NETMODERN:
INTERVENTIONS IN DIGITAL SOCIOLOGY

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ABSTRACT

The techno-economic grid of the Internet looks set to fulfil its autopoietic potentials as a global and multi-dimensionally immersive knowledge and memory archival network. This research project moves through a series of Digital Sociology case studies that mimic the changes in paradigms of the WWW from 2005-2010 in the forms of Web 1.0 to 2.0 and beyond to augmented reality and the cloud. Netmodern social theory is an emergent and speculative product of the research findings of this thesis and the subjective experiences of the researcher in experiencing and explaining digital realities in the research. All of the case studies employ practice-based approaches of original investigation through digital interventions completely immersed in particular waves of innovation and change. The role of the researcher shifts from administrator to mediator and observer as the very fabric of the social web transforms and evolves. The suggestion of the research findings is that you need to actually look at everything *differently* in order to study the research objects of emergent social agency and forms in digital media. Existing forms of critical analysis and methodological frameworks, particularly those concerned with conceptual models of media literacy or collective intelligence are insufficient as explanatory methods. Studying media literacy is most concerned with 'how' we create and interact in online social life beyond issues of simple accessibility. The focus of collective intelligence research is 'what' knowledge is available for interaction and a canvas for relationships between agency and knowledge forms. All of the case studies in this research project speak to and critique the intersections and relationships of emergent social agency and forms prevalent in Digital Sociology. The collective case studies explore online academic communities (BlogScholar), agency and popularity in the Twitter social network (Twae) and a variety of representations of collective intelligence in action (Web 2.0 cases studies). The research results suggest that the Internet is not so much *intersecting* with as it is *being* culture, economy, and technology.

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This thesis is dedicated to my parents for a lifetime of warmth and compassion. They taught me not to be afraid to reach out, in every act of life, for that which appears just beyond your grasp.

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CHAPTER ONE: INTRODUCTION

Existing models for interpreting social life like realism, materialism, idealism, or post-modernism are insufficient to describe and explain the results of digital research conducted in this thesis project. In 2002, Webster argued that it is not just the quantitative leap in digital information that creates an 'information society', but that "the character of information is such as to have transformed how we live" (9). This argument suggests we need to look beyond the standard sociological criteria of technological, economic, occupational, spatial, or cultural change to understand innovation and the impact of the Internet on society. From a structural perspective, communications on the Internet through the duration of this research project progressed from the 'web as platform' (Web 1.0) to the 'web as network' (Web 2.0) and beyond to suggesting various augmented or semantic versions of the 'web as metaverse' (Web 3.0?) seamlessly integrating virtual and offline worlds. But the integral reality worldview of *Netmodern*, the emergent theory of this research, suggests a relationship of equivalency for social life and being virtual. Netmodern theory is an emergent theory of Digital Sociology. As a critical paradigm of reality Netmodern is a response to the lack of interpretive methods for the realities encountered and investigated in this research project and is nothing less than an attempt to rethink particular aspects of social theory and methodology in light of the problem spaces opened up in the work. Just as road repair starts from a theoretical premise of material durability, in Netmodern theory the information society starts from theoretical premises of critical realism and the practical intersections of media literacy and collective intelligence present in digital communities in formation..

This research project or PhD is constructed of collective case studies on online academic communities (BlogScholar), agency and popularity in the Twitter social network (Twae) and a variety of representations of collective intelligence in action (Web 2.0 cases studies). The findings of the Twae and Web 2.0 case studies suggest underlying and intransitive methodological forms framing interaction in social networks while BlogScholar explores the formation and emergence of communities and common

interest. All investigate not just the character of information in the studies but also the emergent social agency and cultures of those transformed by the information. The formulation of Netmodern theory is not a quest for an all-encompassing theory of digital or social life but instead a response to inadequate analyses and causal accounts of the impact and emergence of being digital. Sociology has long been in the habit of jettisoning an integrated view of social life in favour of intersections. How does the Internet impact the economy, culture, or agency? Why should digital ICT be any different than the internal combustion engine or electricity as drivers for an industrial age? The common sociological explanation for the Internet sees it as the fabric of a techno-industrial paradigm with computing technology forming the 'information age' the way the steam engine ushered in a new industrial socio-economic reality (Landes, 1969; Naisbitt, 1984; Hall and Preston, 1988). The collective case studies in this research project contrast with this view and suggest that the Internet is not so much *intersecting* with as it is *being* culture, economy, and technology. This is not to suggest that analysis should begin with some framework promising a complete description of the Internet System as a means of understanding social life. Netmodern theory follows in the critical realist path of Archer when she suggests rigorous cultural analysis must open by examining the effects of internally holding ideas that complement or contradict other ideas rather than with the naturally anterior socio-cultural reasons for these being held (1996). So too must analyses of the impact of the Internet open with the inconsistencies, contradictions and complementariness of the Internet as social life. Not as a mirror of social life or a representation but as both the becoming and being of living in a digital age. Netmodern seeks to develop these ideas as an adequate framework and methodology for further exploring and investigating the conflations and contradictions of *digital* and *society*.

There are four primary ways that this research project intends to explore and investigate integral perspectives on emergent agency and forms in digital society. Each of these is theoretically informed by the literature review and methodology and corresponds to some aspect of the three data chapters in the thesis or the concluding chapter on Netmodern theory. First, the primary focus of the research is an exploration of practice-based **Digital Sociology**, not research on the *sociology of the digital*. One of the aims of

the research is to study community formation in the digital age so digital case study communities were formed as interventions in order to study the social dynamics of digital community formation. Central to this research agenda is the question of what can digital communities achieve for individual agency and as producers of shared knowledge. Two primary interventions were developed in the form of the BlogScholar and Twae case studies chapters as participatory action research on digital communities in formation. These interventions are presented in the context of the skills and knowledge required to formulate the communities (media literacies) and the resultant production of shared knowledge (collective intelligence). The theoretical methodological framework for these investigations is critical realism, allowing for discussion and analysis of the potential presence of structural mechanisms *and* subjective experience in the media literacies and collective intelligences of these emergent communities. The literature review reflects the depth of academic study of Digital Sociology and media literacy and collective intelligence independent of each other but the relationship between them or potential intersections are not addressed in the academic literature on the respective fields. From a common sense perspective it seems clear that for participation individuals and groups must *a priori* have the ability to participate. Studying media literacy is most concerned with 'how' we create and interact in online social life beyond issues of simple accessibility. The focus of collective intelligence research is 'what' knowledge is available for interaction and a canvas for relationships between agency and knowledge forms. These research findings suggest Digital Sociology is, at least in part, the practice of engaging with these intersections and overlaps between agency as literacy and form as collective intelligence. The final case study explores existing examples of interventions in media literacy and collective intelligence and what we can learn from these cases. All of the case studies in this research project speak to and critique the intersections and relationships of emergent social agency and forms prevalent in online digital media in an effort to illustrate some of the relationships between concepts of media literacy and collective intelligence. In a way this is akin to an effort of rolling up the 'how' and the 'what' into 'why' concern ourselves with these relationships. Netmodern theory reflects on the 'why' by exploring the potential value of emergent agency and forms in digital media to social development and aspirations for a global consciousness to match the global networks of interplay.

Second, the research develops a conceptual framework for the development of theoretically informed integral **Netmodern Performance Maps (NPMs)** that account for and builds on perspectives of reality and reliable knowledge presented in the methodology chapter of this thesis. NPMs are representations and manifestations of Digital Sociology through practice and analysis of digital community formation.

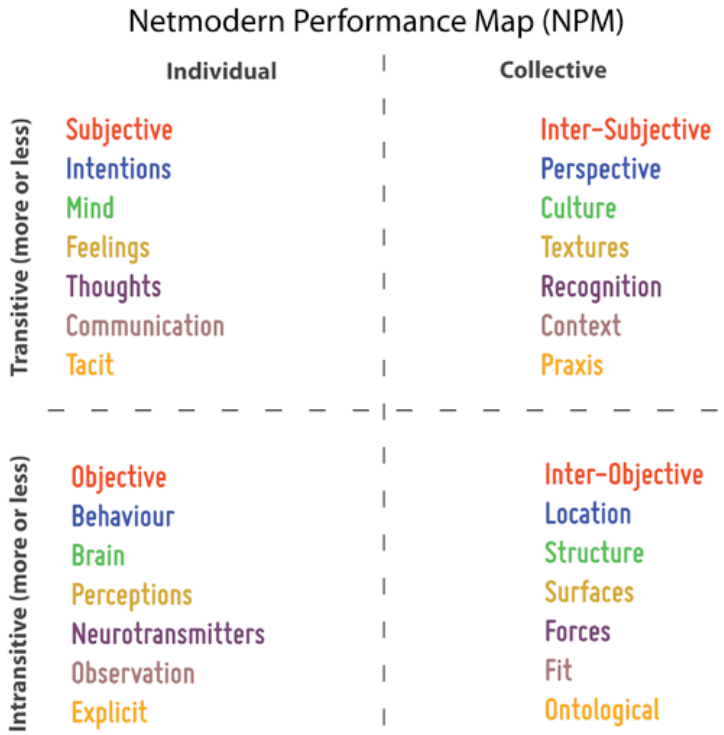

Figure 1: Netmodern Performance 'Map' (NPM)

NPM of territories of individual and collective transitive and intransitive realities.

Figure 1 is a theoretical Netmodern Performance 'Map' (NPM) developed in this research project and relating multiple interpretations of realty in an integral view. This type of mapping apparatus for reality was inspired by paradigm or system theorists like Wilber (2007), Habermas (1984), and Latour (2005). The irony of presenting a disembodied 'map' as a means of describing multi-faceted approaches to reality through pastiche is not lost on the researcher. As we shall see from the description, the approach of developing a map as representation of reality is a shallow and surface-oriented

structural view of the nature of reality. It belongs in the bottom-right quadrant of this particular map dominated by representations of structure and form. The excuse for this digression is the need to represent the various theoretical constructs of a Netmodern approach to reality with language. Like all maps, this one is a synergistic performance of the convergence of map, mapmaker, and territories. Unlike some maps, the mapmaker of this NPM is relatively aware of the partialities and subjectivities inherent in the processes of its construction. So with that *caveat lector* out of the way let us move on to the deconstruction of the referents in this NPM of approaches to reality. The top half of the grid represents the situated mapmaker and the corresponding transitive territories of subjective and inter-subjective idealist realities. The bottom half of the grid represents materiality and corresponding intransitive territories of objective and inter-objective realities. The left side of the grid represents agency and the individual while the right side represents collective social and cultural experience. In the bottom-left quadrant is *individual-intransitive*, representing the traditional empirical scientific map seeking simple location. This is home to physics, biology, neurology, chemistry and any of the other 'hard sciences' or scientists like Dawkins or B.F. Skinner that seek intransitive truths in nature. The top-left quadrant is *individual-transitive* representing consciousness, interpretation, intentions and communication. This area is focused on abstracted thought and meaning and mind-independence and might feature the research interests of Freud, Piaget and Buddha. The bottom-right quadrant is *collective-intransitive* representing techno-economic bases and geo-political structures that form the material base of paradigms and worldviews. Marx, Comte, Parsons would seek funding for research into this sector. Finally, the top-right quadrant is *collective-transitive* representing cultural worldspace and the vast majority of art and social science like Weber, Heidegger, and Foucault. This sector pursues texture and context as understanding of the histories and experiences influencing and governing what is, and can be, seen. All four quadrants have vectors of causal relationships with each other moving in all directions.

This mapping summarising the methodological approach to reality adopted by the thesis project presents a unique and exciting challenge in research. Technologically-mediated *communication* networks become technologically supported *social* networks when

linking people, institutions and knowledge into a form of collective intelligence (Wellman, 2001). This transition facilitates the promotion of human capital and encourages individuals to share as much of themselves as possible, intellectually and socially, into the internet-worked pool of collective intelligence. In this emerging world "each of us will be an individual producer (and consumer) of human qualities in a wide variety of markets or contexts, while no-one would ever be able to appropriate the means of production exclusively for their own use. In the economy of the future, capital will be the total individual" (Lévy, 1997: 34). This research project builds on this sentiment by establishing awareness of, and respect for, behaviour and agency in individuals and structure and culture in collectives. Intersecting these quadrants in the NPM are paradigms of subjective (transitive) and objective (intransitive) approaches to reality. This research stream directly builds on media literacy and collective intelligence as crucial factors in understanding emergent agency and forms in digital media, but not (never) the whole story. It is up to sociology to endeavour to fill in the blanks through critical reflections and efforts to make transparent and visible that which is unaccounted for in existing paradigms of digitised social life. Towards this end NPMs are presented in this research project for each of the case studies and discussed in detail in the Netmodern theory chapter.

Third, this research project extends beyond epistemology and theory into the **multiple and differentiated practices of collective intelligence and media literacies** in digital media. This is particularly prevalent in Chapter 6 exploring existing examples and cases of interventions resulting in community formations and beyond to lessons about media literacies and collective intelligence. The multiplicity of Digital Sociological representations of communities in formation suggests a challenge to the very practices of sociological inquiry in emergent forms and agency in digital social life. This approach is founded in the research paradigm by an approach of practice-based and participatory research as crucial 'keys' to unlocking some of the unknowns prevalent in collective interactivity on the Web. While this research does not discard the importance of studying what it means to 'know' media literacy and collective intelligence it is sympathetic to Serres' view that this theoretical approach often overcompensates for lack of practical capacity.

> Epistemology is merely redundant commentary when compared to scientific results. The place of commentary, of criticism, of judgement, of norms, even of foundations, is less plausible or interesting than the place of the thing judged or criticized. This is the reason for the uselessness of the reflexive loop. The repetitive always contains less information; this diminishes with every copy. Science is founded on itself and, therefore, has no need of external philosophy; it contains its own endo-epistemology, if I may use this term. So, does the philosophy of science simply provide publicity for scientism (Serres 1995a:128)?

Much of the work to date in these fields has focused on theorising on the causes and effects of digitally intermediated communications in society and more work is required on applications, particularly in quantifying media literacy and analyzing collective intelligence in action. This project explores emergent forms and agency in digital media directly by setting-up and operating a thriving interactive community of participants (BlogScholar in Chapter 4), participating and reverse engineering concepts of popularity and taste in social network interactions (Twae in Chapter 5), and surveying and exploring the incredible range and variety of conceptualisations of collective intelligence in the latest forms of digital media on the Internet (Web 2.0 collective cases in Chapter 6). The first two of these projects directly engages participants in the research methods and practices forms of intelligence by evolving in real-time with research findings and results. For example the Twae project research results initially suggested certain literacies as those most important for reverse engineering popularity in the Twitter network but these literacies changed as experiments and reflexive critique revealed alternate literacies gleaned primarily from live practice-based experience and methods within the collective intelligence of the engaged networks. It is a broader informal hypothesis of this project that social researchers investigating media literacy focus so much more attention on 'reading' or accessing the Internet than on 'creating' for the Internet because they are not equipped with the technical or tacit knowledge necessary to comprehensively explore what it means to 'write', for example to author or even actively participate in websites or communities of interest in a variety of forms on the Internet. Berners Lee defines interactivity as not just the ability to choose but the ability to create and solve problems together (Berners Lee, 2000:182/183). For the purposes of this research study, the researcher was equipped with and employed to

relative unique effect a particularly rich set of digital media knowledge and skills for investigating emergent forms in digital media.

Lastly, this research project will adopt an unashamed **humanistic perspective to conducting the fieldwork and analyzing the results**. It starts from a motivation and hypothesis that access to digitally intermediated technology can help improve lives and participation. This contributes to analysis of 'why' sociology need concern itself with the unique characteristics and qualities of emergent digital communities of social life. This notion of improving lives is open to the interpretation of subjective agency and culture and objective interpretations of structural forms and behavioural science that are held to exist whether we perceive them or not in our observations and experiences. This is reflected in the diversity of reality approaches in the NPM. This thesis also suggests a Netmodern theory of emergent agency and forms that are not reducible to their constituent elements. This irreducibility speaks to a big picture of social life in digital media that cannot be reduced to case study findings, even if we have billions of them. Nonetheless this recognition does not preclude – in many ways it encourages – basic recognition of values and consciousness in the 'system' of swirling media literacies and collective intelligence in social life. With increases in bandwidth and mission critical software active at the ends of networks corporate thought leadership has extended the Sun Microsystems metaphor that the "network is the computer" to the notion that "the network is the economy" (Sawhney, 2001). Billions of dollars are being poured in worldwide to squeeze economic value out of the emerging networked economy on behalf of shareholders, markets and the business community. This lobby will be dogged in achieving this narrow goal and insight is required into alternate goals and outcomes for the digital revolution (Lessig, 2001). As a young naturalist traveling the world Charles Darwin wrote in his journal: "If the misery of our poor be caused not by the laws of nature, but by our institutions, great is our sin" (Darwin, 1909). This thought resonates today as the networked economy becomes a modern pervasive global institution and vigorous efforts should be directed to examining how efforts can contribute to developing this still public, but increasingly privatized institution. Exploring and investigating the opportunities and constraints of digital social life is the domain of Digital Sociology. This is one of the direct ambitions of the three case studies

presented in this thesis and beyond to the evolution of the social theory defined in Netmodern. Darwin would approve of addressing critical issues so early in an evolution. His observation could be made of the networked economy: if it provides opportunities for individuals, families and communities to improve their lives but we ignore opportunities to promote application in this regard, great is our sin. The ongoing transformation of symbolic life through forms of digital media is intertwined with the production of new forms of politics, economics, and culture for the next generations. Sociology must advance its practices and investigative techniques to reflect this fundamental transformation in the canvasses of social life. The emergence of a rich landscape of personal and collective subjectivities expressed through emergent social agency and forms in digital media is creating, merging, extending and threatening social identity and interaction. Mills' argument that sociological imagination, quality of mind and critical thinking skills will lead to a better understanding of the world and ourselves is as relevant as ever through the digital spaces mediated by complex interactions founded on the access, analysis and creation of knowledge and ideas. We are challenged through the research analysis and findings of this thesis to develop and evolve a Digital Sociological Imagination for diligence of investigation and inquiry into emergent forms of digital social life.

