapevine': "hot" knowledge and school choice. *British Journal of Sociology of Education*, 19(3), 377–400. doi:10.1080/0142569980190307
- Barad, K. (2003). Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. *Signs: Journal of Women in Culture and Society*, 28(3), 801–831. Retrieved from <http://www.jstor.org/stable/10.1086/345321>
- Barnard-Wills, D., & Ashenden, D. (2012). Securing Virtual Space: Cyber War, Cyber Terror, and Risk. *Space and Culture*, 15(2).
- Barnosky, A. D., Matzke, N., Tomiya, S., Wogan, G. O. U., Swartz, B., Quental, T. B., ... Ferrer, E. A. (2011). Has the Earth's sixth mass extinction already arrived? *Nature*, 471(7336), 51–57. Retrieved from <http://dx.doi.org/10.1038/nature09678>

- Bartlett, J., & Miller, C. (2011). *Truth, Lies and the Internet a Report into Young People's Digital Fluency*. London. Retrieved from <http://www.demos.co.uk/publications/truth-lies-and-the-internet>
- Bauman, Z. (1990). *Modernity and Ambivalence*. Cambridge: Polity Press.
- Bauman, Z. (2000). "Individuality." In *Liquid Modernity* (pp. 53–90). Cambridge: Polity Press.
- Bawden, D. (2008). Origins and Concepts of Digital Literacy. In C. Lankshear & M. Knobel (Eds.), *Digital Literacies: Concepts, Policies and Practices* (pp. 17–32). Oxford: Peter Lang. Retrieved from <http://62ea9e79-a-62cb3a1a-s-sites.googlegroups.com/site/colinlankshear/DigitalLiteracies.pdf#page=19>
- Bayart, J.-F. (2005). *The Illusion of Cultural Identity*. C Hurst & Co Publishers Ltd.
- BBC. (2011). "Google's Eric Schmidt criticises education in the UK." Retrieved October 24, 2014, from <http://www.bbc.co.uk/news/uk-14683133>
- BBC. (2014). Hain: Miliband would win over voters as prime minister. *BBC News*. Retrieved from <http://www.bbc.co.uk/news/uk-27753398>
- Beck, U. (1992). *Risk Society: Towards a New Modernity*. Sage.
- Beckett, C., Livingstone, S., David, B., Davies, C., Willett, R., & Das, R. (2009). "Digital natives": a myth? Retrieved from <http://eprints.lse.ac.uk/35789/1/digitalnatives.pdf>
- Belshaw, D. A. J. (2013). "This is Why Kids Need to Learn to Code." Retrieved August 20, 2014, from <http://dmlcentral.net/blog/doug-belshaw/why-kids-need-learn-code>
- Bennett, S., & Maton, K. (2010). Beyond the "digital natives" debate: Towards a more nuanced understanding of students' technology experiences. *Journal of Computer Assisted Learning*, 26(5), 321–331. doi:10.1111/j.1365-2729.2010.00360.x
- Berners-Lee, T. (2010). "Long Live the Web: A Call for Continued Open Standards and Neutrality." *Scientific American*. Retrieved October 16, 2014, from <http://www.scientificamerican.com/article/long-live-the-web/>
- Berners-Lee, T. (2014). "Tim Berners-Lee calls for internet bill of rights to ensure greater privacy." *The Guardian Online*. Retrieved from <http://www.theguardian.com/technology/2014/sep/28/tim-berners-lee-internet-bill-of-rights-greater-privacy>

- Berners-Lee, T., Weitzner, D. J., Hall, W., O'Hara, K., Shadbolt, N., & Hendler, J. a. (2006). A Framework for Web Science. *Foundations and Trends in Web Science*, 1(1). doi:10.1561/1800000001
- Bloor, M., Frankland, J., Robson, K., & Thomas, M. (2001). *Focus Groups in Social Research*. London: Sage.
- Bolton, P. (2014). *Oxbridge "Elitism."* Westminster. Retrieved from <http://www.parliament.uk/business/publications/research/briefing-papers/SN00616/oxbridge-elitism>
- Boonaert, T., & Vettenburg, N. (2011). Young people's internet use: Divided or diversified? *Childhood*, 18(1), 54-66. doi:10.1177/0907568210367524
- Bourdieu, P. (1977). *Outline of a Theory of Practice*. Cambridge University Press.
- Bourdieu, P. (1986). The Forms of Capital. In J. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241-258). New York: Greenwood.
- Bourdieu, P. (1990). *In other words: essays towards a reflexive sociology*. Cambridge: Polity Press.
- Bourdieu, P. (1992). *The Logic of Practice*. *Studies in Philosophy and Education*. Stanford University Press.
- Bourdieu, P. (1995). *The Rules of Art of the Literary Field Genesis and Structure*. Stanford University Press.
- Bourdieu, P. (1998). *Practical Reason: On the Theory of Action*. Stanford University Press.
- Bourdieu, P. (2007). *Sketch for a Self-Analysis*. Polity Press.
- Bourdieu, P. (2010). *Distinction: A Social Critique of the Judgement of Taste*. Routledge.
- Bourdieu, P., & Passeron, J.-C. (1977). *Reproduction in Education, Society and Culture*. London: Sage.
- Bourdieu, P., & Wacquant, L. (1992). *An Invitation to Reflexive Sociology*. University of Chicago Press.
- Boyd, D. (2014). *It's Complicated*. Yale University Press.
- Boykoff, M. T. (2008). The cultural politics of climate change discourse in UK tabloids. *Political Geography*, 27(5), 549-569. doi:10.1016/j.polgeo.2008.05.002