CHAPTER TWO: DIGITAL SOCIOLOGY, MEDIA LITERACY, AND COLLECTIVE INTELLIGENCE

2.1 Introduction

The central research focus of this thesis investigates emergent social agency and forms in digital media. The form of investigation is Digital Sociology or the practice and processes of conducting sociological inquiry through digital interventions and digital research methods. This focus itself emerged from a sustained research exposure and intersection over the duration of the project with literature and academic research related to applying concepts of collective intelligence and media literacy to social life on the Internet. As described in the Netmodern chapter, this research accepts and endorses the trend towards universal access and relentless expansion of the network grid of the Internet around the world. While issues of the 'digital divide' between those who have and do not have ready access to the knowledge stores on the Internet remain relevant, the focus of the practice-based case studies and theoretical framework for this research is more vested in 'what is required for access' (media literacies) and 'access to what' (collective intelligence). As such these two concepts provide the foundation for the entire research exercise and dominate this literature review as the sources from which all the research findings and theory emanate. The purpose of this literature review is to reflect on the variety of definitions and understandings that exist for media literacy and collective intelligence and to investigate the contexts from which these contributions are sourced. Clear understanding of the historical literature and intellectual evolution of these concepts is required to interpret and understand the impact and relevance of the collective cases presented later in this thesis. This investigation ultimately further informed the project methodology and development of the Netmodern theory concluding the thesis. The strategy employed for relating this literature review to the case study and overall thesis findings is *forwards and backwards* where the literature cited in this review informs and positions the three case studies and

one theory chapter presented later in this thesis and vice versa. All of BlogScholar, Twae, Web 2.0, and Netmodern emanate from investigations into Digital Sociology through emphasis on the impacts and intervention results on collective intelligence and media literacy. This review focuses on UK literature but incorporates other international work if it relates to or reflects on alternate perspectives on the research scope of emergent social agency and forms in digital media. This is the result of the research project being based in London, UK and the tremendous scope of material available on the topic in this geographical domain providing sufficient grounding in the intellectual investigations of collective intelligence and media literacy. It concludes with thoughts on how this research project extends the existing literature and fieldwork conducted into media literacy and collective intelligence in the broader context of emergent agency and forms in digital media.

In professional and personal lives human beings form social relationships naturally through affinity, expertise, and network proximity. Many offline social networks form organically through shared interests, geographical location, and associated relationships. Sociology has formed a significant toolkit and set of methods for inquiry into these networks and relationships that help us form understanding about social forms and particulars. The rapid migration of social relationships on to online networks over the past 15 years has challenged our capacity to investigate and analyse social interactions and the formation of social ties and relationships. Digital Sociology is an emergent field of digital methods and ways of thinking developed particularly for exploring these emergent fields of social life. In practice Digital Sociology constitutes new forms of assessing, using, and analysing research instruments and methods for the collection, analysis, and presentation of quantitative and qualitative social data in relation to sociological problems. Sociologists deploying methods of Digital Sociology require practice-based technological skills and sociological competencies required to relate contemporary sociological theory, methods, and techniques. This knowledge and these skills have not typically been part of the competencies of sociologists with limited exposure to the multi-skilled technological framework of multimedia, computing, and critical theory required to practice as a Digital Sociologist. It is not a new field separate and apart from the discipline of Sociology as the primary goal of exposing and

investigating social life remains the paramount concern. Digital Sociology builds on the fundamentals of Sociology in a particular way that introduces new skillset requirements but also different ways of looking at the world through a digital lens. For example, a researcher trying to ascertain the social motives and justifications for rioting in the streets of an urban centre might position themselves in the region for s sustained period of time to explore ethnographic opportunities of understanding or conduct a vast survey of households or focus groups to reveal subjectivities and beyond to shared understandings that could illuminate motivations and histories implicitly or explicitly contributing to the social actions culminating in riots. These methods of inquiry are just as relevant today as in the history of sociological inquiries but technology has introduced new and emergent forms of digital social interaction that must also be explored and investigated in order to access the social. Most riots or acts of civil unrest are now organised and chronicled in near real-time in social networks like Twitter, Facebook, or Google+. Any attempt to inquire into the motivations of a riot that ignores or essentialises these interactions dismisses such a significant portion of the social life contributing to the actions and motivations for action as to potentially make the inquiry incomplete to the point of gross inaccuracy. But just as a sociologist has a particular toolkit for ethnographic inquiry that defines the inquiry as part of formal sociological discipline and inquiry, so too must a Digital Sociologist look beyond simple web searches and basic literacies to access the social at a deep and meaningful level. Typically this might involve developing a script in the programming languages of Python, Perl, or PHP to harvest and scrape vast swathes of social conversation into a corpus of documents to be tagged, filtered and sorted in the production of complex social data reflecting the robust and swirling social conversations online. An alternative is the use of social software packages designed to perform these functions and in may cases this level of superficial social inquiry may be sufficient to illustrate trends or reveal the otherwise invisible interactions bubbling beneath the surface of the Web. But as with any method, the deeper the literacy, the deeper the capacity to investigate social life. Software packages have inherent constraints in the functions they can perform and the forms of social data they produce. This is well understood by social researchers deploying NVivo to perform grounded theory or statistical packages like SPSS to perform regression analysis on data. The sophistication of a social researcher deploying

these software tools for sociological inquiry is limited by their knowledge of tagging, taxonomies and the metaverse for NVivo and mathematical and statistical competencies for SPSS. Similarly the Digital Sociologist cannot extend far into the world of digital sociological inquiry using software tools without underlying knowledge of the function of the scripts, algorithms, and methods forming the functions of the software packages and capacities with data to collect and analyse patterns of collective social behaviours (Lazer et al 2009). This is in effect a media literacy stack with the usability of the software packages at the top and the knowledge of the programming languages, data query methods, and assemblages at the bottom. The case studies in this research project reflect this approach to literacy by examining underlying skills and knowledge required to conduct the interventions that form the social communities that form the platform for social analysis of the case studies. It is equally necessary for social researchers to understand the historical formation of concepts like media literacy and the collective intelligence of compound social life on the Web in order to practice as Digital Sociologists.

Since 2001, the UK Government has had a statutory duty to "promote media literacy". There are a number of ways of interpreting and understanding the idea and this process inspires lively debate in the academy, policy makers and the public (Livingstone, 2004). There are a range of interdisciplinary stakeholders engaged in the discussion of defining media literacy including primary and secondary teachers, parents, sociologists, educational theorists, psychologists, language, cultural and media theorists, computer scientists, mass media and broadcasters, and a cacophony of voices on the Internet, primarily articulated through blogs and online social communities. A crucial problem for social researchers undertaking doctoral work is dealing in the *now* while most of the material and research you review is already outdated or speaks to a different socio-cultural time and place. This is particularly challenging in the context of a literature review as a comprehensive study of publications and ideas in a particular area of research. In an internetworked digitally intermediated world, how media literate do you have to be to participate and possibly translate human potential into actual results? Are these skills universal or dependent on cultural and/or social context? Can media literacy skills promote individual abilities to contribute to and draw out of a networked

collective intelligence, defined by technologist and philosopher Pierre Lévy as "a universally distributed intelligence that is enhanced, coordinated, and mobilized in real time"? (Lévy, 1997: 16) This research project responds through the BlogScholar study that examines the unique skills and attitudes of academics exploring the frontiers of informal academic publishing on the Internet in communities of like-minded scholars. The Twae case study explores some of the changing dynamics of intersecting literacies and collective engagement in social networks while the Web 2.0 chapter directly engages the tremendous variety of emergent forms of collective intelligence on the Web.

The central focus of these emerging areas of research is the impact of grid computing for the human brain (our know-how repositories) connecting with our inter-networked information collections (our know-about repositories) to open possibilities and improve lives. One premise of all these cases is that we require a new framework for understanding literacy in an increasingly digitally intermediated world and that investigating the possibilities in this regard through case studies and practice-based research will provide a foundation for creative agency and abilities to access the wealth and depth of knowledge digitally stored (the collective intelligence) in structural forms of inter-network and techno-economic grid.

2.2 Sociological Relevance

Contemporary sociologists are in the relatively unique position of both professional observation and participation in the birth of a powerful new form of interconnected media. It is not the first communications revolution and is unlikely to be the last but investigating it involves core research tenets of ethics, theory, and practice. Sociological research methods like digital ethnographies, scraping social network data, historical archival research, statistical modelling, focus groups, interviews and theory are increasing online (Hargittai, 2009). The World Wide Web (Web) is not only an object of study for researchers; it is a field of study equivalent to offline social interaction. The opportunities and variety of real-time interactions and negotiations available to social researchers demand a real-time response. Information technology is bringing the

observer/observed relationship closer and blurring formal research boundaries. The truly 21st century sociologist has online skills, tacit knowledge and comfort moving across and within online and offline territories. As new ideas emerge new fields of research study open for sociological inquiry.

In the *Sociological Imagination*, Mills states the rationale for the acquisition of the critical thinking skills that form the basis for understanding in general but apply directly to the rationale for the development of media literacy. He argues that through developing a quality of mind that forms lucid summations of activities in social life we can better understand the world and ourselves (Mills 1959). He aspired to "have a chance to make a difference in the quality of human life" through exploring the structure, shape, drift and meaning of human society (Ibid:226). Striving to theoretically, conceptually and technically understand media literacy and collective intelligence can help sociologists understand the structure, shape and drift of human society in a digitally intermediated world. It is crucial not to over-simplify the elements involved in human-computer interaction as Serres illustrates with his reference to *interface*.

> Have you noticed the popularity among scientists of the word *interface* – which supposes that the junction between two sciences or two concepts is perfectly under control, or seamless, and poses no problems? On the contrary, I believe that these spaces *between* are more complicated than one thinks. This is why I have compared them to the Northwest Passage, with shores, islands, and fractal ice floes. (Serres 1995a:70).

Beyond the technology Serres reflects on how communication through these fractal floes, like filtering disassembled and reassembled information as a node in a network society, is dependent on the ethics of the messenger, whose job it is to receive, translate and send messages through multiple interfaces (Castells 2001). The problem of disappearing as oneself to give way to the message itself is the ethics of the messenger through form, like the body, transformation, like industrial practices, and information, which is volatile and constantly assembled and dissembled in multiple forms. He suggests the conceptual example of angels as that ephemeral shape through which messages are communicated and that the reason for why angels are invisible to the

human eye is that they are disappearing to let messages pass through them (Serres 1995). In the methodology chapter of this thesis the concept of applying philosophies of quantum mechanics to social theory is introduced as a useful means of expanding social scientific approaches to theoretical approaches to reliable knowledge and reality. Just like Serres' angels, photons dance in and out of measuring tools, sometimes disappearing just as the crucial experimental results are expected to materialise. As human beings we embody our literacies and attempting to distinguish zones of literacy in our broader social and communications toolkit for interacting can be like finding the message but missing the angel. But pursuing tangible interpretations of media literacy helps articulate the broader implications of participating in digitally intermediated society.

Ofcom has defined media literacy as "the ability to access, understand and create communications in a variety of contexts" (Ofcom 2004). In a review of media literacy literature for Ofcom, Livingston found that in relation to new media there was a good deal of research and debate about the issue of *access*, much less on the area of *understanding*, and least of all on *creation* (Livingstone 2005). None of these can be detached from the social and pedagogical relationships that surround contextual and subjective interaction with digital media. In his theoretical framework that treats literacies in the plural as social practices, Brian Street studies how media literacies vary with cultural and social context. This research focuses not so much on skill acquisition or the technical interaction of media and person but rather on what it means to think of literacy as a social practice (Street 1984, Street 2003). Through the advent of the Semantic Web and Web 2.0, the World-Wide-Web (WWW) is developing into a fully operational computing platform serving intelligent applications sharing and communicating knowledge that can be understood by both users and computers. This has important consequences for discussions on the meaning of media literacy. Researchers are interested not just the literacy of users but the literacy of the web itself in the form of search engines, intelligent agents and algorithms. Others explore the potential of ICT-based literacy tools through a developing focus on the use of symbols by people with learning disabilities to increase the possibilities of them having a more inclusive role in society (Abbott 2006). Livingstone and Buckingham research how

children interact with digital media, often noting how they adjust to the constraints apparent in an information retrieval tool, effectively aware of the literacy issues of the technology (Livingstone 2003, Buckingham 2005).

The research indicates multiple interacting factors can provide barriers to adult media literacy including age, socio-economic status, gender, disability, ethnicity, proficiency in dominant languages. But there are also a number of enablers that can make it easier for adults to acquire proficiency in media literacy including the design of interfaces, adult education, public awareness, participation in social networks engaged with media, and enhancing the perceived value of media literacy. While the Ofcom definition of media literacy is gaining dominance as an accepted definition of the term in the UK there are multiple special interests with a stake in further defining what it means to be able to access, analyse and create. For example the advertising industry has an interest in blurring distinctions between *citizens* and *consumers* so that the media literate may better *understand* advertising materials (Gandy 2002). Equally grassroots activists and special interest campaigners are working to connect a media literate population, particularly children, and informational campaigns to reduce the likelihood of adopting smoking, unsafe sexual practices or alcohol. Parents are also concerned with how media literate children might be put at greater risk as a result of their proficient literacy and engage in communications or risk that can lead to sexual abuse or adoption of unsafe behaviours (Palmer 2004).

Digital Sociology builds on a long history of sociology investigating the impact of people interacting with electronic media. For Durkheim point-to-point media like the telephone reinforced solidarities between individuals while broadcast media yields powerful collective representations (Alexander, 1988). Weberians view broadcast media as reinforcing and providing the elements of distinct status cultures while point-to-point communication advances rationalisation by reducing limits to time and space (Collins 1979). Marxists view media as promoting the power of the powerful and as an instrument for enhanced surveillance and control of production and politics through cultural hegemony (Schiller, 1996). Autonomist Marxism emphasises cyclical struggles between capital and labour to view digital culture as a social contest reinforcing class

conflict and occurring inside the technology itself. While new forms of communication and access to knowledge hold promise for the actualisation of hopes for new social orders the need still remains to break through the limitations imposed by capital on human development (Dyer-Witherford 1999). A Marxist critique of a networked world of knowledge and information can be summarized as follows. The world is an abstraction through the lens of media technology. Manufactured needs drive the creation of new technologies resulting in all surfaces and no depth. The myths of lifestyle capitalism encourage people to adopt artificial roles like consumer, patient or worker (Degrandpre 2001).

Rifkin describes the differences between the modern and the postmodern as fuelled by the new media explosion of interconnected information.

> What makes the Postmodern Age so very different from the Modern Age? The simple but complex answer is to be found in the fact that the Postmodern Age is bound up in a news stage of capitalism based on commodifying time, culture, and lived experience, whereas the former age represents an earlier stage of capitalism grounded in commodifying land and resources, contracting human labor, manufacturing goods and producing basic services" (2001:188).

Technological determinists like McLuhan suggest that structural features of new media induce social change and "to high speed change no adjustment is possible. We become spectators only and must escape into understanding" (1960). Critical theorists like Habermas problematise the effects of technological change on society by suggesting that electronic media contributes to the refeudilisation of society where the lines of state and society are blurred and rational critical debate is replaced by leisure, leading to citizens becoming consumers (Habermas, 1989). In *Manifesto for Cyborgs* Haraway argues "for pleasure in the confusion of boundaries and for responsibility in their construction" (1985:66-67).

More recently Castells has argued that technological systems are socially produced and social production is culturally informed and "the Internet is no exception". Crucially for the concept of media literacy he draws a distinction between the producers/users and the consumers/users of the Internet but caveats that these distinctions may only be relevant

"in the present stage of global diffusion of the Internet" (Castells 2001:36). Castells argues that social life is in the midst of epochal change through the *information age* starting in the late 20th century giving rise to an emerging global *network society*. This theory of society rails against intellectual nihilism, cynicism and scepticism to promote rationality, meaningful social action, transformative politics and liberating identity while navigating around the typical critiques of these views as worshipping reason, dreaming of utopias, or promoting rampant individualisation (Castells, 1996, 1997, 1998). The network society is a place characterised by flows of information, capital and culture that order and condition production and consumption. Castells took 14 years to write his defining three-volume exploration of economy, society and culture in an attempt to generate a conceptual framework for social life in the spirit of Marx's *Capital* or Weber's *Economy and Society*. Critics of Castells ask if this framework actually describes the whole substance of society or simply forms a mode of organisation and structures for modern social activity and relations (van Dijk 1999, 2006). This was a particularly relevant critique as Castells' classic trilogy of works investigated theory and empirical evidence for a global transition from and industrial to an informational society from an inherent structural perspective. His most recent book *Communciation Power* proposes theories of shifting power dynamics in media through intersections of mass broadcast forms and user-generated collective intelligence on the Internet. This text inspired aspects of the Twae case study of power as relationships, or the classically inferred amassing of *social capital*. Most critically it suggested that autonomous construction of meaning in society can only be sustained for future generations through preserving the commons of communication networks (Castells, 2009).

Barry argues that we do not live in a network society but have instead come to "inhabit worlds within which the concepts and technologies of networking and interactivity have come to dominate our sense of possibility" (Barry 2001:214). For him science and technology involves two kinds of spaces: sites of calculation and zones of circulation. Sites of calculation are localised places of observation, monitoring and experimentation that are connected together through zones of circulation formed when technology and socio-political practices are connected. But it is very difficult to apply this notion to digital media where social networking promotes borderless sites and the politics of the

establishment of zones is physically represented through the configuration of the multiplicity of networks in the internet-work. When Barry wrote these thoughts only one in eight global and mostly western citizens were connected to the Internet and so it may simply be that the dominant cultural ethos of those online in 2001 was rooted in the historical traditions that have produced the political negotiations that form the zones in Barry's theory. The introduction of the Netmodern chapter speaks directly to the incredible statistical and geographical transitions underway in global Internet access but for the purposes of this review it is useful to note that by 2010 nearly one in five global citizens have daily Internet access with the largest allocation of online users in Asia and the fastest growing regions in Africa and Latin America. It would be a useful research exercise outside the scope of this project to follow up on Barry's findings 10 years later to see the status of 'sense of possibility' around the world as it relates to their participation in the collective intelligence of Internet social life. From the findings of this research project the vast and shifting distribution in geographical access by academics and those interested in the informal publication of intellectual materials on the Web is reflected directly in the BlogScholar.

An extension of this debate in current sociological theory is if there really is anything *new* about new media. An early common academic critique of the Internet is that it is just another tool for western and developed economies to impose a view of social, cultural and economic order on people in other parts of the globe (Lemert, 2002:53). From this perspective the Internet is viewed as a powerful colonising force, using language (primarily english), commerce (online trade and transaction), and advantages in communication technologies (bandwidth, access, ownership) to thrust and impose views, actions and perspectives on others through dynamics of power, prestige and wealth. But recognising the existence of these elements of social interaction does not absolve humanity from action: "We do indeed live in a world of great uncertainty and risk, yet these are for the most part socially manufactured risks. They are part and parcel of conditions to which we all contribute: consequently we all have a shared responsibility to try and do something about them." (Slevin 2000:233) But again the shifting demographics and statistical distributions of Internet users significantly impacts the relevance of this argument to online social agency and forms in 2010. In an

interesting turn, this debate may regain relevance from a different perspective as Asia, particularly Internet users in China and India come to dominate the global aggregation of online information and power.