- Branaman, A. (1997). *The Goffman Reader*. (C. Lemert & A. Branaman, Eds.). Wiley-Blackwell.
- Brock, F. J., & Dhillon, G. S. (2001). Managerial information: The basics. *Journal of International Information Management*, 10(2), 45–59.
- Brooks, R. (2013). The social construction of young people within education policy: evidence from the UK's Coalition government. *Journal of Youth Studies*, 16(3), 318–333. doi:10.1080/13676261.2012.725836
- Brouwer, S. (2006). They Might Be Gurus. *Teacher Librarian*, 34(1), 18–26.
- Buckingham, D. (2005). *The Media Literacy of Children and Young People: A review of the research literature on behalf of Ofcom*. Retrieved from <http://eprints.ioe.ac.uk/145/1/Buckinghammedialiteracy.pdf>
- Buckingham, D. (2009). The Future of Media Literacy in the Digital Age. In *Euromeduc, Media Literacy in Europe: Controversies, Challenges and Perspectives, Bruxelles, Euromeduc* (pp. 13–24). Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/cbdv.200490137/abstract>
- Bulfin, S., & North, S. (2007). Negotiating Digital Literacy Practices Across School and Home: Case Studies of Young People in Australia. *Language and Education*, 21(3), 247–263. doi:10.2167/le750.0
- Burbules, N. C. (2001). Paradoxes of the Web: The ethical dimensions of credibility. *Library Trends*, 49(3), 441–453.
- Butler, J. (1988). Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory. *Theatre Journal*, 40(4), 519. doi:10.2307/3207893
- Butler, J. (2004). *Undoing Gender*. Routledge.
- Callon, M., Law, J., & Rip, A. (1986). *Mapping the Dynamics of Science and Technology*. (M. Callon, J. Law, & A. Rip, Eds.). Palgrave Macmillan.
- Castells, M. (2007). Communication, power and counter-power in the network society. *International Journal of Communication*, 1(1), 238–266. Retrieved from <http://www.nabilechchaibi.com/resources/Castells - Communication, Power and Counter-Power.pdf>
- Cellan-Jones, R. (2011a). “Coding - the new Latin.” *BBC*. Retrieved October 15, 2014, from <http://www.bbc.co.uk/news/technology-15916677>
- Cellan-Jones, R. (2011b). Secret History of Social Networking. Retrieved October 25, 2014, from <http://www.bbc.co.uk/podcasts/series/shsn>

- Chandler, C. R., & Tsai, Y. (2001). Social factors influencing immigration attitudes: an analysis of data from the General Social Survey. *The Social Science Journal*, 38(2), 177-188. doi:10.1016/S0362-3319(01)00106-9
- Chasek, P., Downie, D. L., & Welsh-Brown, J. (2010). *Global Environmental Politics* (5th ed.). Politics Faculty Book and Media Gallery. Retrieved from <http://digitalcommons.fairfield.edu/politics-books/16>
- Cheong, P. H. (2008). The young and techless? Internet use and problem solving behaviors among young adults in Singapore. *New Media and Society*, 10 (5), 5(10), 771-791.
- Clarke, T., & Clarke, E. (2009). Born digital? Pedagogy and computer-assisted learning. *Education + Training*, 51(5/6), 395-407.
- Clegg, N. (2012). Nick Clegg's Social Mobility Speech in Full. *Politics.co.uk*.
- Coady, D., & Corry, R. (2013). *The Climate Change Debate*. Palgrave Macmillan. doi:10.1057/9781137326287
- Collins, H. M. (1983). The Sociology of Scientific Knowledge: Studies of Contemporary Science. *Annual Review of Sociology*, 9, 255-85.
- Collins, R. (2004). *Interaction Ritual Chains*. Princeton: Princeton University Press.
- Commission, T. E. (2014). A Digital Agenda for Europe. Retrieved January 9, 2015, from <http://ec.europa.eu/digital-agenda/>
- Committee, H. of C. T. (2009). *Treasury Committee Banking Crisis : dealing with the failure of the UK banks*. Westminster. Retrieved from <http://www.publications.parliament.uk/pa/cm200809/cmselect/cmtr/easy/416/416.pdf>
- Cunningham, H. (2009). *The Invention of Childhood*. BBC Books.
- Danby, G. (2011). *Internet regulation - Commons Library Standard Note*. Westminster. Retrieved from <http://www.parliament.uk/business/publications/research/briefing-papers/SN06145/internet-regulation>
- Davey, G. (2012). Beyond a Binary Model of Students' Educational Decision-Making. *Sociological Research Online*, 17(4). Retrieved from <http://www.socresonline.org.uk/17/3/4.html>
- De Oliver, M. (2011). Nativism and the Obsolescence of Grand Narrative: Comprehending the Quandary of Anti-Immigration Groups in the Neoliberal Era. *Journal of Ethnic and Migration Studies*, 37(7), 977-997. doi:10.1080/1369183X.2011.559029