To do something about the socially manufactured risks Slevin describes may require a move beyond ideological critiques of the information age to an admission that in a network society, the digitisation of all forms of information and life leave no room for reflexive escape to ponder and analyse from the outside. Appadurai suggests that understanding meaning and significance is more about exploring things themselves than examining how human attributes, transactions, negotiations, and motivations endow things with meaning. To understand human and social context we need to look at things-in-motion as value is embodied in commodities that are exchanged. He suggests that commodities, like people, have social lives (Appadurai 1986). Lash extends this by arguing for recognition of the possibilities of *information critique* that comes from inside the information itself and is not reliant on transcendental spaces for reflection. In the open and cybernetic systems of the information age "the question is not so much what does it mean but how does it work" (Lash 2002:216). Summarised it is that social life and the symbolic work through meaning but networks and the real function through operationality. Crucially this form of information critique is "non-judgemental" like conceptual art without aesthetic or judgement. Difference becomes indifference, information becomes disinformation and the signified, stripped of its relationship to the signifier is the unit of flow. We can no longer focus energy on instrumentality and finalities while remaining indifferent to flows of information and communication. In these flows the units of signified are the material forming the nature of the information age.

Critical to this project is the concept of access, analysis and understanding in a digitally intermediated world. But Lash's theory transfers the notion of understanding from meaning to operation. If we think of sociological representations as something *representative of what it actually is* we are often referring to media like written text, images, audio and video. These are the objects of sociological knowledge (Bourdieu, Chamboredon et al. 1991; Bourdieu and Wacquant 1992). Specifically for media

literacy the question is if new media requires new forms of literacy and understanding of literacies, or to what extent these are simply an extension of existing forms. French philosopher Michel Serres problematices what constitutes something *new* in his conversations with Bruno Latour. Serres examines a late-model car and discusses how each scientific and technical component can be dated to different periods in history and that only the assemblage through its design, finish, and surrounding advertising is contemporary (Latour 1995:45). This theory applies to the information age in the sense that many of the communication forms and social practices involved in internet-worked societies are familiar and can be similarly dated to historical periods and only the assemblage in the form of the internet itself is unique and contemporary. Media literacy is the ability to access, analyse and understand information processed through this assemblage.

Finally through reflecting on recent literature published about internet-worked communications there are multiple practical reasons why the topic of this research study is timely, necessary and useful to advance research and understanding of digitally intermediated sociology. In a 2001 Annual Review of Sociology paper *Social Implications of the Internet* leading US sociologists investigating social interactions with the WWW suggest there are three key reasons that makes the social implications of human interaction with new digital media unique and of interest to social scientists. These reasons appear as relevant in 2010 as when they were authored. First, it offers sociologists a “once-in-a-lifetime” opportunity to explore technology diffusion and media effects during the very early stages of the institutionalisation of a new medium. Second, the Internet offers unique opportunities for media research because it involves different modalities of communication (interactive communication, information retrieval, group social interactions, interaction between man and machine) and different forms of multimedia (text, images, audio, video, animation). They suggest that this “renders plausible claims that the technology will be implicated in many kinds of social change, perhaps more deeply than television or radio”. Third, that regulatory, economic, and legal forms are emerging that will strongly impact the technical and normative structure of the Internet for the foreseeable future. These forms assume behavioural

assumptions about the interaction of people and the Internet and should be based on more than guesswork (Dimaggio et al, 2001).

This movement to extend beyond guesswork, fear of the technological unknown, and real meaningful social engagement with digital social life is the domain of Digital Sociology. Sociology has struggled to keep up with the rapid transformations in digital social life despite an upsurge in research on social networks and related digital social life (Boyd & Ellison, 2007). Most of the existing research has focused on how people are integrating digital social life into their overall social lives (Jones et al 2008, Steinfeld et al 2008, Tong et al 2008, Ross et al 2009) but this is really just further exploration of the sociology of he digital, as opposed to deploying the practices of Digital Sociology as methods of digital inquiry into social life. Another robust strand of research is into the relationship between the systematic use intensity of social networks and online tools and other aspects of social life like employment prospects, academic performance, or educational pedagogy (Kolek & Saunders 2008, Sigman 2009). Alternately researchers can explore core social concepts like the implications of gender on communicative uses of ICTs where patterns emerge like men using digital social networks for 'weaker-tie' activities like meeting new people online while women tend to use these systems for 'stronger-tie' activities like keeping-in-touch or strengthening existing relationships (Weiser 2000, Boneva et al 2001, Hargittai et al 2010). All of these can be classified as the sociology of the digital as they explore how people are using emergent digital technologies instead of the researcher employing emergent digital technologies as a primary research method for sociological inquiry.

Digital Sociology is not yet an established field of research. It is a contested and fluid term representing a multiplicity of meanings. Early stage research use of digital technologies is fledgling but gaining popularity as researchers seek new and more sophisticated ways of accessing digital social life. Murthy argues that researchers cannot afford to ignore these trends but even the focus of a sweeping academic paper surveying opportunities in 2008 reflects in the challenges as it limits its survey of emergent digital ethnographies to blogs, online video, social networks, and online questionnaires (2008). As some of the emergent technologies discussed in Chapter 6 like Augmented Reality, Crowdsourcing, or Gold Farming gain market share and popularity the skillset will need

to evolve accordingly. It is clear that traditional peer review publishing methods are insufficient to document or transfer knowledge about emerging digital sociological trends and techniques as the landscape consistently changes by the time the knowledge is made available in the public domain. It means a significant rise in the need for more immediate and informal publishing mechanisms for academics relating to these emerging fields as reflected in the BlogScholar case study documented in Chapter 4. The most significant advances to-date have focused on emergent digital social research methods, particularly at the Digital Methods Initiative at the University of Amsterdam (Rogers 2010, Niederer & van Dijck 2010). These digital social research programmes have to-date limited themselves to analysing 'backwards' in histories to produce academic sociology. By developing a series of fairly naïve tools for analysing digital social life, these reflective practices open themselves up to being reverse engineered, optimised, or 'gamed' by those with more sophisticated computing science skillsets. This thesis project is more orientated towards the practices of street Sociology in the spirit of 'bootleg' sociology practiced by youth workers, urban planners, or architects seeking to use sociology to address a question they are looking to answer. In this way it is unclear if the future development of Digital Sociology will even originate from self-identified professional sociologists or a matrix of personalities concerned with finding answers in digital society that have evaded them in more traditional practices inside and outside the traditional domains of sociological inquiry. For the purposes of this research project Digital Sociology is predicated on a firm understanding of the media literacies that make up its practices and the collective intelligence of the digital societies where we investigate social phenomena. In contrast to Digital Sociology the concepts of media literacy and collective intelligence have a relatively long history of exploration and amplification in academic research. This Netmodern research project roots its explorations of Digital Sociology interventions and community formations in a foundation of media literacy and collective intelligence that provides a relatively stable platform from which to explore the fluid and constantly shifting boundaries of the field of Digital Sociology.

2.3 Media Literacy

Media literacy is a contested term in academic literature. It is a concept that intersects with theory in multiple disciplines and is applied in multiple contexts. In *Theory of Media Literacy: A Cognitive Approach* Potter cites over 20 definitions for the term (Potter 2004). Debate rages over whether media literacy is an individual act constituting skills and aptitudes and/or a social or cultural practice informed by context. In the Spring of 2006 Ofcom published a six report audit on the extent of media literacy in the UK population involving thousand of interviews with UK citizens to examine the views and experiences of different groups – children, adults, the elderly, disabled, ethnic minorities – from different nations and regions of the UK (Ofcom 2006a). Findings include that nearly half (48%) of children aged 8-11 and two-thirds (65%) of children aged 12-15 use the internet at home (Ofcom 2006b). A key reason for people getting the internet is to access information, but there are many other reasons. Nearly three-quarters of internet users use email at least weekly. Levels of concern about internet content are higher than for other platforms, and concerns over entering personal details are prevalent. Age is a significant factor in media literacy. Over 65s have significantly lower levels of media literacy than other age groups. The research shows that amongst older people lower usage is partly attributable to a perceived lack of need for new digital services. The use of the mobile as a 'memory device' to look back at stored texts and pictures is commonplace for all age groups (Ofcom 2006a, 2006b, 2006c, 2006d, 2006e). Take-up and usage of digital platforms among minority ethnic groups is higher than the UK average, partly because minority ethnic groups are younger than the UK population as a whole. In comparison to all UK adults under 65, disabled people aged under 65 watch more TV, listen to more radio, and use the internet and mobile phones to a similar extent (Ofcom 2006f).

In May, 2006 as a contribution to this research project, different representations of media literacy in the media were analysed through Nvivo in a formal but limited snapshot of the top ten search results in Google Scholar, multiple tagged blogs through Technorati and mainstream media news through Google News. This kind of analysis is representative of the speed and accessibility of real-time information available to

sociologists in conducting preliminary studies of research topics. Twelve different representations were found in the 30 documents.

- Access: Issues of accessing digital media, like for example the relative diffusion of bandwidth and how this relates to challenges of media literacy
- Creative: The creation of digital media, typically in the form of multimedia, video games or interactive content
- Critical Analysis: A substitute for the term “understanding”. Can a user critically analyse digital media in the interests of understanding a potentially multiplicity of meaning embedded in the media.
- Defining: Continued attempts to create awareness of how media literacy has not yet secured an accepted definition and some of the complexities involved in undertaking attempts to complete or advance this task.
- Health: Using media literacy to promote better health care and advance preventative care
- Ethics: Media literacy as a vehicle for discussing and analyzing ethical practices in society
- Gender: Addressing imbalances in social practices related to gender through media literacy.
- Democratic: Advancing democratic possibilities through enhanced media literacy
- Pedagogy: Specific techniques for incorporating or using the concept of media literacy to advance educational principles and techniques
- Parenting: Considerations for parents regarding media literacy
- Empowerment: Providing individuals with knowledge of media literacy to open opportunities and improve lives
- Advertising: Addresses the commercial potential or opportunity to promote the spread of targeted digital media propaganda through promotion of media literacy.

The primary finding was that media literacy is a ‘loaded’ term open to countless definitions and interpretations, some only slight variations of others, by multiple organizations, industries and individuals citing the term. In such cases Kress encourages

us to ask whether there is after all some difference, whether it is because the term is approached from different perspectives or the word is not expansive enough to describe the multitude of variations (2003). Academic research into the field can focus on literacy as emerging from history, experience and culture of immediate environments and/or appropriating the skills, codes and cultures of multiple spheres to transcend local environments and realize potential and ambition. This literature review focuses on media literacy as a complex combination of these concepts as stated by theorist of education Paulo Freire.

> First, I think consciousness is generated through the social practice in which we participate. But it also has an individual dimension. That is, my comprehension of the world, my dreams of the world, my judgment of the world – all of these are part of my individual practice; all speak of my presence in the world. I need all of this to begin to understand myself. But it is not sufficient to explicate my action. In the final analysis, consciousness is socially bred. In this sense, I think my subjectivity is important. But I cannot separate my subjectivity from its social objectivity (1987:47).

Following public consultation in 2004 Ofcom adopted the following definition of the term: "Media literacy is the ability to access, understand and create communications in a variety of contexts" (Ofcom's strategy and priorities for the promotion of media literacy 2004). Compare this to the UNESCO definition of literacy in the 1960s: " … the process and content of learning to read and write to the preparation for work and vocational training, as well as a means of increasing the productivity of the individual." (Verhoeven 1994:6) Though you could hardly blame them for their lack of foresight in anticipating the communications revolution of new media[1], it wasn't always clear in the UK that media, information or technological literacy were an important component of social and economic participation. In the 1970s The Council for Education and Training (CET) forecast that "microelectronics itself will be a new industry, and may others or reshaped industries will emerge dependending on microelectronics, but their requirements will be for investment capital and for limited numbers of highly qualified staff" (CET 1978:5).

[1] See Bill Gates, 1993: "The Internet? We are not interested in it."

From this initial focus on the political economy of workplace training emerged recognition that media literacy is an issue relevant to any and all UK citizens. Currently the UK Government through Ofcom has a statutory duty to "promote media literacy" and in the Communications Act (2003) this responsibility was formally stated as developing public awareness and understanding of:

- The nature and characteristics of material published by electronic media;
- The process by which materials are selected and made available;
- The systems by which access to materials is or can be regulated;
- The systems by which the public may control what is received.

Historical and contemporary debates on traditional print literacy (Kintgen 1988) have undergone a Marshall McLuhan like *extension* into the realm of multimedia and networked communications. While academics explore the ramifications of literacy in the 21st century, agents of economic growth in the context of a burgeoning knowledge economy recognize the importance of literacy to global growth. The definition of literacy from an OECD International Literacy Survey ties together the capacities of literacy with personal ambition

> Literacy is the ability to understand and employ printed information in daily activities, at home, at work and in the community – to achieve one's goals, and to develop one's knowledge and potential (OECD 2000).

In some literature the importance of media literacy as an element of sustainable development, democracy and participation is stressed. Rassool argues for the concept of a *communication competence* as a necessary pre-requisite to participating in the democratic process in digitally intermediated society (Rassool 1999). Mansell sets the stage for media literacy as a human right issue (Mansell 2001) by examining if cognitive capacities and the ability discriminate between different choices can be classified as what Nobel Prize winning economist Amartya Sen terms *entitlements* (Sen, 1999). In the very early days of the public Internet many academics and analysts got caught up in the euphoria, later criticized as techno-utopianism, of the emerging interconnected technology. The primary theme was that there was an urgency of

response required from academia to the emerging and impending revolution in digital communications.

> Did you ever know the childhood conundrum of working for a penny a day for a month, but doubling your salary each day? If you started this wonderful pay scheme on New Year's Day, you would be earning more than $10 million per day on the last day of January … When an effect is exponential, those last three days mean a lot. We are approaching those last three days in the spread of computing and digital communications (Negroponte 1995:5).

Hawisher critiques the concept of sophisticated inter-connected networks promoting democracy and transcendence of geopolitical boundaries and borders as a utopian and ethnocentric narrative (Hawisher 1999:2). She introduces 10 case studies from around the world to explore a variety of literacies in a variety of sociocultural contexts. In the case study findings hip-hop fans in America go online and preserve the images and issues associated with hip-hop culture, Indigenous peoples in Australia find common ground engaging on the Web with other peoples in other countries informing and supporting their unique post-colonial struggles, Norwegians produce traditionally aesthetic artistic websites that counter the perceived offences of surrealism and other non-representational art, Mexican ninth-grade students produce bi-lingual web pages describing each Mexican state. But ultimately Hawisher seems to contradict her rejection of the Internet as a powerful enabler of positive forces in humanity so long as those forces meet her terms.

> It is something of a paradox that the hegemonic powers of the new globalized media that may serve to thwart local struggles, may, when local contests move to the global theatre, actually enhance opportunities for engaging in counter-hegemonic work (Hawisher 1999:89).

In *School's Out: the new Technology and the End of Education* Perelman called for a dramatic restructuring of educational systems to replace the concept of "schools" with that of "hyperlearning" or the "transformation of knowledge and behaviour through experience". Foreshadowing collective intelligence he envisions a time in the not too distant future when "knowledge, experience, media, and brains … both human and non-human are connected to an unprecedented degree". He calls for a focus on learning as

an action that is ‘done by’, not ‘done to’ the actor with an emphasis on the process of *discovery* in educational pedagogies (Perelman 1992). This echoes the thoughts of modernist artist Joseph Albers from the Bauhaus school who stresses the importance of education to align individuals with contemporary economic and political events through professional and social life. For Albers individualism with its focus on isolations is better left for personal development outside of formal learning settings: “Let us ask how many personalities exist! We must number *types* in the majority. Sociological economy must reject the personality cult of existing educational practice: productive individuality asserts itself without and against education” (Albers 1971:1). Castells uses the example of open-source software projects brokered by “a techno-meritocratic culture rooted in academia and science” as a way of understanding the roles of individuals and institutions in tackling the teaching of digital media (Castells 2001:39). Once again *discovery* is the most valuable contribution, particularly in the context of a specific objective. Peer review determines the relevance of the discovery and formal/informal rules govern the behaviour of participants.

Reading the academic literature from the early 1990s it is startling to see how informed and inspired some of the predictions turn out. While it is easy to criticize these early pioneers of writing on social, economic and educational implications of new media technology it is also important to note that trends can suggest that the vision just required another 10 years to realize itself. Business Advisory firm Deloitte predicted in a 2006 report that a small contingent of elite academics will be lecturing to thousands via technology by 2010 and that the institutional capacity of education centres will be greatly diminished (Deloitte 2006). By 2010 online enrolments in colleges in the United States was growing by 21% per year with proportional increases recorded each year since 2005 (Kolowich, 2010). The rise and rise of virtual learning communities, online education, e-learning and the like, seem to support the vision of Perelman that teaching and learning the techniques for navigation and participation in digitally intermediated communication requires a fundamental shift in educational values and pedagogies. Media literacies are representative of the assemblage of these skills and social practices.

Ways of people understanding media

Media literacy extends beyond the scope of the 'digital divide' – the relative diffusion of network infrastructure and bandwidth – to contemplate a different form of access focused on the impact of differences in how people interact with media. DiMaggio argues that research on the Internet should go beyond issues of physical access to address issues of digital inequality, or the differences among people with Internet access. Digital equality in this context involves five main variables: technical access, community and social capital, political participation, organizations and other economic institutions, and cultural participation/diversity. This includes questions of access but also how users access (from home, work, supervised, unsupervised), the skills that promote efficient access, the social support and networks in place to support access, and the purposes of use (economic, social, consumption) (Dimaggio et al 2001). Many of these factors reappear in the Web 2.0 case studies presented in the data chapter of this thesis where 'Hacktivists' engage government authority through social networks or deep misunderstandings pervade debates about the realities of practices in 'virtual sweatshops' *goldfarming* on the Web. In each case the intersections of human/computer interfaces yield emergent agency in participants and structurally evolve the geo-political and technical forms shaping the grid of the Internet. Warschauer points out that these issues are just as relevant in areas of limited access or where the traditional digital divide remains a major obstacle to use of the Internet (2003:199). In an essay entitled *Facebook Privacy settings: Who cares?* Hargittai examines the attitudes and practices of a research sample of 18- and 19-year-old Facebook users. Her findings challenge assumptions that young Facebbok users are unconcerned by privacy or the use of the data they contribute to the network but that relative media literacy skills are deeply correlated with users making modifications to privacy settings (Hargittai, 2010). In a review of adult media literacy literature for Ofcom, Livingstone notes that the core elements of access, understanding and creation cannot be detached from the social and pedagogical relationships that surround contextual and subjective interaction with digital media (2005). In his theoretical framework that treats literacies in the plural as social practices, Street studies how media literacies vary with cultural and social context (2003). He warns against taking the social consequences of literacy for granted in favour of an autonomous functional vision often favoured by government and

international agency programs targeting citizen literacy. But equally limited in scope is adopting an ideological model that makes assumptions about literacy in itself. Crucial to understanding media literacy is the cultural context of every person interacting individually or in groups with media (Street 1995).