- Dean, B. (2014). Google's 200 Ranking Factors: The Complete List. Retrieved from <http://backlinko.com/google-ranking-factors>
- Dean, J. (2014). Webs of Conspiracy. In A. Herman & T. Swiss (Eds.), *The World Wide Web and Contemporary Cultural Theory: Magic, Metaphor, Power*. Routledge.
- Dean, M. (1999). *Governmentality: Power and Rule in Modern Society*. London: Sage.
- DeNardis, L. (2012). Hidden Levers of Internet Control. *Information, Communication & Society*, (February), 1-19. doi:10.1080/1369118X.2012.659199
- Department of Education. (2013). National curriculum in England: computing programmes of study. Retrieved October 25, 2014, from <https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study>
- Dias, S. B., Diniz, J. A., & Hadjileontiadis, L. J. (2014). E-Learning Exequibility in the Information and Knowledge Society. In *Towards an Intelligent Learning Management System Under Blended Learning* (Vol. 59, pp. 3-19). Springer.
- Dobransky, K., & Hargittai, E. (2012). Inquiring minds acquiring wellness: uses of online and offline sources for health information. *Health Communication*, 27(4), 331-43. doi:10.1080/10410236.2011.585451
- Donoghue, M. O. (2012). Putting working-class mothers in their place: social stratification, the field of education, and Pierre Bourdieu's theory of practice. *British Journal of Sociology of Education*, 34(2), 190-207. doi:10.1080/01425692.2012.710006
- Eastin, M. S. (2008). Toward a Cognitive Developmental Approach to Youth Perceptions of Credibility. In *Digital Media, Youth, and Credibility* (pp. 29-47). MIT Press. doi:10.1162/dmal.9780262562324.029
- Eastin, M. S., Yang, M., & Amy, I. (2010). Journal of Broadcasting & Children of the Net: An Empirical Exploration Into the Evaluation of Internet Content. *Journal of Broadcasting & Electronic Media*, (June 2012), 37-41.
- Ennals, R., Trushkowsky, B., & Agosta, J. M. (2010). Highlighting Disputed Claims on the Web. *Human Factors*, 341-350.
- Eysenbach, G. (2008). Credibility of Health Information and Digital Media: New Perspectives and Implications for Youth. In *Digital Media, Youth, and Credibility* (pp. 123-154). MIT Press. doi:10.1162/dmal.9780262562324.123

- Faye, E. (1991). Producing the Australian Adolescent as Schoolchild in the 1950s: the fantasised object of desire. *History of Education Review*, 20(2), 66-77.
- Finch, H., & Lewis, J. (2003). Focus Groups. In J. Lewis & J. Ritchie (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers* (pp. 170-198). London: Sage.
- Flanagin, & Metzger. (2007). The role of site features, user attributes, and information verification behaviors on the perceived credibility of web-based information. *New Media & Society*, 9(2), 319-342. doi:10.1177/1461444807075015
- Flanagin, & Metzger. (2008). Digital Media and Youth : Unparalleled Opportunity and Unprecedented Responsibility. In *Digital Media Youth and Credibility* (pp. 5-27). MIT Press. doi:10.1162/dmal.9780262562324.005
- Flanagin, & Metzger. (2010). *Kids and Credibility An Empirical Examination of Youth, Digital Media Use, and Information Credibility. Digital Media*. MIT Press. Retrieved from <http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=12287&mlid=703>
- Fontana, A., & Frey, J. H. (2005). The interview: From neutral stance to political involvement. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (Third Edit., pp. 695-727). Thousand Oaks, CA: Sage Publications.
- Forbes. (2012). Codecademy Raises \$10 Million To Conquer The World. Retrieved from <http://www.forbes.com/sites/jjcolao/2012/06/19/codecademy-raises-10-million-to-conquer-the-world/>
- Foucault, M. (1977). Truth ad Power. In *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977* (pp. 109-133). Random House.
- Foucault, M. (1978a). *The Birth of Biopolitics: Lectures at the Collège de France, 1978-1979. On Neo-Liberal Governmentality*. Palgrave Macmillan.
- Foucault, M. (1978b). *The History of Sexuality: Volume I: An Introduction* (Vol. I). New York: Pantheon Books. Retrieved from <http://www.michel-foucault.com/dulwich/power.pdf>
- Foucault, M. (1980). *Power/Knowledge Selected Interviews and Other Writings 1972-1977*. (C. Gordon, Ed.). New York: Pantheon Books.
- Foucault, M. (1988). The Political Technology of Individuals. In & P. H. L. Martin, H. Gutman (Ed.), *Technologies of the Self: A Seminar with Michel Foucault*. University of Massachusetts Press.

- Foucault, M. (1994). *The Order of Things: Archaeology of the Human Sciences* (2nd ed.). Vintage Books.
- Foucault, M. (2002a). Governmentality. In D. Faubion, James (Ed.), *Power: The Essential Works of Michel Foucault 1954-1984* (3rd ed., pp. 201–223). Penguin.
- Foucault, M. (2002b). *The Archaeology of Knowledge*. Abingdon: Routledge.
- Fowler, B. (1996). An introduction to Bourdieu's Understanding. *Theory, Culture and Society*, 3(1-16).
- Friedman, B., Kahn Jr, P. H., & Borning, A. (2006). Value sensitive design and information systems. *Human-Computer Interaction in Management Information Systems: Foundations*, 348–372. Retrieved from <http://mesharpe.metapress.com/index/8w130038338tx165.pdf>
- Fritch, J. W., & Cromwell, R. L. (2001). Evaluating Internet resources: Identity, affiliation, and cognitive authority in a networked world. *Journal of the American Society for Information Science and Technology*, 52(6), 499–507. doi:10.1002/asi.1081.abs
- Fuchs, C. (2013). *Social Media: A Critical Introduction* (Kindle Edi.). Sage Publications, Inc.
- Fuchs, S. (2001). Beyond Agency. *Sociological Theory*, 19(1), 24–40.
- Gane, N. (2013). The Emergence of Neoliberalism: Thinking Through and Beyond Michel Foucault's Lectures on Biopolitics. *Theory, Culture & Society*. doi:10.1177/0263276413506944
- Garner, S. (2012). A moral economy of whiteness: Behaviours, belonging and Britishness. *Ethnicities*, 12(4), 445–464. doi:10.1177/1468796812448022
- Gasser, U., Cortesi, S., Malik, M., & Lee, A. (2012). *Youth and digital media: From credibility to information quality. Berkman Center Research* Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2005272
- Giddens, A. (1990). *The Consequences of Modernity*. Stanford: Stanford University Press.
- Giddens, A. (1991). *Modernity and Self-identity: Self and Society in the Late Modern Age*. Cambridge: Polity Press.
- Giles. (2005). Internet Encyclopaedias Go Head to Head. *Nature*, (434). Retrieved from <http://www.nature.com/nature/journal/v438/n7070/full/438900a.html>