According to Heidegger human life is a search for its own identity and meaning free of authoritative structures or fixed values. Significance is found in discourse, a concept broader than talk, including all of our inner and outer expression: "Discoursing or talking is the way in which we articulate 'significantly' the intelligibility of being-in-the-world" (1927:204). In his reflection on Heidegger and mobile media technologies Myerson argues that individual actors in the communication systems of new media are unaware of the pressures caused by the vivid real-time online interactions of self and social.

> There are two key ideas: first, the sheer scale of interconnection; and second, by contrast, an idea of individual freedom. To be able to communicate is a basic aspect of being free. Indeed the fact of communication is a key sign of being free … at heart the mobile concept is about being in control – as a separate and disctinct individual. This is the basis of mobilisng the concept of communication – that it's an activity undertaken by an individual, over which that individual seeks control. Being in control of communication means being the master of technology itself … A postmodern paradox! On the one hand we have a language of scale; on the other hand, we have the separate individual seeking goals. This paradox creates the atmosphere of mobilisation. Countless – but counted – individuals are seeking their desires separately, and yet unknowlingly they are caught up in a huge system (Myerson 2001:23-24).

Freeman researches on the subjective sensation of *being there* in a mediated environment of 3D stereoscopic media. Results show non-experts describe sensations of presence without prompting (Freeman 2000). Murphie argues that humans thrive on more immersive knowledge and information and the perceived threat of digital culture disconnecting body and mind is in fact an opportunity for their reconciliation. He suggests that contrary to the great cultural fear that human immersion in information matrices will result in the loss or diminishment of the body, it is the body itself that is calling for more feedback to adjust a course in relation to its environment. "The result of much technological development has been that, rather than losing our bodies, we may in

fact be closer to our bodies than at any time in the past, even if these are bodies which crumble as we finally touch them, into fragments of information" (Murphie 2003:121). Conversely Dreyfus critiques the notion that bodies can freely migrate from offline to online worlds without degradation. He argues that the most important question for a philosopher investigating the educational promise of the WWW is: "Can the bodily presence required for acquiring skills in various domains and for acquiring mastery of one's culture be delivered by means of the Internet?" Dreyfus prefers humanity rooted in the offline world engaging with online identities: "In sum, as long as we continue to affirm our bodies, the Net can be useful to us in spite of its tendency to offer the worst of a series of asymmetric trade-offs: economy over efficiency in education, the virtual over the real in our relations to things and people, and anonymity over commitment in our lives" (Dreyfus 2001:49, 106).

It is unclear what impact the Internet is having on linguistics and individual languages in particular. Analysis is ongoing into the global scale and intensity of Internet use and the effect on language (Crystal 2001). But as with many of the facets of Internet participation, the medium itself does not limit the user's ability to articulate and participate in a multitude of voices and languages. The issue is a traditional one of power dynamics and dominant cultures and what impact the potential acceleration of multicultural engagement through online interaction has on language memory. Darley explores the concept of the 'spectacle' or sensational culture and its manifestation in the aesthetic space of new media lacking the traditional depth clues and operating as 'surface play'. At issue is if users of new media technologies, featuring a barrage of virtually unlimited imagery and presentation, are able to mine below the surface of art, design, commercials, narratives or editorials (Darley 2000). Heller et al explore *design literacies* in the many forms of persuasion, mass media, type, language, identity, information, iconography, style and commerce (Heller 2004).

Ways of media understanding people

While the development of the Internet as a public space has been a fluid and constantly changing process we are on the brink of its first major full transition in capability and possibility. Often termed Web 2.0 or web services, the shifting constitution of the

information from a collection of websites to a fully operational computing platform serving web applications and spanning all connected devices is underway. The services improve as they are consumed, updated and remixed by users promoting architectures of participation and reinforcing the crucial importance of literacies. Shadowing these developments are widespread efforts to promote the development of semantic web applications that address the syntactic representation of data to share and communicate services, information and knowledge that can be understood by not just users but also computers, intelligent agent software, and information retrieval platforms. This is a crucial distinction from other fields when we speak of media literacy in computing science as we are speaking about not just the literacy of people interacting with digital media but also effectively the literacy of the web itself in compiling and interpreting the data pulsing across its internet-worked infrastructure.

Crucial to machine *understanding* of human intentions in interaction are computer alogorithms – well defined computational procedures that take values as inputs and produce values as outputs (Cormen et al 2001). The Google search engine is an algorithm optimised for search and retrieval of information in databases. Certainly any attempt to digitise knowledge involves use of algorithms to organise, submit, retrieve and associate fragments of information. The challenge for those working in practical applications is often to devise algorithms that do not limit the functions of the system compared to the complexity of inputs and outputs required to reflect human knowledge and activity in a virtual mirror. The current focus for algorithms of collective intelligence, and the focus of many of the developing trends in web-based interactions, is the emergence of a *semantic web*, often termed Web 2.0. This was the original dream of Tim Berners Lee to create a universal space of machine-readable information whose *meaning* is well defined by standards.

> The vision I have for the Web is about anything being potentially connected with anything. It is a vision that provides us with new freedom, and allows us to grow faster than we ever could when we are fettered by the hierarchical classification systems into which we bound ourselves. It leaves the entirety of our previous ways of working as just one tool among many. It leaves our previous fears for the future as one set among many. And it brings the workings of society closer to the workings of our minds (Lee 2000:1).

A major focus of computing science research into media literacy could be just how far we can advance ideas of qualifying, quantifying, defining, or perhaps even automating the subjective human/computer interaction of media literacy. Mirroring the ongoing work in the field of artificial intelligence we can ask questions of what impact enhancing the literacy of the machines has on the literacy of the users. One of the early but ultimately unfulfilled goals of this research project was to conceptualise a Media Literacy Measurement Tool that functioned across borders, languages, cultures, subjectivities, and social practices. This process involves sensitivity to the multimodal communication between machine and human and the respective literacies involved. Ultimately this project ambition was dropped out of the overall thesis project because the question it sought to answer was too limited in scope and saturated by educational training companies and institutions determined to put an IQ score equivalent on *information literacy*. Information literacy contrasts with media literacy in definition as exclusively focused on functional skills for access at the expense of any recognition of tacit knowledge. For the purposes of this research project that focus is limited to the bottom-left quadrant of the Netmodern Performance Map (NPM) introduced in the introduction of the thesis. This quadrant is metaphorically focused on the map and not the territories or even the mapmaker and further research in this domain prevents integral approaches to the emergent agency and forms of digital media relationships. This approach is a typical method of large institutions and governments with a mandate to improve media literacy and thus requiring some way to score that improvement and demonstrate results. For example the OFCOM audit declares that media literacy is "not a ladder, whereby the more you 'score', the greater your media literacy" (Ofcom 2006a:8). But scores are inevitably assigned to nine elements seen to constitute media literacy in the form of people's responses to structured questionnaires. The Association of College and Research Libraries (ACRL) in the United States has developed a set of standards for assessing the "information literate individual". The criteria include five standards and 22 performance indicators involving different levels of thinking skills involved with various learning outomes (ACRL 2000). The practice-based case study findings in this research project simply do not substantiate privileging the social structural or behavioural science indicators that can be measured through statistical

survey at the expense of subjective agency and cultural constructions and mediations. There is certainly a form of functional media literacy that can be measured by a scoring tool but this research project explores a richer and more diverse understanding of this concept that encourages investigation of both subjective and objective realities in human/computer interactions as formulated in the Netmodern theory chapter concluding this thesis.

Ways of understanding social life through media

The case study chapters in this thesis focus primarily on the ways in which conflations of agency and form in digital media are producing emergent properties of agency and form. This is an endeavour to understand social interactions and life through a lens of various digital media platforms. It also speaks to how these platforms are themselves transforming the very nature of potential in social life. It is difficult to describe people's relationship to media. Livingstone writes of how the term *audience* is no longer sufficient to describe the interactive viewing, reading, listening, writing, and playing elements of media interaction (Livingstone 2002:8). Media literacy includes all forms of media but the Internet is the dominant medium of analysis in current academic literature. Work has been conducted on radio (Crisell 1994, Verwey 1990), television and film (Branigan 1992, Stacey 1994) and video gaming (Gee 2003) but the multimedia and multimodality of the Internet provides a uniquely rich landscape for social researchers into media literacy, integrating elements of all media and mediums. Porter suggests that the age of self-sufficient generalists is passing as the complexity and sophistication of new media technologies reflects the complexities emerging in social life that has brought on unprecedented interdependence. The Internet is representative of the kinds of inter-networked technologies that offer a constant reminder of the inescapable social lives we lead in and the need to maintain connections and connectivity in the face of increasing geographic and occupational mobility (Porter 1997:64-65).

According to geographer Yi-Fu Tuan: "Place is security, space is freedom: we are attached to the one and long for the other" (Tuan 1977:3). And it is not always as obvious as more space brings more freedom. "We tend to forget," says Tuan, "that

rural-urban migration, like the earlier movement across the ocean and into the New World, could also be motivated by the impulse to escape crowding." A rural community could be considered "crowded in the economic sense because it did not provide enough jobs, and in a psychological sense because it imposed too many social constraints on behaviour." (Ibid.:60). In his theory of *supermodernity* Auge conceives of living in a world with an overabundance of space and the individualisation of references as producing *non places* lacking relational or historical identity (Auge 1995). Degrandpre asserts cyberspace as such a non place torn between the fading meaning of traditional identities and the escapism of digitally enhanced virtuality. He suggests in his theory of *digitopia* that society is on the verge of "stepping through to the other side of the looking glass" to a placeless place where the essence of humanity is digitised and downloadable into virtual machines (Degrandpre 2001:7)

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But ethnographic research in Trinidad by Slater and Miller rejects this hypothesis: "Contrary to the first generation of Internet literature – the Internet is not a monolithic or placeless 'cyberspace'; rather, it is numerous new technologies, used by diverse people, in diverse real-world locations" (Slater 2000:1). Their research found that Trinidadians "took to the new media in ways that connected to core dimensions of their history and society" (Ibid.:3). Miller and Slater use the example of Trini youths who go online to access the latest rap, hip-hop and pop music but generally encounter all music in terms of their long term traditions – 'soca' music, incorporating soul, rap and electronic themes. While they expected their observations of Trini online activity to reflect a distortion from their offline lives, like for example becoming less explicitly Trinidadian, the opposite result was found in the form of a desire to see the Internet as place to "perform Trini-ness" despite the diversity in their offline identities as youth, businesspeople, family members and religious believers (Ibid.:7). Slater also finds that ethnographic studies conducted online require a specific set of skills in the researcher not unlike those that constitute media literacy. In an early study of conducting virtual ethnographies Hine argues for an understanding of authenticity, space and identity on the Internet that allows for studying social interactions in this communicative medium on its own terms (Hine 2000).

Street has developed numerous ethnographies of literacy in recent years, spanning developed and developing societies and in and out of formal educational contexts. He explores the variety of modes in which meanings are constructed—visual, kinesthetic, gestural—and the ways in which meaning makers design and enact particular mixes of modes or switch between them (Street 1995). Back researches music, art and visual representations, exploring cartographies of sound, presentation and meaning in literacy communications (Back 2004). Abbott focuses on the idea of e-inclusion or the use of technology to enable further participation in society (Abbott 2006). Leseman summarises the challenges of multi-modal and multi-media literacy: "We may now hypothisize that the effectiveness of literacy socialization depends upon the degree to which the different contexts offered by pedagogical, educational, economic, social and cultural practices, support each other with respect to the literate knowledge and skills needed to participate" (1994:164). He cites as an example how teaching in schools reflects an interpretation of the need to analyse knowledge using "everyday acts of problem-solving, communicating and knowing". These acts may differ widely in or across populations or cultural context so it is highly probable that when the student is at home, work, or in everyday life, entirely different practices may be required to communicate and socialise effectively.

2.4 Collective Intelligence

French philosopher and technologist Pierre Lévy defines collective intelligence as "a universally distributed intelligence that is enhanced, coordinated, and mobilized in real time" (Lévy 1997:16).

> No one knows everything, everyone knows something, all knowledge resides in humanity. There is no transcendent store of knowledge and knowledge is simply the sum of what we know … the real-time coordination of intelligence, once past a certain quantitative threshold, must be based on digital information technologies. (Ibid.:14).

Lévy's theory investigates the interaction of the individual and the social through digital communication and the bringing together of knowledge into a collective network of

universally accessible distributed intelligence. While technology becomes entrenched within propelled systems of commodities, infrastructure, social practices, and technological trajectories, the individual maintains the right to discriminate between alternate choices (Ropke, 1999). The ideal of collective intelligence is the enhancement of technical, economic, legal and human endeavour to mobilise skills and fulfil potential. Batch media processing is being supplanted by communications architectures of networks and nodes where individuals send and receive information as inputs and outputs of a new humanism that incorporates and enlarges the scope of self-knowledge and collective thought (Lévy 1997:17). Lévy announces the emergence of a new form of public space in the 21st century where global communication converges and intersects through hypertext. He declares that "a meta city can be seen on the horizon of planetary culture" (Ibid). This does not differ widely from William Gibson's famous definition in Neuromancer: "Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts … A graphic representation of data abstracted from every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding … " (Gibson 1984:67).

Rifkin illustrates collective intelligence in describing the changing form of networks and freedom: "In a network economy of suppliers and users, however, in which embedded relationships become the axial principle for structuring activity, freedom comes to mean something very different. Inclusion and access, rather than autonomy and ownership, become the more important tests for one's personal freedom" (Rifkin 2001:240). Berners Lee argues that collective intelligence functions through interconnected individuals working towards what they believe is 'good' and useful with a net result of more power, more understanding and more harmony for the collective. The needs of the whole and the needs of the individual do not subjugate each other but understanding can be found in the struggles between these levels of identity. It does not mean we are getting smarter or more in control but rather simply better connected which can result in more possibilities for influencing each other and ourselves (Berners Lee 2000:227).

Paradigms of collective intelligence range beyond the domains of technology or computing science to a myriad of humanities and social sciences. Italian author Italo Calvino died in September, 1985 shortly before he was to depart for the United States to deliver six talks for the Charles Eliot Norton Lectures at Harvard University. He only completed five of these talks and in the last, *Multiplicity*, where he reviews the works of Thomas Mann, Paul Valery, Jorge Luis Borges and Georges Perec amoung others, Calvino describes the merits of modern and postmodern encyclopaedic novels.

> What tends to emerge from the great novels of the twentieth century is the idea of an *open* encyclopaedia, an adjective that certainly contradicts the noun *encyclopedia*, which etymologically implies an attempt to exhaust knowledge of the world by enclosing it in a circle. But today we can no longer think in terms of a totality that is not potential, conjectural, and manifold (Calvino 1993:116).

Surfers of the Internet will grasp the similarity of the vision to the reality of tools like the open encyclopaedia *Wikipedia*, or the whistleblowers paradise of *Wikileaks* as a sample of collective intelligence in action. This is the first of many examples to follow in this literature review of how intellectual and academic thought has touched on, grazed, or directly impacted the concept of collective intelligence. Similar cases are further updated and expanded upon in the Web 2.0 data chapter in this thesis. Collective intelligence is an intransitive reality in Netmodern theory but forms of collective intelligence, particularly in emergent forms of internetworked digital media platforms, are transitive and themselves emergent. The emergent properties are products of *relationships* in collective intelligence between agency and forms. Lévy has not conducted his work in isolation and there is a tremendous amount of global academic energy and theory going into research on how interconnecting everyone is going to impact everyone. Appadurai argues for reflecting on the meaning of an archive in the age of electronic information stored digitally and created collectively by a multiplicity of authors, editors and users. He suggests that this transformation should have us perceiving archives beyond Foucault's dark interpretation of instruments of the state: "Rather than being the tomb of the trace, the archive is more frequently the product of the anticipation of collective memory" (Appadurai 2003).

Lévy's work is predated, and in many cases inspired, by similar projects published in the last 50 years to understand the implications of collective thought including the noosphère of Teilhard de Chardin, the ecology of spirit of Gregory Bateson, the ecology of representations of Dan Sperber, the collective subject of Michel Greenhouses, cybionte of Joel de Rosnay, hive mind of Kevin Kelly, connected intelligence of Derrick de Kerckhove, super-brain intelligence of Francis Heylighen, the swarm systems of Kevin Kelly, Howard Rheingold's smart mobs, and the emergent intelligence of Steven Johnson. In the 1940s Tielhard foresaw the exciting prospects of previously isolated academics working together to solve complex problems: "In the past such investigations were isolated, sometimes no more than the hobbies of individuals. Today we find the reverse: research students are numbered in the hundreds of thousands-soon to be millions-and they are no longer distributed superficially and at random over the globe, but are functionally linked together in a vast organic system that will remain in the future indispensable to the life of the community" (Chardin, 1961: 106). Teilhard even identified a key component of the "organic system" of the noosphère as the emerging science of cybernetics.

> And here I am thinking of those astonishing electronic machines, by which our mental capacity to calculate and combine is reinforced and multiplied by the process and to a degree that herald as astonishing advances in this direction as those that optical science has already produced for our power of vision (Chardin, 1961:110).

More recently in *Emergence: The Connected Lives of Ants, Brains, Cities, and Software*, Johnson describes an alternate way of understanding complex systems. He favors a bottom-up approach to the traditional top-down method of understanding the physics of astronomy through complicated laws of physics translated into rules that guide the paths of celestial bodies. This inductive method fails to consider that planets are large collections of independent particles that join together through their own set of rules. Through this approach the macro laws of motion emerge from the micro basic principles of individual particles. Quantum mechanics and the metaphorical relationship of quantum philosophies to social life presented in this thesis methodology and Netmorn theory as *Quantum Sociology* further challenges any attempt to produce essentialised inductive realities. Johnson uses a similar and alternate bottom-up

approach to reflect on the possibility of distributed media guided by clusters of consumer interest usurping the power of mass media and advertising agendas. Johnson describes *emergence* as what happens "when the whole is smarter than the sum of its parts" (Johnson, 2002:220). These models and theories of collective social action, learning and knowledge, inspire the emerging field of human collective intelligence accompanied by a vast range of inputs from multiple disciplines and perspectives. The following offers a partial introduction to the inspirations and contributions to ongoing work in collective intelligence. The sources have been selected as those that have been reviewed to date for this research project.