- Gillespie, T. (2014). The Relevance of Algorithms. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Eds.), *Media Technologies: Essays on Communication, Materiality, and Society*. MIT Press.
- Glister, P. (1997). *Digital Literacy*. New York: Wiley.
- Goffman, E. (1959). *Presentation of Self in Everyday Life*. Anchor Books.
- Goldthorpe, J. H. (2007). "Cultural Capital": Some Critical Observations. *Sociologica*, 2, 1-23. doi:10.2383/24755
- Google. (2011). Google Official Blog. Retrieved from <http://googleblog.blogspot.co.uk/2011/02/update-to-google-social-search.html>
- Gordon., G. (1991). Governmental rationality: an introduction. In G. Burchell, G. C, & P. Miller (Eds.), *The Foucault Effect: Studies in Governmental Rationality*. Hemel Hempstead: Harvester Wheatsheaf.
- Grenfell, M. (2009). Applying Bourdieu's field theory: the case of social capital and education. *Education, Knowledge and Economy*, 3(1), 17-34. doi:10.1080/17496890902786812
- Griffin, C. (1993). *Representations of Youth*. Polity Press.
- Gui, M., & Argentin, G. (2011). Digital skills of internet natives: Different forms of digital literacy in a random sample of northern Italian high school students. *New Media & Society*. doi:10.1177/1461444810389751
- Hague, C., & Payton, S. (2010). *Digital literacy across the curriculum: A Futurelab handbook*. Retrieved from http://www2.futurelab.org.uk/resources/documents/handbooks/digital_literacy.pdf
- Hall, S. (1980). *Culture, Media, Language: Working Papers in Cultural Studies*. Routledge.
- Hannak, A., & Sapiezynski, P. (2013). Measuring personalization of web search. In *WWW '13 Proceedings of the 22nd international conference on World Wide Web* (pp. 527-538). Retrieved from <http://dl.acm.org/citation.cfm?id=2488435>
- Hargittai, E. (2007). A Framework for Studying Differences in People's Digital Media Uses. In A. Kutscher & H.-U. Otto (Eds.), *Cyberworld Unlimited* (pp. 121-137). VS Verlag für Sozialwissenschaften/GWV Fachverlage GmbH.
- Hargittai, E. (2010). Digital Na(t)ives? Variation in Internet Skills and Uses among Members of the "Net Generation." *Sociological Inquiry*, 80(1), 92-113. doi:10.1111/j.1475-682X.2009.00317.x

- Hargittai, E., & Hsieh, Y. P. (2011). Succinct Survey Measures of Web-Use Skills. *Social Science Computer Review*, 30(1), 95–107. doi:10.1177/0894439310397146
- Hargittai, E., & Young, H. (2012). Searching for a “Plan B”: Young Adults’ Strategies for Finding Information about Emergency Contraception Online. *Policy & Internet*, 4(2). Retrieved from <http://onlinelibrary.wiley.com/doi/10.1515/1944-2866.1176/abstract>
- Hargittai, Fullerton, Menchen-Trevino, & Thomas. (2010). Trust Online : Young Adults ’ Evaluation of Web Content °. *Journal of Communication*, 4, 468–494.
- Hargittai, & Hinnant. (2008). Differences in Young Adults’ Use of the Internet. *Communication Research*, 35(5), 602–621.
- Heidegger, M. (1962). *Being and Time*. (J. Macquarrie & E. Robinson, Eds.). New York: Harper and Row.
- Helsper, E., & Eynon, R. (2010). Digital Natives: Where is the evidence? *British Educational Research Journal*, 36(3), 503–520. doi:10.1080/01411920902989227
- Hennessy, J. (2014). The tech utopia nobody wants. *The Guardian Online*. Retrieved October 25, 2014, from <http://www.theguardian.com/commentisfree/2014/jul/22/the-tech-utopia-nobody-wants-why-the-world-nerds-are-creating-will-be-awful>
- Herring, S. C. (2007). Questioning the generational divide: Technological exoticism and adult constructions of online youth identity. In *The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning* (pp. 71–92). MIT Press. doi:10.1162/dmal.9780262524834.071
- Hitlin, S., & Elder, G. H. J. (2007). Time, Self, and the Curiously Abstract Concept of Agency. *Sociological Theory*, 25(2), 170–191.
- Hjorland, B. (2002). Epistemology and the socio-cognitive perspective in information science. *Journal of the American Society for Information Science and Technology*, 53(4), 257–270. doi:10.1002/asi.10042
- Hope Cheong, P. (2008). The young and techless? Investigating internet use and problem-solving behaviors of young adults in Singapore. *New Media & Society*, 10(5), 771–791. doi:10.1177/1461444808094356
- Howard, P. N., Rainie, L., & Jones, S. (2001). Days and Nights on the Internet: The Impact of a Diffusing Technology. *American Behavioral Scientist*, 45, 383–404.