Sociology, and the sociology of sciences in particular, investigates many of the key issues needing analysis to pursue understanding and frameworks for collective intelligence. Studies of virtual and cyber identities help to understand the cultural and social impact of mass online interactions and communication (Bell 2000, Harraway 1985, Wilbur 2000). Niklas Luhmann's devotion to non-normative science inspired by Weber and Popper features theories of global society as a social system that is "autopoietically closed" in that it relies on resources from outside the system that are not a part of the system itself. These theories of a society consisting purely of communication are strongly critiqued by Jürgen Habermas and others as de-humanising society but both the theories and the debate can contribute to modelling alternate approaches to collective intelligence (Luhmann 1995, Habermas 1987). Habermas is concerned with 'how' people gain knowledge and 'how' they use it. In his theory, two people can gain the same information, but differences may exist in how they have acquired it, through dialogue versus access over the Internet for example which may result in qualitative differences in the experience (Myerson 2001:55). Luhmann's approach to mass media also provides insight to developing collective intelligence as he focuses on not *what* surrounds as a society but *how* we accept information when we have knowledge of its production (Luhmann 2000). So if we know about the method of production, can we take the content seriously? Approaches to network theories, ecologies of representation, ideas, and memes contribute to understanding how collective intelligence could be represented, visualised or communciated (Anger 2000, Scott 2000, Dawkins 1986).

In the 1970s sociologist Mark Granovetter examined radical collective behaviour and studied either/or situations where people decided to join collective actions like strikes, stocks, riots, or demonstrations or remain outside of the group. He found that thresholds for participation are the result of individual reactions to group dynamics: "By explaining paradoxical outcomes as the result of the aggregation processes, threshold models take the 'strangeness' often associated with collective behaviour out of the heads of actors and put it into the dynamics of situations" (Granovetter 1978). In devising his notion of Smart Mobs and determining if these mobile actors of technology will be passive consumers of mass media or act with participative cooperation in the future, Howard Rheingold saw in Granovetter's model "a crucial conceptual bridge that connects intelligent cooperation with emergent behaviors of unintelligent actors such as hives, flocks, and swarms" (Rheingold 2002:175).

Perhaps the most relevent sociological strand of theory for collective intelligence is research on the sociology and history of sciences and technology (Canguilhem 1994, Latour 1987, Stengers 1997, Callon 1987). Part of this work examines the processes of production of knowledge in the scientific community providing indications of the mechanisms and methods of collective intelligence in action. Stengers writes of that which *collects us all* in her vision of *cosmopolitics* suggesting a roadmap for integrating nature and politics, humans and non-humans, science and society to ask the question of what sacrifices we will make for each other and for all. Latour suggests we open "pandora's box" through a process of *depunctualising* with actor-network theory the complexities of all the entities and actions involved in production and cosumption of technology. Similar to how Steven Johnson prefers the micro to the macro, Latour asks us to not look at the Internet as a massive schema spanning the globe but to understand that it is the composite of the elements, people and machines, that make it up. He also suggests we free science from its positivist and epistimological chains through proposing we "socialize nonhumans to bear upon the human collective" (Latour 1999:296), an approach he prefers to traditional scientific concepts of disconnecting from the outside world or needing to carefully select what is said as proof.

Serres echoes the thoughts of Johnson and Latour of an intrinsic relationship between the *background* and the *foreground* of all things. He proposes the existence of a constant substance absolutely uninterrupted, the hum in the background of all action and thought and the element of the software of all our logic. His vision of noise as the background of all information relates directly to the progress of collective intelligence. No warmth without air, no life without heat, and no collective intelligence without that knolwedge of relationships in the grid. Like Calvino viewing literature through multiplicity, so too does Serres see time in this form, without unity or moment, beginning or end. History emerges through the mutiplicity and fog and mist of observer/observed to provide the glass and frame for the mirror of collective intelligence.

> The raucous, anarchic, noisy, variegated, tiger-striped, zebra-streaked, jumbled-up, mixed-up multiple, criss-crossed by myriad colors and myriad shades, is possibility itself. It is a set of possible things, it may be *the* set of possible things. It is not potential, it is the very reverse of power, rather it is capaciousness. The noise is the opening. The Ancients were right to say of chaos that it gaped. The multiple is open, from it is born nature, which is always aborning. We cannot predict what will be born from it. We cannot know what is in it, here or there. No one knows, no one has ever known, no one will ever know how a possible coexists with a possible, and perhaps it coexists through a relationship of possibility. The set is criss-crossed by possible relationships (Serres, 1995a:22).

Serres warns against declaring a study science or non-science (or respectively non-philosophy) as such demarcations can rapidly change in history and context. Ludwig Wittgenstein provides a philosophical guide to cognitive approaches to language to help understand how human collective intelligence differs from animal collective intelligence. But he also speaks of *possibilities* in a form that directly relates to the notion of collective intelligence as more than a mirror of the now but as a method for extension of human possibility and potential. He compares possibilities to the 'purest crystal' or the *hardest* thing there is they exist as the a priori order of the world, prior to all experience (Wittgenstein 1976:44).

Philosophy can also teach us how collective intelligence in humanity is in constant transformation, releasing energy through entropy and reconfiguring itself constantly. In

One Thousand Plateaus Deleuze and Guattari reject totalising principles, binaries and dualism in favour of observing *rhizomatic* growth in society and life. Data can be represented and interpreted from multiple perspectives and non-hierarchical entry and exit points (Deleuze 1987). In the *Perennial Philosophy* Aldous Huxley states the case for knowledge being linked to, perhaps even inseparable from, identity and being. He stresses that knowledge can take many forms and there are often trade-offs in the cumulation of a certain forms against the loss or deterioration of others. As children become adults they experience a revolutionary change in knowing and knowledge but this typically takes the form of a more conceptual and systematic approach to ideas and form. These gains are offset by deterioration in the quality of immediate and intuitive power (Huxley 1970). Anthropological and historical studies on cultural changes related to modes and forms of communication systems can provide key inputs to a vision of collective intelligence that embraces cultural diversity *and* the ubiquitous global Internet. Régis Debray's theory of *mediology* or the scientific study of mass media and power explores the relationship of social functions like religion, politics or music with the means and mediums of communication and transmission (Debray 1979). Jack Goody writes about the series of communicative acts and literacies, specifically written and oral traditions, that constitute culture and the impact of modes of production and communication on the storing, analysis and communication of human knowledge (Goody 1977).

In education the expectation that internetworked participation will provide substantive opportunities beyond profits is getting more pronounced for learning, change, collaboration and connection. In a UK-based ethnographic-style study of Internet use in thirty families with children aged between 8 and 16, child subjects were asked to draw the Internet and many of the diagrams showed computers and humans (often the subjects) inter-networked, cogs on a wheel, or beads on a circle of people and machines: "So ask where is the user in these images of the Internet, and what is apparent is that the user is networked – precisely not off in a world of their own, but part of the world where everybody else is too" (Livingstone 2002). Art, particularly art that invokes numerical support or form, often focus on the artist as a designer of context instead of as a creator or transmitter of content: "Connectivity, interaction, and emergence are now

the watchwords of artistic culture" (Ascott 2003:279). These art forms ask questions of and integrate the observer into the creative process, through interaction and transformation and are characterised by a systems approach to creation and response to the behaviour of users. Just as human beings can communicate content through what is said and the meta-language of how it is said digitally (through naming a feeling: "I am happy") and analogically (a smile, soft or gentle tone), interactive art has the same capability (Watzlawick 1984). Online or offline relationships are formed through how engaging parties punctuate the communication sequence and all interactions are either symmetrical/equal or complementary/unequal. Once again the focus is on a multiplicity of origins and destinations, constantly in flux and transformation. These techniques reflect an emphasis on how things look to a process of becoming that is similar to the theories of radical constructivism in biological sciences.

In 1958 Heinz von Foerster, one of the acknowledged fathers of radical constructivism and second-order cybernetics, started the Biological Computer Lab at the University of Illinois. His work focuses on how social processes influence and impact the content and elements of technology. Second order cybernetics differs from first order cybernetics in that it does not see computers or software as passive objects to be manipulated, but views them as agents interacting with other agents or observers in social systems (Heylighen 2001). Following on this research Umpleby renames first order as "engineering cybernetics", second order as "biological cybernetics" and proposes a new third order of "social cybernetics" that can encompass both biological and social phenomena. He describes the "puzzle to be solved" is to help "explain the relationship between the natural and the social sciences" by adopting a pragmatic view of epistemology where knowledge is constructed to achieve human purposes instead of focusing on how the brain functions. He highlights a key difference between social systems and physical systems by using the example of how when physical theories change we assume the phenomena has not changed, like when physicists shifted from classical Newtonian mechanics to quantum mechanics the behaviours of atoms didn't change whereas the theories of Adam Smith or Karl Marx did change the operation of social systems (Umpleby 2001).Umpleby's work is closely aligned to Luhmann's and such studies of social cybernetics can provide valuable insight into the transformation of

conceptual systems required to promote collective intelligence. It contributes to efforts to find a third way beyond the traditional nature/nuture debate that can synthesise the efforts of evolutionary biologists and social theorists/developmentalists (Oyama 1985, Wilson 1975).

In mathematical terms the emergent implications of collective intelligence architectures are supported by Metcalf's Law of computing based on a fundamental mathematical property of networks: The number of connections between nodes grows more quickly than the number of nodes (Reed, 1999). The total value of a network where each node can reach every other node grows with the square of the number of nodes. Serres approves of the rapid thought and structural approach of mathematics to analyzing communication and believes social science and the humanities too frequently dismisses equations and science as overly simplistic in describing the complexity of social interaction: "Philosophers love intermediate inferences; mathematicians gladly dispense with them. An elegant demonstration skips the intermediate steps. Indeed, there is a slowness particular to philosophers that often strikes me as affection and a speed accompanying mathematical thought that plays with amazing shortcuts. I am fairly glad to be living in the information age, since in it speed becomes once again a fundamental category of intelligence" (Serres 1995a:68).

Knowledge management and scientific studies of the economy and management often speak of the emergence of an economy of knowledge that directly relates to attempts to systematically quantify, qualify, organise and make relevant collective intelligence. In 1997 Harvard Business Review pronounced Peter Senge's analysis of "learning organizations" *The Fifth Discipline* as one of the seminal management books of the past 75 years. It focuses on "organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together" (Senge 1990:3). Management theorists like Francis Fukuyama and Robert Putnam write about how confidence and the quality of social bonds can inspire "authorised capital" that forms a basis for prosperity. The phenomena of globalisation and the recent trend towards the convergence of economic and political

institutions speaks to a need for engagement with the familiar and the other in virtual local and global arenas: “Let us foster new forms of electronic entertainment and communication that reinforce community engagement rather than forestalling it” (Putnam 2000:410).

It is impossible to speak of collective intelligence as a mirror of human knowledge or an infinite storage facility for Internet “memory” without addressing how this relates to the field of cognitive sciences or the study of the mind and/or intelligence. For example Gerald Edelman contends that “memory is more like the melting and refreezing of a glacier than it is like an inscription on a rock” (Edelman 2000:93).This poses a unique challenge for computers, and possibly digitised collective intelligence, for whom memory is a set of storage locations on a main circuit board, not unlike a rock. For Edelman the analogy of human to computer memory causes more problems than it helps address. Unlike the coded input of machines signals sent to the brain are “context dependent, potentially ambiguous, and not necessarily adorned by prior judgements of their significance” (Ibid:94). Users of the Internet frustrated by the here now, gone tomorrow culture of online publishing recognise the difficulties in retaining memory on the Web. In a July, 2006 ‘ideas interview’ in *The Guardian* with John Sutherland senior British Library archive manager Richard Masters concurs with this perspective.

> Our view at the moment is that we have a cultural responsibility to collect, store and preserve the public national archive. With the web, too much disappears. There is no responsibility or obligation to preserve. In a sense, the web has its own collective memory, but it’s often a short memory (Sutherland 2006).

Computer code is performative and software development is rules-based so there is no such thing as “good” or “bad” code, just coders with different intentions and goals. This is at the heart of the debates on how far artificial intelligence can reach into achieving genuine cognition as represented by John Searle’s thought experiment of a Chinese Room and the question of whether computers will ever be able to understand the rules they follow (Preston 2002). There is considerable opposition to the notion that mental qualities can be applied to machines that follow well-defined sequences of operation but this remains a crucial question for the future of collective intelligence (Penrose 1989).

Semantic space is a form of perspective space, and collective intelligence strives to create for users a virtual representation of the *point of view of others*, which cannot be dissociated from your own point of view. Change your position in the matrix and you change the whole matrix. In his most recent research efforts to develop Lévy envisions the creation of a *semantic mirror*, a virtual world that can be explored and reflects back to visitors the infinitely reproduced vision of their collective creation. Crucially this mirror will reflect beyond marketplaces and economies, where society already has considerable instrumentation, to ideas, credibility and tacit knowledge where most of the available information is still anecdotal. Lévy completed the first version of IEML (Information Economy Meta Language) in 2006 as an artificial language designed to be – at the same time – optimally computable *and* able to express the semantic and pragmatic nuances of natural languages. His vision is that it will provide "the distributed governance of the collective intelligence in the service of human development" (Lévy 2006). Lévy approaches the Web as a helping encyclopaedia instead of a labyrinthic chaos. Similarly in the *Second Manifesto of Surrealism* Andre Breton states that the surrealists strive to attain a "mental vantage-point (point de l'esprit) from which life and death, the real and the imaginary, past and future, communicable and incommunicable, high and low, will no longer be perceived as contradictions." (Breton 1930)

Critical to a successful semantic web will be use of ontologies, defined in a broad sense as the science or study of being. The most commonly referenced definition of ontology as it relates to the WWW is Gruber's: "specification of a conceptualization" (Gruber 1993). In computing ontologies can be used to provide a concrete specification of term names and meanings, the simplest of which is a finite list of terms forming a controlled vocabulary. A glossary or thesaurus are other examples of ontologies frequently encountered in the public domain, which can often be ambiguous and so are not suitable for computing agents. The earliest ontologies on the web were hierarchical taxonomies of terms, like the directory structure of Yahoo's search engine but the semantic web has put an increasing emphasis on the ability of an ontology to be epistemologically adequate and express more detailed information (McGuinness 2003). Berners Lee emphasizes the importance of adequately representing the meaning of the contents of the web as a route to increasing the knowledge management and social capacity of

online interaction. He designed the WWW as more of a social creation than a technical one and pursued a model that would reflect our 'web-like' social lives through families, communities, association and companies (Lee 2000:133).

This is also the current focus of Pierre Lévy's research into collective intelligence, a project that has consumed his academic life and literature since 1991. Over the past 15 years Lévy has been working on an ontology that builds on Berners Lee's theory of a semantic web – we need an addressing system that is not based on the physical location of documents on servers (IP addresses) but on their meanings. With his IEML meta language Lévy proposes to develop a universal ontology, expressed by an ideographic language that complements but integrates existing ontologies. This semantic ontology is to provide a mirror for humanity to reveal customs, cultures social orders, interactions and negotiations with one goal of revealing pathological conditions in society and suggesting methods of address. It is unfortunate that IEML was not at a mature enough stage for application to the case studies in this thesis. Future case studies exploring emergent agency and forms in digital media like those presented in this thesis project would benefit from a semantic framework like IEML as an intermediary 'platform' between the Internet grid and embedded social life and relationships.

2.5 Progressing the Literature

The vast majority of academic work on media literacy and collective intelligence focuses on the theoretical aspects of the ideas. There is a fairly unanimous agreement in academia, government, the private sector and individual references that the impact of digitally intermediated communication and culture is a crucial issue for the 21st century.

> Just as technology becomes part of the neural network of the mind, it also becomes part of the social network of humanity. And never has this been more the case than with information and communications technologies, which also function not only as the electricity of the twenty-first century but also as the printing press, library, television, and telephone, not to mention school, social club, mall, debating society, and gambling den. (Warschauer 2003:215)

It is not the intention of this research project to further substantiate this understanding. The rise of wireless communications in Africa, superspeed fiber-optic networks in China, continuous growth and adoption of the Internet in developed and developing nations alike, illustrate an undeniable global trend of adoption and growth for interconnected digital communications. Thinking in terms of a split between online and offline, physical and virtual, or even computers and mobile phones are just not as relevant anymore to an increasingly integrated ICT world. Real-time information feeds flood in nanoseconds on to the Web every moment of every day and information is being digitised at an alarming rate. But this real-time cacophony does not mean our research and methods need abandon reflection, sustained critical analysis or thick description. As the techno-economic grids of capitalism merge seamlessly with the techno-scientific networks of the Internet there is a real threat of research seeking the paths of pithy least rigour and resistance (Thrift, 2004). Rigorous sociological analysis can make use of software and analytical tools but must not become dependent on them for findings. While the digital interventions in part formed by Twitter analysis tools deployed in the Twae case study or the weblog analytics suggesting demographic breakdowns in BlogScholar are useful data sets for research, they do not help explain why these findings appear in this form or what is left out of these figures. This thesis project seeks to progress this literature review not simply by piling findings upon findings generated by a researcher adept in the literacies required to get the machines to 'speak' about the social life pulsing across internetworked grids of collective intelligence. The ambition is to explore the constantly shifting and fluid boundaries of the fledgling pursuits of Digital Sociology through practicing some of these methods and techniques towards community formations and analysing communities already formed through digital interventions. The challenge this research seeks to address is analysis of emergent forms of agency and structure through a lens of sociological imagination fuelled by attentiveness, a compound of online dialogue, and critique (Back, 2008).

CHAPTER THREE: METHODOLOGY

"Whether we are speaking of rules of grammar, mathematics, law, etiquette, or carpentry, the real test of knowing a rule is to be able to apply it successfully in unfamiliar cases. Knowledge of a rule or a schema by definition means the ability to transpose or extend it - that is, to apply it creatively"[2].

3.1 Introduction

In the tradition of qualitative social science research this project adopts strategies of inquiry allowing connections between lived experience, social and cultural structures (Denzin 1998). These connections form out of empirical inquiry and materials gathered in the process of investigation. As the researcher exists in the empirical world these inquiries are shaped by a subjective and interpretive perspective. Advocates and critics of qualitative methods often share a characterization of this process as reflexive, iterative, and flexible (Sechrest 1992). Central to this project methodology is the artistic process of pragmatic *bricolage* or *use of what is available* so often adopted in qualitative research (Levi-Strauss 1966:17, Becker 1989, Nelson 1992). This research project employed a rigorous critical realism methodology in concert with pragmatic use of a particularly deep technical and creative skill set of the researcher relating to digital media and content on the Internet. The results of this application are found in the data chapters contained in this thesis relating to BlogScholar, Twae and Web 2.0 collective cases. Key to the value of qualitative social science is the merit of serendipitous invention in research but often lacking is clarity on how this process can be both creative and systematic (Silbey 2003). Too often research results or participant observations lack evidence of *a priori* design and are overly reliant on the temporal coincidences of collection and analysis. These approaches perceive any attempt to establish research design or formulate hypotheses as an attempt to enforce a contract on the research process.