- Hsieh, Y. P. (2012). Online social networking skills: The social affordances approach to digital inequality. *First Monday*, 17(4). doi:10.5210/fm.v17i4.3893
- Hulme, M. (2009). *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge University Press.
- Introna, L. D. (2007). Towards a post-human intra-actional account of socio- technical agency (and morality).
- Introna, L. D. (2009). Ethics and the Speaking of Things. *Theory, Culture & Society*, 26(4), 25-46. doi:10.1177/0263276409104967
- Introna, L. D. (2014). Towards a Post-human Intra-actional Account of Sociomaterial Agency (and Morality). In P. Kroes & P.-P. Verbeek (Eds.), *The Moral Status of Technical Artefacts: 17 (Philosophy of Engineering and Technology)* (Kindle Edi.). Springer Netherlands. doi:10.1007/978-94-007-7914-3_3
- Ito, M., Baumer, S., & Bittanti, M. (2010). *Hanging out, messing around, and geeking out. Digital ...* London: MIT Press. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/cbdv.200490137/abstract>
- Ivanitskaya, L., O'Boyle, I., & Casey, A.-M. (2006). Health Information Literacy and Competencies of Information Age Students: Results From the Interactive Online Research Readiness Self-Assessment. *Journal of Medical Internet Research*, 8(2). Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1550696/>
- James, A., Jenks, C., & Prout, A. (1998). *Theorising Childhood*. Cambridge: Polity Press.
- Jenkins, H. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century. Program*. The MIT Press.
- Jenkins, R. (1992). *Pierre Bourdieu, Key Sociologists*. London: Routledge.
- Johnson, D. G. (2006). Computer systems: Moral entities but not moral agents. *Ethics and Information Technology*, 8(4), 195-204. doi:10.1007/s10676-006-9111-5
- Johnson, R. (1993). Editor's introduction. In R. Johnson (Ed.), *The Field of Cultural Production: Essays on Art and Literature*. Cambridge: Polity Press.
- Jolley, D., & Douglas, K. M. (2013). The social consequences of conspiracism: Exposure to conspiracy theories decreases intentions to engage in politics and to reduce one's carbon footprint. *British Journal of Psychology*, 105(1), 35-56. doi:10.1111/bjop.12018

- Jones, C., & Binhui, S. (2011). *The Net Generation and Digital Natives Implications for Higher Education*. Retrieved from <https://www.heacademy.ac.uk/node/4011>
- Jones, C., & Czerniewicz, L. (2010). Describing or debunking? The net generation and digital natives. *Journal of Computer Assisted Learning*, 26(5), 317-320. doi:10.1111/j.1365-2729.2010.00379.x
- Kahan, D. M., Jenkins-Smith, H., & Braman, D. (2011). Cultural cognition of scientific consensus. *Journal of Risk Research*, 14(2), 147-174. doi:10.1080/13669877.2010.511246
- Kardash, C. M., & Scholes, R. J. (1996). Effects of preexisting beliefs, epistemological beliefs, and need for cognition on interpretation of controversial issues. *Journal of Educational Psychology*, 88(2), 260-271.
- Kata, A. (2011). Anti-vaccine activists, Web 2.0, and the postmodern paradigm - An overview of tactics and tropes used online by the anti-vaccination movement. *Vaccine*, 1-12. doi:10.1016/j.vaccine.2011.11.112
- Kellner, & Share. (2007). Critical Media Literacy, Democracy, and the Reconstruction. In D. Macedo & S.R. Steinberg (Eds.), *Media literacy: A reader* (pp. 3-23). New York: Peter Lang.
- Kelly, P. (2000a). The dangerousness of youth-at-risk: the possibilities of surveillance and intervention in uncertain times. *Journal of Adolescence*, 23(4), 463-76. doi:10.1006/jado.2000.0331
- Kelly, P. (2000b). Youth as an Artefact of Expertise: Problematizing the Practice of Youth Studies in an Age of Uncertainty. *Journal of Youth Studies*, 3(3), 301-315. doi:10.1080/713684381
- Kelly, P. (2003). Growing Up as Risky Business? Risks, Surveillance and the Institutionalized Mistrust of Youth. *Journal of Youth Studies*, 6(2), 165-180. doi:10.1080/1367626032000110291
- Kirkpatrick, G. (2008). *Technology and Social Power*. Palgrave Macmillan.
- Klaczynski, P. A., & Gordon, D. H. (1996). Self-serving influences on adolescent's evaluations of belief-relevant evidence. *Journal of Experimental Child Psychology*, 32(317-339).
- Klaczynski, P. A., Gordon, D. H., & Fauth, J. (1997). Goal-oriented critical reasoning and individual differences in critical reasoning biases. *Journal of Educational Psychology*, 89, 470-485.
- Klaczynski, P. A., & Robinson, B. (2000). Personal theories, intellectual ability, and epistemological beliefs: adult age differences in everyday reasoning tasks. *Psychology and Aging*, 15, 400-416.

- Kreuger, R. A., & Casey, M. A. (2009). *Focus Groups: A Practical Guide for Applied Research* (4th ed.). Thousand Oaks, CA: Sage.
- Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice*, 34(3).
- Lanham, R. A. (1995). Digital literacy. *Scientific American*, 273(3), 160–161.
- Lankes, R. D. (2008). Trusting the Internet : New Approaches to Credibility Tools. In *Digital Media, Youth, and Credibility* (pp. 101–121). MIT Press. doi:10.1162/dmal.9780262562324.101
- Lansdown, G. (1994). Children's Rights. In B. Mayall (Ed.), *Children's childhood: Observed and experienced*. London: The Falmer Press.
- Latour, B. (1999). *Pandora's hope. Essays on the reality of science studies*. Cambridge, MA/ London: Harvard University Press.
- Latour, B. (2005). *Reassembling the Social* (Vol. 7). OUP Oxford.
- Latour, B., & Woolgar, S. (1986). *Laboratory Life: The Construction of Scientific Facts*. Princeton University Press.
- Law, J. (1999). After ANT: Complexity, Naming and Topology. In J. Hassard & J. Law (Eds.), *Actor-Network Theory and After*. Oxford: Blackwell.
- Lawler, S. (2014). *Identity: Sociological Perspectives* (Kindle Edi.). Wiley.
- Lecomte, J. (2013). Beyond indefinite extension: about Bruno Latour and urban space. *Social Anthropology*, 21(4), 462–478. doi:10.1111/1469-8676.12044
- Lee, L. (2008). The Impact of Young People's Internet Use on Class Boundaries and Life Trajectories. *Sociology*, 42(1), 137–153. doi:10.1177/0038038507084829
- Legrand, T. (2014). The Citadel and Its Sentinels: State Strategies for Contesting Cyberterrorism in the UK. In T. M. Chen, L. Jarvis, & S. Macdonald (Eds.), *Cyberterrorism* (pp. 137–154). New York: Springer.
- Lesko, N. (2012). *Act Your Age! The Cultural Construction of Adolescence*. (Second Edi.). Oxford: Routledge.
- Lesko, N., & Talburt, S. (2012). A History of the Present Youth Studies. In N. Lesko & S. Talburt (Eds.), *Key Words in Youth Studies* (pp. 11–24). Routledge.
- Levin-Zamir, D., Lemish, D., & Gofin, R. (2011). Media Health Literacy (MHL): development and measurement of the concept among

- adolescents. *Health Education Research*, 26(2), 323–35.
doi:10.1093/her/cyr007
- Lewis, T. (2006). DIY selves?: Reflexivity and habitus in young people's use of the internet for health information. *European Journal of Cultural Studies*, 9(4), 461–479. doi:10.1177/1367549406069068
- LiPuma. (1993). Culture and the concept of culture in a theory of practice. In C. Calhoun, E. LiPuma, & M. Postone (Eds.), *Bourdieu: critical perspectives*. Cambridge: Polity Press.
- Littler, J. (2013). Meritocracy as Plutocracy: The Marketising of “Equality” Under Neoliberalism. *New Formations*, 80(1), 52–72.
doi:10.3898/NewF.80/81.03.2013
- Livingstone, I., & Hope, A. (2011). *Next Gen: transforming the UK into the world's leading talent hub for the video games and visual effects industries*. London. Retrieved from http://www.nesta.org.uk/sites/default/files/next_gen_wv.pdf
- Livingstone, S. (2007). Internet literacy: Young people's negotiation of new online opportunities. *The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning*, 101–122.
doi:10.1162/dmal.9780262633598.101
- Livingstone, S. (2009). *Children and the Internet*. Polity Press.
- Livingstone, S. (2010). Digital learning and participation among youth : critical reflections on future research priorities. doi:10.1162/IJLM
- Livingstone, S., Bober, M., & Helsper, E. (2005). *Internet literacy among children and young people: findings from the UK Children Go Online project*. London. Retrieved from <http://eprints.lse.ac.uk/397/1/UKCGOonlineLiteracy.pdf>
- Mackenzie, D. (1984). Marx and the Machine. *Technology and Culture*, (3), 473–502.
- Marx, K. (2011). *Economic and Philosophic Manuscripts of 1844*. Wilder Publications.
- Marx, K. (2012). *Poverty of Philosophy*. Digireads.com.
- Mason, J. (2011). Facet Methodology: the case for an inventive research orientation. *Methodological Innovations Online*, 6(3), 75–92.
doi:10.4256/mio.2011.008
- McKenzie, D., & Wajcman, J. (1999). Introductory Essay: The Social Shaping of Technology. In D. McKenzie & J. Wajcman (Eds.), *The Social Shaping of Technology* (Second Edi., pp. 1–26). Buckingham: Oxford University Press. Retrieved from

<http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Introductory+essay:+the+social+shaping+of+technology#0>

- McNay, L. (1999). Gender, Habitus and the Field: Pierre Bourdieu and the Limits of Reflexivity. *Theory, Culture & Society*, 16(1), 95–117. doi:10.1177/026327699016001007
- Menchen-Trevino, & Hargittai. (2011). Young Adults' Credibility Assessment of Wikipedia. *Information, Communication & Society*, 14(1), 24–51.
- Metaxes, & Graham. (2003). "Of course it's true, I saw it on the Internet!" Critical Thinking in the Internet Era. *Communications of the ACM*, 46(5), 71–75.
- Miller, C., & Bartlett, J. (2012). "Digital fluency": towards young people's critical use of the internet. *Journal of Information Literacy*, 6(2). Retrieved from <https://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V6-I2-2012-3>
- Morgan, D. K. (1997). *Focus Groups as Qualitative Research* (2nd ed.). Thousand Oaks, CA: Sage.
- Morrow, V. (2008). Ethical dilemmas in research with children and young people about their social environments. *Children's Geographies*, 6(1), 49–61. doi:10.1080/14733280701791918
- Morrow, V., & Richards, M. (1996). The Ethics of Social Research with Children: An Overview. *Children and Society*, 10(2), 90–105.
- Nash, R. (1999). Bourdieu, "Habitus", and Educational Research: Is it all worth the candle? *British Journal of Sociology of Education*, 20(2), 175–187. doi:10.1080/01425699995399
- Nations, U. UN Convention on the Rights of the Child (1989). Retrieved from <https://treaties.un.org/doc/Publication/MTD5G/VolumeI/ChapterIV/IV-11.en.pdf>
- Neagu, M.-I. (2013). *Decoding Political Discourse*. Palgrave Macmillan. doi:10.1057/9781137309907
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065–1078. doi:10.1016/j.compedu.2012.04.016
- Oblinger, D., Oblinger, J., & Lippincott, J. (2005). *Educating the net generation*. Educause. Retrieved from <http://digitalcommons.brockport.edu/bookshelf/272/>
- Ofcom. (2011). *UK children's media literacy*. Retrieved from <http://stakeholders.ofcom.org.uk/market-data-research/media-literacy/medlitpub/medlitpubrss/ukchildrensml11/>