[2] Sewell, William F. (1992). "A Theory of Structure: Duality, Agency, and Transformation". The American Journal of Sociology, Volume 98, Number 1 (July, 1992), p. 18

In contrast this research project contends that nothing precludes the development of a research design establishing a proposed path for work processes benefitting from the same flexibility and iterative possibilities as the research experience. The research must strive to provide an account of how results and conclusions are reached and inform readers of the inspirations and sources of a chosen approach to reality and knowledge. This chapter opens with a brief outline of the research design for this project including the scholar's methodological paradigm, the philosophical correlates that inform the paradigm, and chosen strategies of inquiry. The second section introduces the theoretical paradigm of critical realism as the foundation for the reality and knowledge approach adopted in the research project. The third section describes some of the latest scientific approaches to reality inspired by quantum mechanics and the concluding section relates how these concepts inform approaches to reality in social life and further the Netmodern chapter that concludes this thesis project.

3.2 Research Paradigm

This research project is inter-disciplinary in the sense that the subject matter and research processes straddle the disciplines of sociology and computing science. This extends through all aspects of the research project. The research design in Figure 2 radiates out from fluid and interchangeable observer/observed dynamics, to the adopted paradigm on reality, to philosophical correlates for this perspective, the strategies of inquiry adopted in the research design and finally the research design itself that provides the practical foundation for the entire project. Intersecting the entire project is a highly theoretical methodological approach to reality that requires interpretation and understanding for engaging with the project results.

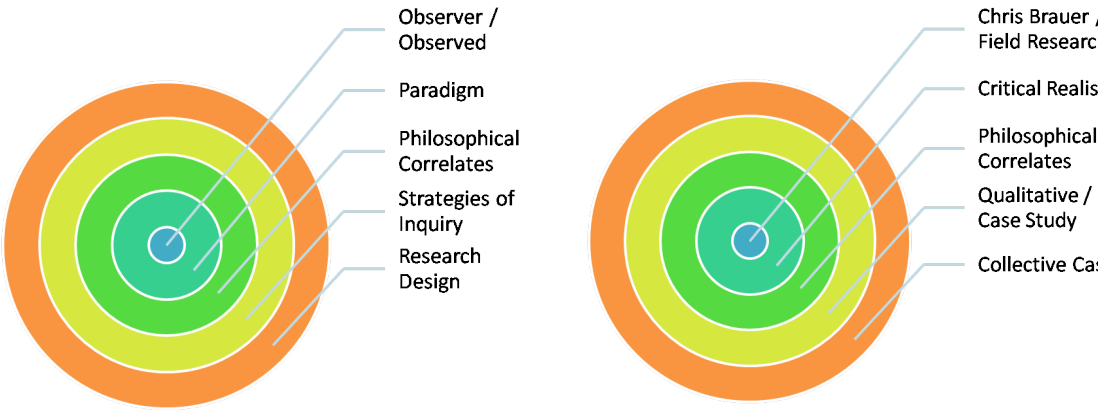


Figure 2: Thesis project research design

Paradigms represent a set of basic beliefs comprising a worldview defining a subjective understanding of the nature of 'reality' (Guba 1994). These paradigms dynamically shift and change with the shifting and changing nature of subjectivity. Subjective paradigms change as individuals change their perception of meaning and knowledge in life. These paradigms are stratified in the sense that multiple paradigms can exist and layer for any perception of reality and paradigms can exist within each other to infinity (King et al 1994). All paradigms are profoundly subjective in that there is no method of ascertaining their truthfulness or veracity. Like cosmologies or theologies they represent belief systems rooted in philosophical perspective and agency.

In the social sciences paradigms are a critical component of the processes of inquiry and discovery. To ascertain reliability and credibility of findings it is often necessary for readers of any rigorous work of social research to understand the paradigm from which a research project emerges. It helps to define what falls in or outside of legitimate inquiry: the aim or purpose of inquiry, the perceived nature of knowledge, how knowledge accumulates, what criteria applies in assessing the quality or credibility of the research findings, and the role of values and ethics in the inquiry (Guba 1994: 113-116). Researchers should provide an accompanying ontological, epistemological and methodological framework with any research findings or report. This provides the reader with a sense of how and why the research was formulated and conducted in the

chosen manner. The focus of this initial section of this chapter is to provide this background for the entire research project.

The paradigm for reality and knowledge adopted in this project is *critical realism*. In the realm of social inquiry critical realism is most strongly associated with British philosopher Roy Bhaskar who developed part of its philosophical tradition (1978, 1989, 1993). Critical realism is a meta-theory and Bhaskar asks: "What properties do societies and people possess that might make them possible objects of knowledge?" (1978: 13) The starting point for critical realists is this ontological query but in tandem is the epistemological question of how knowledge is possible. From this perspective reality is stratified and changing but consisting of both transitive (subjective) and intransitive (objective) dimensions. Critically this reality contains both an external world independent of our consciousness *and* socially determined and constructed knowledge.

> Science is a social product, but the mechanisms it identifies operate prior to and independently of their discovery (existential intransitivity). Transitive and instransitive dimensions must be distinguished. Failure to do so results in the reification of the fallible social products of science. Of course being contains, but it is irreducible to, knowledge, experience or any other human attribute or product. The domain of the real is distinct from and greater than the domain of the empirical. (Archer 1998:xii)

The philosophy of realism often suffers from poor public perception in the social sciences. On one hand it is attacked as simple 'commonsense' and on the other that anything so supposedly obvious is 'naive'. It is a habit of critical thinkers in the social sciences to situate a theory in a virtual highwire act, where a step in any direction can be a foot wrong. Often the objections are combined to unique effect: realists are naively reproducing commonsense. (Collier 1994:4). This mind-independent critique is a veiled double standard. Typically in this discourse from deconstructionists this same naive realism is practiced with reference to the philosophers who inspire relativist theories. Collier summarises this by stating that "people are only ever non-realist about matters with which they are not practically engaged" (Collier 1994:6). Bhaskar suggests every philosophy is a form of realism and each form takes on its own version of reality. If we adopt this view we need to determine what makes critical realism different from any

other perspective on reality. Collier argues that a theory is *more* realist if is makes claims for knowledge in three ways. First that what is real is real regardless of whether it is known or not. It may not appear or be known in the conventional sense but this basically asserts that it is real whether we are looking or not. This premise is strongly supported by recent research in theoretical physics explored later in this chapter that suggests quantum reality behaves differently when it is *not* being looked at, partially because it is not observed. Second, that knowledge is fallible and claims are always open to update, change, alteration or refutation with further information. Third, that knowledge is transphenomenal and formed through multi-layered and stratified inputs and understandings, always incomplete and always partial, but existing whether we reference this reality or not (Ibid).

The transformative and emancipatory potential of critical realism is a crucial ingredient of the knowledge paradigm for this research project as one of the key assumptions of the research is potential for advancement of opportunities in social life through concepts like improved media literacy and participation in networks of collective intelligence. The field research and methodology are complementary as they both assume the potential for transcendence in reality and knowledge. From this perspective, social researchers analyse the *unactualised potential* for social change and human liberation inherent in social life. Critical realism promotes transformation, not just rationalisation, of existing practices; by recognising enduring structures in the social milieu: people are encouraged to challenge these structures to improve conditions; all theories are open to critique as we can view the world independently of those theories; knowledge may be counter-phenomenal and therefore opens up opportunities for liberation from enslaving appearances (Collier 1994: 15-16).

Philosophical correlates for critical realism are many and varied in social science literature. It is a relatively new theoretical foundation for reality and knowledge, so the vast majority of paradigm references in this project are from the past 40 years. But critical realism builds on a long tradition of both realist scholars and aspects of anti-realism as it combines external and interpretive realities. The primary critical realist sources for this research project have been Bhaskar (1975, 1979, 1989, 1993), Archer

(1995, 2003), Collier (1994), Outhwaite (1987), Porpora (1987), Lawson (1997), Lopez and Potter (2005), Danermark et al (2002), Cruickshank (2003) and Sayer (1992, 2000). There are also numerous examples of social scientists who do not explicitly use critical realism as a starting point for their theoretical investigations but have served as valuable inputs to positioning this research project in the critical realist domain including Marxist scholars (Brown et al 2002), Giddens (1977, 1979, 1982), Habermas in his theory of communicative action (1984, 1990), and Bourdieu (1993). Bourdieu's work on habitus, field and capital is aligned with but not shaped through perspectives of critical realism. Bourdieu's contention that agents are socialised in an evolving field of roles and relationships and operate according to an understanding of personal context or position in that field speaks directly to critical realist philosophy (1977).

The choice to adopt primarily qualitative methods is closely aligned with the overall research question the project is attempting to investigate. Critical to the issues under investigation is the specifics of human communication and interaction and quantitative methods can be too reductive and limiting in addressing these issues in depth. Nonetheless quantitative data is occasionally provided, particularly as it relates to web logs and analytics for the case studies. But this project seeks to find the emergent realist properties of the interactions and integral contexts of social life in internetworked digital media through a critical realist lens. In a bizarre turn for qualitative researchers, many are now rejecting the anthropological tradition of 'placing social and cultural phenomena in context' as what Fabian terms the 'positivity of context' (1999). From this perspective context-stripping can be a good thing in qualitative research as it moves the researcher closer to knowledge as praxis and further from knowledge as representation. In contrast this research project adopts the position that the entire transitive dimension and elements of the intransitive dimension of reality is 'context' and there is no conflict between identifying these mechanisms and praxis. Stripping all this away is methodologically unnecessary and leaves only the contradictions and ego of mind-independence.

The investigations into reality through the sciences in the third section of this chapter focus on quantum mechanics as opposed to classical scientific models in speaking

directly to the messy, transitive and intransitive reality expressed in the research paradigm for this project. Relating this back to the social sciences in the fourth and final section is a critical requirement to avoid misplaced concreteness in applying quantum theories to social life without understanding the distinctions and the limited allegorical and informing application. This also sets the stage for the next chapter where the methodological paradigm described in this chapter is applied to practical and 'real' case studies relating to the core research topics of collective intelligence and media literacy.

3.3 Research Methods

The research paradigm for this project informs its use of methods and the construction of the overall study. This research project moves through a series of case studies that mimic the changes in paradigms of the WWW from 2005-2010 in the forms of Web 1.0 to 2.0 and beyond to augmented reality and the cloud. The research employs mixed qualitative methods including interviews, participant observation, codified data spiders and scraping tools, and practice-based research. Each of these is discussed in greater detail where applied in collective case study research but each shares a common foundation of practice-based approaches of original investigation undertaken in order to gain new knowledge partly by means of practice. As discussed in the literature review most recognisable research on media literacy focuses on activity, suggesting a separation of the user of the technology and the technology. In general it is the approach of social scientific analyses of the Internet to consider the Web as the network and users of the Internet as actors interacting with this network. In contrast Netmodern theory and the research methods employed in this project suggest an integral approach of meshed activity and structure in researching emergent internetworked social agency and form in digital media. From this perspective and associated method practices the WWW is not a closed system like a laboratory where users interact in oscillating action and reaction but an open system where users do not express agency to *produce* culture as from a Netmodern perspective the very act of engaging online realities *is* culture.

The primary research method employed by the researcher on this project and its composite case studies is *digital interventions*. Digital interventions as emergent method

augments and transforms the traditional social method of *interventions* just as Digital Sociology augments the traditional practices of sociology to form an emergent field of practice-based inquiry. The term traditional in this context is relative. Intervention as a social method has only been well defined since the mid 1970s whereas sociology has over 100 years of history in its formation and development for Digital Sociology to build on. Interventions emerged as a social method from French sociology and was first proposed by Alain Touraine in *La voix et le regard* in an effort to renew sociological methodology (Touraine 1978). The spirit of this effort for methodological renewal is similar to that which inspired the digital interventions and further scope of Digital Sociological practice in this research project. Touraine's initial work was further developed by Bourdieu in *La misère du monde* as he probed sociological interventions as promoting the active participation of social actors in processes of *self-analysis* in the fabric of collective political or social struggle (Bourdieu 1993). Essentially the ambition of these interventions is to create critical thinking and self-aware social actors that understand at least part of the power relationship dynamics in their personal and professional social lives. Typically sociologists work closely with social actors in a spirit of mutual trust and knowledge transfer where the sociologists are endeavouring to make the actors aware of the value of critical self-analysis so as to direct their collective action into social movements with political and socio-cultural agendas of change or transformation.

> The sociological intervention thus proves to be a permanent sociology since the explanation of the social action it helps to reveal is established in the heat of an open discussion with its own actors. The latter may benefit from this to direct their collective action so as to turn it into a social movement. The sociological theory is thus ready to feed its object of study: the social action originally envisaged by the sociological intervention (Hamel 1997).

The digital interventions in this research project are founded on these recent theories of social intervention as method of social inquiry but expand and amplify the experimental role of the intervention in the context of the emergent forms of technology and media that provide the platforms for investigation. The case studies are digital interventions as experiments in Digital Sociology. The primary goal remains the reflexive cycles of knowledge production through practical consciousness but the digital interventions in this study differ from the social interventions formulated by Touraine and Bourdieu in

ambition and the details of method. The ambition of the digital interventions practiced in the case studies for this research project is informing the dynamics of digital community formation whereas the self-analysis of social interventions is deployed to inform and reproduce political or ideological struggle. This goes some way towards addressing the primary critique of social intervention theory: that actual methodology and method is lost or emphatically diluted in its lust for conversion of social actors into critical self-reflexive social actors (Amiot 1982). Instead of focusing on specific social types, the digital interventions analyse "the movement and expertise by which knowledge and expertise are mobilised to inform a value-laden intervention in the public sphere" (Eyal & Buchholz 2010). The case studies in this research project demand knowledge of the media literacies required to engage digital social actors and networks using technologically-fuelled and practice-based digital sociology methods. These interventions take place in the context and canvas of the broader swirling collective intelligence of the macro networks of the Web. This is similar to how a scientist interested in studying the impact of climate change on specific glaciers in the Antarctic cannot conduct the experiments reliably without knowledge of the best or most efficient methods of conducting the experiments and knowledge of the broader knowledge canvas of the global environment and theories of climate change. That's why the various chapters of this thesis focus so much energy on explicating the roles and intersections of media literacies and collective intelligence with the digital intervention methods employed and deployed by the researcher. Whereas in social intervention methods the actual intervention can often be seen to fade away under the acts of political or ideological conversion, the digital interventions in these cases are focused on interpreting the intervention as social object and digital method. The ambition is informing the merging practices of digital sociology rather than transforming the political or ideological awareness of the mostly anonymous social actors engaged peripherally in the case studies, more as objects than actors with social awareness and agency.

The distance and similarities between social interventions and digital interventions as methods grows with the progression of the case studies reflecting the transforming nature of community engagement and production on the Web through 1.0 to 2.0 and

beyond to the mini-cases on emergent technologies like augmented reality and the cloud analysed in the third case study. In the first case study on BlogScholar the nature of the network allows for significant engagement between the researcher and the community made up of social actors formed of academics experimenting with informal publishing on the Web through blogs. This is the most traditional social intervention in the form of a digital intervention as in many ways the BlogScholar portal is formed through the self-reflexive processes of the researcher in concert with the self-analysis of the academics experimenting with blogs inside the portal. In a sense Blogscholar is a kind of macro blog made up of a directory of micro blogs produced by the social actors engaging with the researcher in the formulation of the research study and objects. The second case study on Twae already reflects significant distance between the researcher and the social actors in the Twae network to the point of total anonymity of the vast majority of the members of the community and their total lack of awareness of any research engagement in their participation. This reflects the more transitory and fragmented networks of social media and Web 2.0 as opposed to the broadcasting, commenting, and discussion formats of Web 1.0. In the Twae case study the network is the conversation whereas in Blogscholar the network is the voices of the actors. In both cases communities are formed in order to study the processes of digital community formation but the function of the intervention shifts from a relatively collaborative exercise in BlogScholar to an abstracted notion of intervention and community engagement in Twae. The final case study reflects a multiplicity of potential future transformations of community formation in a future Web 3.0 and the traditional collaborations of researcher and social actors of social interventions. The distance from the self-awareness promoted by social interventions is even greater as the researcher is not even forming the communities in order to observe their formation. The researcher is analysing third-party digital interventions to reflect on what can be learned about future potential progressions of community formation in an era of remote storage of digital identities and transient flash mobs of social engagement in digital communities. This reflects the current transition of digital social life from social networks to living life in transient digital clouds of data and social identity.

The role of the researcher in these digital interventions is thus progressively more distant from the deep engagement envisioned by those originally forming the concepts and methods of social interventions. The digital intervention by its very nature becomes more and more virtual, more and more elastic and digital, and ever further detached from the analogue and physical realities of offline social and community engagement. In this progression the risk re-emerges of the methods getting lost in the conversion of the networks and communities from concept to realisation. The intervention threatens to get lost in the process of forming the digital communities in order to analyse the dynamics of digital community formation. This is again an argument for the inclusion in the thesis of so much peripheral material about media literacies and collective intelligence as these two concepts ground all three case studies in the researcher's construction of emergent Digital Sociology and provide critical glue for the overall project sticking together. Critical realism and the NPMs provide a theoretical foundation for the methodology and open possibilities for seeking integral realities of community formation and social engagement.

Hamel suggests social interventions advance qualitative methodologies in five ways. First, perceiving practical consciousness as an essential form of knowledge for illuminating political, historical, and psychological dimensions of social realities. Second, sociology revealing itself as "knowledge of knowledge" by drawing on practical knowledge in investigating and explaining factors that define the objects of its study. Third, sociological knowledge requires sociology in continuous participatory and engaged action in order to adequately explain social struggle. Fourth, social life can take on a theoretical representativeness as compared to representations of social data without any conflict or compromise between the two. And fifth, social explanation depends on understanding of practical knowledge as interpretation and explanation are one and the same (Hamel 1997). The researcher's role in the digital interventions of the case studies utilises all five of these developments in enacting and representing social research methods of inquiry. First, the practical consciousness of the researcher is prevalent in the investigation of the media literacies required for enactment of the methods deployed in community formation and analysis. Second, the case studies draw on this knowledge of literacy and beyond to the context of collective intelligences online in defining the

parameters, opportunities, and constraints of the case studies. Third, the presence of the researcher in a participatory action role in building communities in order to study the process of building communities and the constant interactive engagement of the researcher with the social actors in the community networks helps explain the social struggles of community formation and engagement. Fourth, the Netmodern theory emerging from the researcher is both prior and concurrent with the explanations of the sociological knowledge produced by the processes of enacting the case studies. It is an alternate "representativeness" of the sociological realities produced through the case study explorations. And fifth, the findings of the case studies cannot be detached from the practical knowledge and consciousness inspiring and guiding their development and analysis. The Digital Sociology demonstrated in the case studies cannot be detached or viewed in isolation of the media literacies and collective intelligences predicated on its realisation. In these five ways the digital interventionary methods used in the case studies relate and reflect back on the methodological frameworks of emerging social interventionist methodological theories while simultaneously transforming and advancing these practices for digital engagement. This use of scientific methods and emerging technologies to investigate social realities is in the spirit of programmes of research like the ESRCs eSocial Science initiative in the UK harnessing technologies from eScience for social science[3].