- Panek, E. T. ., Nardis, Y., & Konrath, S. (2013). Mirror or Megaphone?: How relationships between narcissism and social networking site use differ on Facebook and Twitter. *Computers in Human Behavior*, 29(5), 2004-2012.
- Pariser, E. (2011). Beware online “filter bubbles.” Retrieved from http://www.ted.com/talks/eli_pariser_beware_online_filter_bubbles
- Parsons, T. (1959). The school class as a social system: some of its functions in American Society. *Harvard Educational Review*, 29, 297-318.
- Peck, J. (2010). *Constructions of Neoliberal Reason*. Oxford: Oxford University Press.
- Piketty, T. (2014). *Capital in the Twenty-First Century*. Harvard University Press.
- Pinch, T., & Bijker, W. (1984). The social construction of facts and artefacts: or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, 14(3), 399-441. Retrieved from <http://www.jstor.org/stable/285355>
- Pinch, T. J., & Bijker, W. . (1989). The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other. In H. T. and P. T. Bijker WE (Ed.), *The Sociology and History of Technology*. Cambridge, MA.: MIT Press.
- Poulter, S. (2013, March 9). “Cancer and premature birth fears linked to fizzy drink sweetener.” *The Daily Mail Online*. London. Retrieved from <http://www.dailymail.co.uk/news/article-2290544/Aspartame-Cancer-premature-birth-fears-linked-fizzy-drink-sweetener.html>
- Prensky, M. (2001). Digital Natives, Digital Immigrants, Part II: Do they really think differently? *On The Horizon*, 9(6), 1-9. Retrieved from http://eventos.unipampa.edu.br/seminariodocente/files/2011/03/Oficina-11-Prensky-Digital_natives_Digital_Immigrants-Part2.pdf
- Punch, S. (2002). Research with Children: The Same or Different from Research with Adults? *Childhood*, 9(3), 321-341. doi:10.1177/0907568202009003005
- Putnam, R. D. (2001). *Bowling Alone: The Collapse and Revival of American Community*. Simon & Schuster Ltd.
- Qvortrup, J. (1994). Childhood Matters: An Introduction. In J. Qvortrup, M. Bardy, G. Sgritta, & H. Wintersberger (Eds.), *Childhood Matters. Social Theory, Practice and Politics* (pp. 1-24). Aldershot: Avebury.

- Reay, D., Crozier, G., & Clayton, J. (2009). "Strangers in Paradise"? Working-class Students in Elite Universities. *Sociology*, 43(6), 1103–1121. doi:10.1177/0038038509345700
- Reay, D., David, M., & Ball, S. (2001). "Making a Difference?: Institutional Habituses and Higher Education Choice." *Sociological Research Online*, 5(4). Retrieved from <http://www.socresonline.org.uk/5/4/reay.html>
- Reckwitz, A. (2002). Toward a Theory of Social Practices: A Development in Culturalist Theorizing. *European Journal of Social Theory*, 5(2), 243–263. doi:10.1177/13684310222225432
- Reevell, P. (2007). Freedom as the web gets wilder. *British Journalism Review*, 18(2), 47–52. doi:10.1177/0956474807080946
- Rheingold, H. (2012). *Net Smart: How to Thrive Online*. MIT Press.
- Rhodes, J. (2012). The "trouble" with the "white working class": whiteness, class and "groupism." *Identities*, 19(4), 485–492. doi:10.1080/1070289X.2012.710548
- Robinson, L. (2013). Freeways, detours, and dead ends: Search journeys among disadvantaged youth. *New Media & Society*. doi:10.1177/1461444813481197
- Rose, N., & Miller, P. (1992). Political power beyond the state: problematics of government. *British Journal of Sociology*, 43(2), 173–205.
- Ross, J., & Bayne, S. (2011). "Digital Native" and "Digital Immigrant" Discourses. In *Digital Difference* (pp. 159–169). Sense Publishers.
- Rouse, J. (2004). Barad's Feminist Naturalism. *Hypatia*, 19(1), 142–161. doi:DOI: 10.1111/j.1527-2001.2004.tb01272.x
- Savage, M., & Silva, E. B. (2013). Field Analysis in Cultural Sociology. *Cultural Sociology*, 7(2), 111–126. doi:10.1177/1749975512473992
- Schäfer, M. S. (2012). Online communication on climate change and climate politics: a literature review. *Wiley Interdisciplinary Reviews: Climate Change*, 3(6), 527–543. doi:10.1002/wcc.191
- Schatzki. (1996). *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge: Cambridge University Press.
- Schatzki, T. R. (2000). Introduction: Practice Theory. In K. Knorr-Cetina, E. Von Savigny, & T. Schatzki (Eds.), *The Practice Turn in Contemporary Society*. Routledge.

- Schatzki, T. R. (2002). *The Site of the Social: A Philosophical Account of the Constitution of Social Life and Change*. Penn State University Press.
- Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology*, 82(3), 498–504.
- Schulz-Hardt, S., Frey, D., Luthgens, C., & Moscovici, S. (2000). Biased information search in group decision making. *Journal of Personality and Social Psychology*, 78(4), 655–669. Retrieved from <http://cat.inist.fr/?aModele=afficheN&cpsidt=1348464>
- Schwarz, J., & Morris, M. R. (2011). Augmenting Web Pages and Search Results to Help People Find Trustworthy Information Online. *Interfaces*.
- Scott, S. J. and S. (1999). Risk anxiety and the social construction of childhood. In Deborah Lupton (Ed.), *Risk and Sociocultural Theory* (pp. 86–108). Cambridge: Cambridge University Press.
- Selwyn, N. (2009). The digital native – myth and reality. *Aslib Proceedings: New Information Perspectives*, 61(4), 364–379. doi:10.1108/00012530910973776
- Shephard, G. (2014). State of the Nation 2014 : Social Mobility and Child Poverty in Great Britain Report Summary October 2014, (October).
- Shepherd, J. (2014). Cognitive science and threats to free will. *Practical Ethics; Ethics in the News*. University of Oxford. Retrieved May 11, 2014, from <http://blog.practicaethics.ox.ac.uk/2014/05/cognitive-science-and-threats-to-free-will/>
- Sieber, J. (1993). The ethics and politics of sensitive research. In C. Renzetti & R. M. Lee (Eds.), *Researching sensitive topics*. London: Sage.
- Silverman, D. (2006). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. (Third Edit.). London: Sage Publications.
- Simon, H. (1957). *Models of man: Social and rational*. New York: Wiley.
- Sismondo, S. (2011). *An introduction to science and technology studies*. Retrieved from <http://books.google.com/books?hl=en&lr=&id=TsEfNbMtSmoC&oi=fnd&pg=PT9&dq=An+Introduction+to+Science+and+Technology+Studies&ots=50XqbVAoAK&sig=0v4-PVY4ctJNCtFUDWBpVTM3G0A>
- Social media causing “narcissism epidemic” among teens. (2014). *The Daily Mail Online*. Retrieved from

<http://www.dailymail.co.uk/video/femail/video-1134584/Social-media-causing-narcissism-epidemic-teens.html>

- Southworth, B. (2014). A UK digital skills gap looms. *The Guardian Online*. Retrieved from <http://www.theguardian.com/media-network/media-network-blog/2014/aug/18/uk-youth-shortage-digital-skills>
- Spanier, G. (2014). Computer coding, design and entrepreneurship - are sorely lacking from most schools. *The Independent*. Retrieved October 24, 2014, from <http://www.independent.co.uk/news/business/analysis-and-features/computer-coding-design-and-entrepreneurship--are-sorely-lacking-from-most-schools-9116081.html>
- Springer, S. (2012). Neoliberalism as discourse: between Foucauldian political economy and Marxian poststructuralism. *Critical Discourse Studies*, 9(2), 133-147. doi:10.1080/17405904.2012.656375
- Stahl, B. C. (2006). On the Difference or Equality of Information , Misinformation , and Disinformation : A Critical Research Perspective. *Informing Science Journal*, 9.
- Stempel, C., Hargrove, T., & Stempel, G. H. (2007). Media Use, Social Structure, and Belief in 9/11 Conspiracy Theories. *Journalism & Mass Communication Quarterly*, 84(2), 353-372.
- Sterne, J. (2003). Bourdieu, Technique And Technology. *Cultural Studies*, 17(3-4), 367-389. doi:10.1080/0950238032000083863a
- Stewart, D. W., & Shamdasi, P. M. (1990). *Focus Groups: Theory and Practice*. Newbury Park , CA: Sage.
- Stewart, W. (2014). Ofqual to axe 24 GCSE and A-level subjects. *Times Educational Supplement*. Retrieved from <https://news.tes.co.uk/b/news/2014/06/03/ofqual-to-axe-24-gcse-amp-a-level-subjects.aspx>
- Swartz, D. (1997). *Culture and Power: The Sociology of Pierre Bourdieu*. Chicago: University of Chicago Press.
- Swidler, A. (2000). What anchors cultural practices. In K. Cetina, T. Schatzki, & E. Von Savigny (Eds.), *The Practice Turn in Contemporary Theory*. Routledge.
- Tapscott, D., & Williams, N. (2008). *Wikinomics: How Mass Collaboration Changes Everything*. New York: Atlantic.
- The Food Standards Agency. (2014). Aspartame. Retrieved July 2, 2014, from <http://www.food.gov.uk/science/additives/aspartame/#.U7PsYbEh1vE>

- The National Archives, T. N. (2012). The National Archives. Retrieved from http://www.nationalarchives.gov.uk/pathways/citizenship/struggle_democracy/childlabour.htm
- Threadgold, S. (2006). Habitus , Governmentality and Young People's Engagement with September 11. In *Australasian Political Studies Association conference Youth & Politics Stream University of Newcastle 25-27 September*. Retrieved from https://www.academia.edu/363747/Habitus_Governmentality_and_Young_Peoples_Engagement_With_September_11
- Thrift, N. (2005). *Knowing Capitalism*. Sage Publications UK.
- Van Deursen, a. J., & van Dijk, J. a. (2013). The digital divide shifts to differences in usage. *New Media & Society*, 16(3), 507-526. doi:10.1177/1461444813487959
- Van Deursen, A., Helpser, E., & Eyon, R. (2014). *Measuring Digital Skills. From Digital Skills to Tangible Outcomes project report. Conference of the International*
- Veen, W. (2006). *Homo Zappiens: Growing Up in a Digital Age*. London: Network Continuum Education.
- Wacquant, L. (2006). *Body & Soul: Notebooks of an Apprentice Boxer*. Oxford University Press.
- Wacquant, L. (2006). "Pierre Bourdieu." In R. Stones (Ed.), *Key Contemporary Thinkers*. London (pp. 261-277). London: Macmillan.
- Warde, A. (2004). *Practice and field: revising Bourdieusian concepts* (No. 65). Centre for Research on Innovation & Competition, University Manchester. Retrieved from <http://www.cric.ac.uk/cric/Pdfs/DP65.pdf>
- Warikoo, N. K., & Fuhr, C. (2013). Legitimizing status: perceptions of meritocracy and inequality among undergraduates at an elite British university. *British Educational Research Journal*, (1958), n/a-n/a. doi:10.1002/berj.3108
- Willis, P. (1981). *Learning to Labor: How Working Class Kids Get Working Class Jobs* (Morningsid.). Columbia University Press.
- Willis, P. (1983). Cultural production and theories of reproduction. In L. Barton & S. Walker (Eds.), *Race, Class and Education*. London: Croom Helm.
- Wyn, J., & White, R. (1997). *Rethinking Youth*. St Leonards: Allen & Unwin.
- Young, M. (1970). *The Rise of the Meritocracy, 1870-2033: an Essay on Education and Equality*. Penguin.

Zelizer, V. A. (1994). *Pricing the Priceless Child: The Changing Social Value of Children*. Princeton University Press.