For all the case studies in this project the research subjects are the users of the computational tools and services under study and it is exactly their fluidity and daily usage that is of issue rather than dedicated sites of study or research groups of individuals. There was a constant reflexivity between the needs of the research and the skills of the researcher traversed throughout by adaptation to circumstances as they unfolded through the duration of the project. The products of the case studies include a thriving portal for academic bloggers, a fantastically popular Twitter feed of original short stories, and a variety of collective case findings on varietal instances of collective intelligence in action. All of these suggest emergent properties of social agency and form and these are the subjects and objects of study in this thesis. In *bricolage* the

[3] This programme includes projects using geo-spatial technologies to investigate social movements, information and analytical tools for obesity research and investigations into new methods for biomedical researchers to share and collaborate on data across borders and perceived discipline boundaries.

researcher makes use of what is available and at the inception of this research project an audit of the researcher skills suggested ample opportunities for inventive research practice and creativity founded in depth of media literacy. Beyond what is available a central methodological consideration for this research study is *necessariis* or what is necessary for experimentation and analysis. There simply was no other way as a researcher to explore the rapidly shifting frontiers of the emerging agency and forms in digital media in this research project than to participate in the process and engage completely in the wave of innovation and change. Strict observation was too partial, strict data too essentialised, and participation was mandatory. The risk of not adopting this approach far outweighed the risk of fruitless experimentation through adoption. Finally, the methodology for this project is highly theoretical but that is a requirement of conducting the study at all. The remainder of this chapter flushes out the theoretical foundation of the methodology as critical realism. The suggestion of the research findings is that you need to actually look at everything *differently* in order to study the research objects of emergent social agency and forms in digital media. Building on critical realism and digital interventions as method, Netmodern is that different approach.

3.4 Critical Realism

Critical realism represents an alternative to strict relativist or empiricist realities but is not a compromise between or a conflation of these theories; it represents a perspective in its own right. Critical realism accepts the relativist position that all knowledge is socially produced but rejects that all knowledge is therefore equally valuable. The implication that there are no grounds to determine when one kind of knowledge is preferable to another is refuted within critical realism (Bhaskar 1975, 1989). Critical realism accepts that all knowledge is conceptually mediated and socially produced and consequently contextually dependent. But it also argues that there is a real world independent of our knowledge and that it is possible to gain knowledge about this world. One view of the typical trajectory of paradigms in social science inquiry is from positivism to post-positivism to critical theory to constructivism (Guba 1994). From a social science perspective, critical realism straddles critical theory and constructivism to

recognise a socially mediated reality made up of both transitive and intransitive dimensions (Collier 1994, Sayer 2000).

Science has traditionally been understood as the steady accumulation of knowledge about a studied object by means of scientific method and neutral empirical observation. The goal is to develop more and more sophisticated investigative techniques and observations in search of 'truth' about the object or its behaviour. Often this involves building on the techniques of your predecessors in any specific research field. In this spirit, Isaac Newton famously wrote a letter to his rival Robert Hooke: "What Descartes did was a good step. You have added much several ways, and especially in taking the colours of thin plates into philosophical consideration. If I have seen a little further it is by standing on the shoulders of Giants" (Newton 1960)[4]. This paradigm of ever-compounding scientific knowledge is referred to by many names – empiricist, foundationalist, objectivist, and positivist are just a few. While there are distinctions between each of these terms the general sentiment is the same. They refer to practices specifically designed for the acquisition and testing of knowledge. In the physical and natural sciences they seek answers to fundamental questions of nature through empirical methods focused on what we can know about an object under study. This verification principle through the logic of induction and sense/data verifies propositions and separates meaningful knowledge from metaphysical speculation. Popper critiqued the empirical verification criterion and suggested falsifiability as an alternative. He illustrates this post-positivist turn using the classic example of the Black Swan.

> It is far from obvious from a logical point of view, that we are justified in inferring universal statements from singular ones, no matter how numerous; for any conclusion drawn in this way may always turn out to be false: no matter how many instances of white swans we may have observed, this does not justify the conclusion that *all* swans are white (1972:27).

This relates to the 'problem of induction' or how we can logically or even reasonably go from specific instances to reach general conclusions (Taleb, 2007). A further critique of

[4] Some scholars have interpreted this quote from Newton as a sarcastic jibe at Hooke who was afflicted with a severe stoop and was of slight build.

positivist orthodoxy is that it is impossible to separate the theories of science from the 'facts' of science gleaned through experimentation. These facts are theory-laden and dependent on a mutual dependence with the scientific concepts comprising our understandings (Popper 1963; Kuhn 1970). To attempt this is to practice a form of *naive objectivism* in frantic pursuit of an unattainable ideal of objective reality. It presumes cognitive, aesthetic, cultural and ethical values are independent of human thinking. A relativist alternative is arguing language, concepts and reality combine in a swirling complexity to form knowledge in its various forms. These claims, though largely ignored in the physical and natural sciences, put the scientific project under significant threat from the perspective of the social sciences. If reality can only be understood through subjective and varying forms of pre-understandings, we need only choose between competing forms of reality. This was taken further to suggest we cannot compare and evaluate truth claims or versions of reality as knowledge is infinitely relative (Rorty 1980). Taken to its logical conclusion this leads to a self-referential death spiral for relativist ideas. If no universals or objective realities can exist than the universal of all knowledge as relative cannot be sustained. Certainly no conferences, websites or books about relativist thought or research into claims of reality as these would inevitably employ truth claims. It has been argued that the consequence of such a paradigm is not the re-interpretation of knowledge claims but the complete meaninglessness of such a process (Boghossian 2006). Theorists adopting this approach are free to spout uncritical rhetoric safe in the knowledge that all cognitive discourse is immune to cognitive critique. By vaulting the primacy of practice above theory, perspectives and *arguments* are reduced to mere *attitudes*. As such there are potentially more dangerous consequences than eternal narcissism to contend with when adopting non-realist thought. As Collier says: "Non-realism as a meta-theory licenses every form of dogmatism at the first-order level" (1994:14).

Critical realism offers a more moderate and accommodating approach to reality as an alternative to manifest and universal truths of positivism, and the contradictory universals of relativism. Realists argue for a reality independent of our knowledge of it. The belief of a transitive world existing independently of our knowledge is the defining characteristic of realism (Danermark 2002). Sayer argues that the independence of

objects from knowledge is crucial to rendering the relationship between them problematic (2000). Contrary to realism being synonymous with any form of naive objectivism, it provides a challenge to any complacent assumptions about reality. While some realists might claim unmediated access to the 'truth', this is not the perspective of critical realism as pioneered by Bhaskar. Critical Realists consider that knowledge is always fallible, always changing, but not therefore always equally fallible. Facts are theory-dependent and socially produced but not therefore theory-determined.

Providing a bridge between oppositional perspectives in natural and social sciences is a recurring feature of critical realism and this bridge-building perspective offers an alternative to presumptive and flawed philosophies of dualism and binaries in science, social life, and theory. In the natural sciences, realism strides between the foundationalism of strict empiricists and positivists and the strict relativist philosophies of science. In the social sciences, realism challenges the strict interpretations of law-finding science applied to social life and the reduction of all social interaction and production to the strictly epistemological interpretation of meaning. This combination of a modified naturalism and interpretive meaning in the *fallibilist* philosophy of critical realism contrasts with a positivist quest for *infallible* objective truth or a strict relativist world as a product of our knowledge. Critical realism also provides a spanning bridge between the reductive grand narratives of modernity and the postmodern rejection of the possibility of reliable knowledge claims and scientific progress (Sayer 2000, Stones 1996). Finally, critical realism provides the researcher a toolkit presuming both the prevalence of logic and rhetoric in methods. It encourages the literary turn of metaphors and associational thinking in the investigation of the relative interpretations of knowledge and the critical distinctions between contingency and necessity of logic. Critical realism offers a conceptually cautious and reflexive approach to research methods and discovery. Systems under observation are situated in multiple and stratified social and political coordinates but knowledge exists in a blended mess of both 'transitive' and 'intransitive' dimensions. The intransitive is made up of propositional knowledge independent of theories and discourse about it. Typically physical processes or social phenomena forms a reality regardless of whether we speak of it or not and is thus intransitive. As theories change or adapt about the objects under study, it does not

necessarily follow that the intransitive need change with them. Sayer uses the example of the earth to illustrate that as theories evolved from flat-earth to round-earth, the actual earth didn't undertake any change of shape (2000:11).

It is not hard and fast that some aspects of knowledge in research reside in the intransitive domain, while other exists in transitive space. In the natural sciences this mess is easier to sort out as we can speak of photons of light, or pure energy, existing as intransitive outside the transitive theories of Newton presuming it has infinite speed and Einstein suggesting a finite reality. In the social sciences Bhaskar's theory on the two dimensions is harder to sustain in explicit terms as any aspect of social life is socially constructed and includes knowledge itself as an aspect of reality. Where the natural and physical sciences use transitive theories as the raw material to develop deeper knowledge of the intransitive world, the social sciences may just as easily use transitive knowledge as an object of study. Nevertheless, the product remains transitive knowledge. No matter how much research goes into the geological make-up of the earth, or instances of street theft in suburban London, the product of deepening knowledge of these systems in critical realism is transitive in the form of theories or scientific results verifying a hypothesis.

Bhaskar further argues that reality is not transparent. If it was there would be no need for science or discovery (1989). The *real* in critical realism is everything that exists, natural or social, whether we observe it or not and whether we have any knowledge of its nature. Empirical observation or equally our relativist perspective on an object under observation is just one layer of this stratified critical realist onion. If only our observations form reality, the sense-data approach of strict empiricists might be adequate to describe reality. If we could look at the sky and see the photons bending at light speed or understand the optimal physical make-up of a 100-meter sprinter just by watching a race, there would be no need for research or science. But equally if we reduce reality to only what we can know about it, in the sense-data approach of strict empiricists, the 'empirical world' is made up of only experiences, not the things experienced or the people experiencing. Bhaskar critiques this 'epistemic fallacy' by offering an 'ontological map' to three proposed ontological domains: the *empirical*, the

actual and the *real* (1975). The empirical consists only of our direct and indirect experiences, the actual includes unseen events as not all events are experienced, and the real contains experiences and events that contribute to the production of events. Bhaskar metaphorically terms these contributions *mechanisms* and this theory of a third domain of reality is part of what distinguishes critical realism from other forms of realism or perspectives on objective existence. The domain of the real is whatever exists in natural or social life whether or not it is an empirical object under observation. Realists accept a causal criterion and a criterion of observability in making claims of existence. In natural or social life we can observe certain powers, forces and structures in action but these observations are subjective, reflexive and multiple. Existence is not dependent on observation and a plausible case for the existence of unobservable entities can be made by referencing observable effects as the products of such entities (Collier 1994). But critical realists do not understand causation as a model of regular succession of events so there is no need to seek social laws or even identify the these events to provide theories and explanations for natural or social activity (Bhaskar 1975, Harre and Madden 1975). Instead of seeking regular occurrences or repeated patterns to unearth the causes of these products, explanation in critical realism looks to identify causal mechanisms to understand how they work and under what conditions they are activated. Starting with the real can help explain the actual and empirical (Sayer 2000). As Bhaskar states, the domain of the real is greater than or equal to the domain of the actual that is greater than or equal to the domain of the empirical: $D_r \geq D_a \geq D_e$ (1975). The goal of empirical realism is to establish the 'special case' of closed experimental systems where $D_r = D_a = D_e$ but this is much easier to apply to natural sciences than social life. While no system in the known universe is a perfectly closed system, experiments approximate closed systems and provide a method of isolating mechanisms to test their effects. Bhaskar considers predicates like 'natural', 'human', 'social', 'economic' or 'biological' to be *mechanisms*, not *events*, and as such one goal of social research is to observe products in social activity that can be referred to as effects of these mechanisms. There is a multiplicity of mechanisms and interactions in the open systems of natural and social life and passive self-absorbed observation assumes transparency. Experiments are necessary as "nature is neither a closed system nor just one damned thing after another, it is a multiplicity of mechanisms jointly producing the

course of events. So the course of events is in principle explicable, but not in terms of any one science" (Collier 1994:46). In sum, the function of scientific work in the social or natural domains is to "investigate and identify relationships and non-relationships, respectively, between what we experience, what actually happens, and the underlying mechanisms that produce events in the world" (Danermark 2002:21). This differs greatly from any version of empiricism/realism that observes atomistic objects or events as if they have no unobservable qualities.

Critical realism proposes a 'stratified ontology' to further distinguish the real, actual and empirical. This contrasts with 'flat' ontologies incorporating either empirical or actual reality or a combination. Examples include empiricism and the assumption that reality exists only through empirical observation and 'actualism' that "assumes that what actually happens at the level of events exhausts the world, leaving no domain for the real" (Sayer 2000:12). Bhaskar's critical realism is an *emergent* theory in that it argues for new properties emerging from stratified ontological frameworks irreducible to their constituents. The classic physical example (H_2O) is the emergent properties of water irreduced to hydrogen and oxygen. Similarly it seems the material universe predates organic life and life itself is surrounded by and made up of matter. In this context, matter is a building block for life which is a building block for rationality which is a building block for society and history. Social life emerges from biology, emerging from chemical and physical observation. Reductive materialists suggest that science explaining a more basic layer in this stratified structure has explanatory power over less basic layers. From this perspective it is only deficiencies in our knowledge of biology that requires us to investigate economics, psychology or social interaction. Taken to the extreme, from this viewpoint the ideal is a single science of matter like collective electrodynamics or the microscopic tiny loops of energy in super-string theory making up a propositional 'theory of everything'[5] (Collier 1994, Mead 2000, Greene 2000). Emergent theorists like Bhaskar argue that while more basic sciences may explain something about less basic ones they do not explain them away. Sayer provides the

[5] The natural sciences are not alone in pursuing a 'Theory of Everything'. Relativism about everything as the only form of reality is just as maligned in the natural sciences as any attempts to find a definitive science of matter are in the social sciences. Any theory that purports to offer a universal all-inclusive description of reality is by its nature exclusionary and bound to increase interdisciplinary rifts.

example of how the social practice of conversing is dependent on physiology, including synapses firing in the brain, but conversing is not reducible to those physiological processes (2000:13). Critical realism rejects the *either/or* approach in favour of *both/and* by accepting that levels in the strata may help explain but not explain away other levels. In social life internal relations between roles, identities and institutions create inter-dependencies and relationships with emergent properties. Friendships are not reducible to the atoms of individual friends that make them up, nor are the relationships between judges, lawyers, witnesses, defendants and the criminal justice system free of dependencies or combinations causally influencing each other and the form and structure of proceedings (Lawson 1997).

Social science requires both causal explanation and interpretation of meaning. Social phenomenon has meaning that needs to be interpreted and understood, not measured or counted. Critical realism accepts there is always a hermeneutic element to social reality and when the object of study is intrinsically social, research practice must operate in a 'double hermeneutic'.

> While natural scientists necessarily have to enter the hermeneutic circle of their scientific community, social scientists also have to enter that of those whom they study. In other words, natural science operates in a single hermeneutic while social science operates in a double hermeneutic. These circles imply a two-way movement, a 'fusing of the horizons' of listener and speaker, researcher and researched, in which the latter's actions and texts never speak simply for themselves, and yet are not reducible to the researcher's interpretation of them either. (Sayer 2000:17)

This does not however rule out causal explanation as material change in society must also be explained and reasoning can also be causal, for example, if the decision to purchase a new suit is partially motivated by reasoning regarding brands, style and politics. But critical realism opens up opportunities to seek causes in power, forces or mechanisms instead of just related objects.

> Actions always presuppose already existing resources and media, many of which have a social dimension that is irreducible to the properties of individuals; hence speaking presupposes a language, a language community, as well as material resources such as vocal chords or other means of making intelligible sounds;

> starting a bank account presupposes banks, money, and rules governing lending and borrowing. That those resources and social structures are themselves a product of actions (no structures without actions) does not mean that structures and actions can be collapsed into one another. Once one looks at them in time – remembering that they couldn't be anything other than temporal – then it becomes clear that actions presuppose an already existing set of structures including shared meanings, though these owe their existence to the fact that at an earlier time (t-1), people reproduced or transformed them through their actions, which in turn were constrained and enabled by structures existing from time t-2. (Sayer 2000:18)

In essence, every attempt to understand the world starts with our concepts of it and this research project is no exception. It is one of the reasons for the inclusion of this chapter in the thesis as it attempts to illustrate the concepts the author uses in approaching and researching emergent social agency and forms in digital media. In critical realism the relationship between the real world and the concepts we form to negotiate and mediate social life is the focus of the research process. Intransitive reality is conceptually mediated by researcher and participants so whatever finding or observation emerges is theory-dependent but not theory-determined.

CHAPTER FOUR: INTRODUCING BLOGSCHOLAR

[1]

4.1 Introduction

BlogScholar.com is a website started in June, 2005 to provide a forum and community for members of academia who publish informally on the World Wide Web (Web) through online publishing platforms like websites, blogs and wikis. The research on BlogScholar for this thesis project was conducted over the duration of June, 2005 until December, 2006. Blogs are online journals containing a chronological publication of comments and thoughts that are published instantly on a website and normally reflect the views of the blog's creator(s). Academic blogs are a subset of blogs that focus primarily on reflections and ideas related to a discipline of academic research or study. Wikis are websites that allow users to add and edit content collectively using collaborative software.

BlogScholar is an "academic blogging portal" and as such is intended to act as a gateway for academics bloggers or those interested in academic blogging to access resources, explore relevant issues, visit other academic blogs and create content. The

[1] BlogScholar wordcloud of the text contained in this chapter

start-up of BlogScholar is a direct result of my experience as an academic blogger lacking connections and resources directly related to the experience of academic blogging. BlogScholar is intended to partially address this gap by providing access to resources and opportunities for new and experienced academic bloggers to share ideas on relevant issues. Since launch the website has grown into one of the top two or three most popular resources on the web for academic bloggers despite it being abandoned as an active platform for publishing and community by the researcher in the summer of 2008. This data chapter analyses the experience and skills required to set-up and manage the operation of BlogScholar, statistics on the usage of the website, survey feedback from members of the BlogScholar community on the interaction of social life and blogging, and next steps for the website.

The BlogSholar academic blogging portal was established through the specific digital intervention of the researcher. The aim was to develop a Web 1.0 community in order to study the dynamics and inter-relationships of community development at that stage of the overall development of communities in the WWW. As discussed in the methodology chapter, the BlogScholar case study as a digital intervention by the researcher is the closest in form to traditional social intervention methods. This is reflective of the relatively traditional nature of the community formed through the digital intervention. There was significant interaction between the researcher and the academics participating in the BlogScholar portal through inclusion in the directory, commenting and interacting around themes relating to academic blogging, and the survey conducted of sampled members of the BlogScholar academic blog directory. In traditional social interventions the role of the sociologist is well defined as a *moderator* or *secretary* documenting and organising the knowledge transfer and overall intervention method and results. Responsibilities include chairing meetings, noting reactions and responses from participants and proposing sociological interpretations of the proceedings (Hamel 1997). This is very similar to the role of *administrator* played by the researcher in the BlogScholar digital intervention. Instead of document meetings, the researcher documents the server logs of activity on the portal but the ethos is relatively the same. Through mutual trust the administrator and some of the participants in this digital intervention as an example of an early blogging portal also

co-explored the social struggles and professional challenges apparent in informal academic publishing on the Web. This transitions the portal from platform for inquiry to method of inquiry. The administrator and actors engaged with the case study project transform into a social movement investigating and exploring the boundaries and possibilities of informal digital publishing. This engaged with the broader social movement of academic blogging underway at the time of the case study but operates as a contained case study on and inspiring these phenomena through the framework of the digital intervention producing and relating to the BlogScholar community. The administrator role is what crucially differentiates the BlogScholar case study from the following case study on Twae in the Twitter network. The researcher as administrator was able to effectively control and direct the community formation and levels of interaction through administrator privileges in the open source content management system (CMS) running the portal. This is the essence of Web 1.0 and the broadcast paradigm of communication it involves. The BlogScholar community can be thought of as one giant meeting where the researcher as administrator is chair of the proceedings and establishes the rules and framework for interaction and participation. The findings of the case study at the end of this chapter reflect on the advancements in qualitative sociology afforded by use of digital interventions as augmented social intervention method for community formation and analysis. These are Web 1.0 practices of Digital Sociology and remain reliant on the interpretation of these phenomena as dependent on knowledge of the roles and interactions of media literacies and collective intelligence in their development and execution.

BlogScholar relates to media literacy in that access to it and involvement in the community requires a sufficient level of media literacy for participation. Also many of the early adopters of BlogScholar who successfully submitted blogs into the directory or suggested sources of stories and relevant events are educators with a direct interest in the study of media literacy as it relates to e-learning, pedagogies of online teaching and learning, and broader social science and computing considerations. BlogScholar is in essence an attempt to launch a collective community on the Web participating in the academic blogging movement. In this form it relates directly to the theories of collective intelligence that suggest that by providing opportunities for collective interaction and

participation on a subject or idea, a meta-layer or semantic space will open up that otherwise might be muffled in the involvement of a cacophony of disparate and not formally connected voices.

4.2 Inspiring BlogScholar – Practical Examples

This chapter, like the overall doctoral research project, is focused on both the *theories* and *practices* of media literacy/collective intelligence in multiple intersections through a critical realist methodological lens. Research into BlogScholar requires both knowledge of that which informs the ideas and how these ideas manifest themselves in real world scenarios. This can pose unique challenges for the researcher as articulated by Hall.

> What happens when an academic and theoretical enterprise tries to engage in pedagogies which enlist the active engagement of individuals and groups, tries to make a difference in the institutional world in which it is located? These are extremely difficult issues to resolve, because what is asked of us is to say 'yes' and 'no' at one and the same time. It asks us to assume that culture will always work through its textualities – and at the same time that textuality is never enough. But never enough of what? Never enough for what (Hall 1996:271)?

The following are examples of practical applications of collective intelligence in action on the Internet in 2006. Most of the voices are practitioners of Internet craft. All of the examples involve elements of media literacy in the form of varying degrees of social practices, skills and knowledge required to read, write and participate in the featured communities. The sites selected are intentionally renowned and represent an emerging form of mass media that has proved consistently popular and useful. Use of these sites complemented my academic blogging experiences to inspire the development and operation of BlogScholar. In the literature review collective intelligence is described as being analogous to "grid computing for the human brain". Examples of grid computing for computers, typically when people download software and donate their computer's idle CPU time, include the Search for Extra Terrestrial Intelligence (SETI) project and the World Community Grid. SETI was launched in 1999 as an effort to replace expensive supercomputers with a virtual supercomputer made up of large numbers of Internet-connected computers. Over five million users download a small piece of software and a dataset of results from radio telescope signals to examine for anomalies

and upload back to SETI when complete (SETI 2006). The World Community Grid states its mission as "to create the largest public computing grid benefiting humanity". Current projects include identifying candidate drugs to fight the HIV virus and AIDS and understanding human protein functions (WCG 2006).

Since the stock market crash of the speculative "dot-com bubble" in 2001 content has rapidly returned as the key differentiator for website popularity and many sites have opened up the process of content creation and dissemination to their users. This has led to a huge surge in the global popularity of online media like blogs, podcasts, photo and video sharing, having a profound impact on the communication forms of writing, audio, images and moving images respectively. Blog aggregator Technorati boasts of tracking over 45 million individual sites and RSS feeds containing over 2.5 billion links to online resources (Technorati 2006). Bloggers can insert tags into posts on the Internet using meta-language and specific terms to describe the contents of each idea they submit into the "blogosphere". Users of Technorati can search by tag or post contents for terms (eg. racism) and receive hundreds of thousands of written fragments intended to reflect the interpretation and understanding of that tag by the collective of the authors tracked by the site. These types of websites provide rich landscapes for research through virtual ethnographies and studies of identity updated for the Web 2.0 era (Hine 2000, Turkle 1997). Flickr offers a similar service for photos, iTunes offers thousands of free podcasts created by users for users to download on topics of choice, and there are dozens of video sharing sites popping up on the Internet (Arrington 2005). OhMyNews, the most popular media website in South Korea, features contributions from over 30,000 registered "citizen journalists", defined as "the act of a citizen, or group of citizens, playing an active role in the process of collecting, analyzing and disseminating news and information" (Bowman 2003). Morris Communications, one of the largest owners of regional newspapers in the Unites States, recently stated a desire to switch all of its holdings into the model of their Bluffton Today citizen journalism pilot. In Bluffton, North Carolina over 50% of the town's 100,000 citizens have a blog on the Bluffton Today website and much of the free hard-copy daily newspaper version is made up of stories originating from the blogs. Many in the media industry are wondering now why

it took everyone so long to arrive at such a seemingly natural concept – a community newspaper written by the collective community.

One industry that is wholeheartedly endorsing the digital revolution in communications is video gaming. Massive multiplayer online games (MMO), like Blizzard's World of Warcraft that has 5.5 million subscribers worldwide, puts thousands of players in a real-time virtual world fighting against, or working with, characters controlled by people who could be next door or halfway around the globe. Persistent worlds in these games mean that the action goes on even if your player isn't there to participate. Analysts expect continued massive growth in this sector of the entertainment world as players get more and more used to, and expectant of, a collective gaming experience (Ono 2006). No industry is immune to these shifts in the cultural fabric of the Internet to collective agencies and action. The traditional publishing industries and measures of credibility in academia are undergoing a massive upheaval as journals move online and aggregators with powerful algorithmic functions like Google Scholar and Windows Live accelerate the process. The natural hypertext of the Web and the trend to semantic web search and retrieval provide an ideal format to track and measure the popularity of online academic submissions and publications. Sites like Issue Crawler follow links from organisations to create visual maps of "issues" like genetically modified food or right wing politics. It is becoming increasingly important that the optimised web presence of institutions, individuals and organisations reflects the core focus and operations of the offline entity. Automated techniques to analyse the content of publications and blogs can provide powerful insight into the style and intentions of the author(s). A study on the effects of age and gender on blogging that examines tens of thousands of blogs and over 300 million words illustrates this trend and asserts some evidence for old clichés.

> Male bloggers of all ages write more about politics, technology and money than do their female cohorts. Female bloggers discuss their personal lives – and use more personal writing style – much more than males do. Furthermore, for bloggers of each gender, a clear pattern of differences in content and style over age is apparent. Regardless of gender, writing style grows increasingly "male" with age: pronouns and assent/negation become scarcer, while prepositions and determiners become more frequent. Blog words are a clear hallmark of youth, while the use hyperlinks increases with age (Schler 2006:5).

Perhaps the most staggering change for academia will be the move to open access to all publications with government sponsorship in the United States within six months of publication in an academic peer-reviewed journal. With the introduction of the bipartisan Federal Research Public Access Act in the US Senate the academic publishing industry has come under severe threat and will need to adopt new economic models to sustain revenue and subscription. Electronic copies of the collective of academic research will be stored in databases and made publicly accessible online. This proposal for a near wholesale shift to electronic media in academic publishing has profound implications for the future development of BlogScholar as a community of academics publishing online.

Following the completion of the BlogScholar research case study in 2006 it has been tempting for the researcher to update the findings in line with the evolving understandings and knowledge about how academics have behaved and published on the Internet from 2007-2010 (Kjellberg, 2009; Luzon, 2009; Williams, 2010). According to Google Scholar, BlogScholar itself was cited over 25 times in peer-reviewed academic journals during this period as a crucial source of information about academic blogging and informal publishing. This indicates that while the internal study of BlogScholar has been informing this research project, researchers around the world have been using the public information in BlogScholar to analyse and draw conclusions about the behaviours of academic bloggers. So for the putposes of this research project it has been expedient and rigorous to not update findings for research on BlogScholar but instead reflect on how the findings are constituted in time and place relative to the overall development of the Internet. Specifically the limitations of interactivity and interactive potential in BlogScholar led the researcher to pursue the Twae research project explored in the next chapter that situates the research paradigm in social networks. As such there has been a linear procession to the research topics and studies in this thesis resulting from the participant observations and practice-based research models adopted towards its research question. It is most useful for this thesis project to reflect on the BlogScholar findings and their contribution towards the broader research agenda in the context of the time and place in which they were gathered.

4.3 Managing a Community

The advent of Web 2.0, or the semantic web, has dramatically changed the roles associated with managing a website of any scale. For example a journalism media site might previously have relied on wire services like Associated Press (AP) or Reuters to provide the bulk of website content complemented by some carefully targeted original contributions from in-house staff or contracted contributors. Many media websites in 2006 now rely almost entirely on users of the website to supply the content, most of it original, which sustains the website and the interest of the user community.

Similarily in academia a website about academic publishing prior to the blogging revolution might focus on listing journals where academic work is published or providing access to resources for academics aspiring to get their work published in journals. Contrast this with BlogScholar, itself a powerful publisher of non-peer reviewed informal academic work heavily reliant on the visitors to the website to provide the bulk of the website content. Managing a community like BlogScholar requires a variety of skills associated with media literacy and the following outlines the skills required to practice the management of the online BlogScholar community. It is not to suggest that anyone interested in setting up an online community of user interaction must have all of the skills listed here but these are the required skills to launch and operate BlogScholar in its current format. As the sole individual involved in the start-up and operation of BlogScholar Chris Brauer is uniquely positioned to reflect on the requirements of managing the community.

Getting Started

Setting up BlogScholar required knowledge of the following technical, content and design skills. These skills constitute a very high level of media literacy in the context of *creation*, typically the weakest skill of the access, analyse and creation skill-set constituting media literacy in its current definition. The experience validates the assumption of Chris Brauer developed through implementation of multiple dynamic websites that the skills required to create a customised community extend well beyond those required to set-up a blog or participate in a MySpace community of users.

- BlogScholar uses the Mambo Server open source content management system to manage all of the content on the website. Setting this system up requires knowledge of content management systems in general and the ability to install and configure the application on a web server
- Advanced knowledge of programming languages HTML and CSS are required to configure the look and feel of the website.
- Intermediate knowledge in the use of photo-editing software and graphic design software is required to produce original imagery for use in the design of the website
- Intermediate knowledge of programming language PHP is required to create new modules in BlogScholar
- Basic knowledge of programming language MySQL is required to configure the Mambo Server database
- Ability to author original content in English is required to populate the website with content through the Mambo content management server.

Operations

BlogScholar was launched in June, 2005 and has been operating for eighteen months at the time of this analysis. The following skills are required to operate BlogScholar on a daily basis.

- Acting as Managing Editor of the website requires the ability to differentiate between and make decisions about various types and formats of content submitted to the site. For example BlogScholar receives an average of 10 website submissions per day for consideration for inclusion in the BlogScholar directory of academic blogs. Selecting sites for inclusion based on the stated criteria for inclusion is a daily task in administering the website.
- Authoring new content is currently a key component of the BlogScholar editorial policy which calls for consistent insight into the latest news and trends relating to academic blogging. Most of this work involved scouring the Web for

interesting stories for BlogScholar users and authoring a teaser on the website that links to the story web page.

- Any changes to the look and feel, functionality or operation of BlogScholar typically require a combination of the skills outlined in the Getting Started summary.

4.4 Participating in a Community

While the previous section focused on what is required to set-up and manage the BlogScholar website this section focuses on the users of the website. All of the content on the BlogScholar website is related in some form to academic publishing and academic blogging in particular. There is not any contact information available to the user community, no advertising on the website and no identifiable benefit to visiting the site beyond interest in the content. Therefore it is reasonable to assume that the website visitors are in one form or another interested in academic publishing on the Web. The media literacy skills required to access the BlogScholar.com website are similar to the requirements for accessing any content based website on the Web. In theory the biggest constraint to accessing the site is that the majority of content is in English.

BlogScholar statistics

The attempt to create a community of users at BlogScholar.com has been a great success to date. Figure 3 is sourced from the BlogScholar web server logs and summarises the website traffic over the period of a year from December 2005 – Nov 2006. The statistics for November 2006 are incomplete at the time of authoring and represent approximately half the month's traffic until November 15, 2006. On average 7,500 unique users visit the BlogScholar.com website each month and these users visit 26,000 pages on the website each month. These statistics are the most important in tracking website popularity as indicators like Hits simply track the number of files accessed on a webpage (eg. if you have twelve images on a page when a user visits the counter will track one user, one page and thirteen hits). Each day BlogScholar currently gets 300 different people visiting the website. Figure 4 breaks this information down for the month of September, 2006. Key figures include referrals from 514 different websites

and an average of 328 different people visiting each day. Figure 5 illustrates the source of the visitors to the website for the month of September, 2006 based on mapping the IP address of the visitors to domains around the world. It indicates that users from 73 different countries visited BlogScholar in September, 2006 but that nearly 50% of users are from the United States and the server was unable to identify the origin of 23% of visitors.

Summary by Month

Month	Daily Avg				Monthly Totals					
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
Nov 2006	2365	1901	1221	304	2805	460187	5776	23217	36129	44945
Oct 2006	2330	1753	1228	287	3614	613557	8906	38087	54373	72234
Sep 2006	2026	1741	928	328	3817	603549	9863	27851	52247	60802
Aug 2006	2269	1781	1244	226	3263	663530	7009	38585	55223	70354
Jul 2006	3214	2905	1417	324	4753	956108	10073	43930	90062	99650
Jun 2006	2278	2060	925	296	3780	622734	8898	27763	61828	68350
May 2006	1598	1498	659	204	2897	450298	6324	20442	46450	49550
Apr 2006	1701	1570	740	202	2463	492069	6076	22218	47125	51053
Mar 2006	1480	1387	724	265	2345	463392	8223	22453	43007	45901
Feb 2006	1298	1189	550	231	2225	323254	6475	15419	33310	36359
Jan 2006	1199	1054	493	171	1802	291016	5308	15306	32684	37180

Dec 2005	1126	1022	549	194	1604	337571	6027	17028	31712	34928
Totals						**6277265**	**88958**	**312299**	**584150**	**671306**

Figure 3: BlogScholar website traffic by month

Monthly Statistics for September 2006		
Total Hits		**60802**
Total Files		**52247**
Total Pages		**27851**
Total Visits		**9863**
Total Kbytes		**603549**
Total Unique Sites		**3817**
Total Unique URLs		**2281**
Total Unique Referrers		**514**
Total Unique User Agents		**524**
	Avg	**Max**
Hits per Hour	**84**	**513**
Hits per Day	**2026**	**3647**
Files per Day	**1741**	**3417**
Pages per Day	**928**	**1905**
Visits per Day	**328**	**592**
KBytes per Day	**20118**	**42581**

Figure 4: BlogScholar website traffic for September, 2006

Top 73 of 73 Total Countries							
#	Hits		Files		KBytes		Country
1	25827	42.48%	21671	41.48%	303947	50.36%	US Commercial
2	12975	21.34%	12074	23.11%	142287	23.58%	Unresolved/Unknown
3	10331	16.99%	8827	16.89%	67142	11.12%	Network
4	1828	3.01%	1587	3.04%	14116	2.34%	United Kingdom
5	1581	2.60%	1061	2.03%	10676	1.77%	US Educational
6	1511	2.49%	1343	2.57%	12131	2.01%	Canada
7	1508	2.48%	801	1.53%	9754	1.62%	France
8	627	1.03%	582	1.11%	8319	1.38%	New Zealand (Aotearoa)
9	516	0.85%	455	0.87%	4132	0.68%	Germany
10	319	0.52%	306	0.59%	2338	0.39%	Australia
11	301	0.50%	293	0.56%	3057	0.51%	Netherlands
12	299	0.49%	269	0.51%	2204	0.37%	Singapore
13	256	0.42%	255	0.49%	1215	0.20%	Brazil
14	255	0.42%	254	0.49%	637	0.11%	Morocco
15	197	0.32%	162	0.31%	1703	0.28%	Finland
16	186	0.31%	173	0.33%	1423	0.24%	Italy
17	156	0.26%	153	0.29%	2497	0.41%	Japan
18	136	0.22%	132	0.25%	1392	0.23%	Argentina

19	**131**	0.22%	**123**	0.24%	**1017**	0.17%	Turkey
20	**117**	0.19%	**113**	0.22%	**466**	0.08%	Non-Profit Organization
21	**116**	0.19%	**113**	0.22%	**752**	0.12%	Romania
22	**110**	0.18%	**106**	0.20%	**601**	0.10%	Sweden
23	**109**	0.18%	**98**	0.19%	**741**	0.12%	Poland
24	**106**	0.17%	**106**	0.20%	**1543**	0.26%	Czech Republic
25	**95**	0.16%	**95**	0.18%	**1884**	0.31%	China
26	**93**	0.15%	**69**	0.13%	**403**	0.07%	Ireland
27	**86**	0.14%	**63**	0.12%	**760**	0.13%	India
28	**74**	0.12%	**73**	0.14%	**504**	0.08%	Russian Federation
29	**70**	0.12%	**59**	0.11%	**266**	0.04%	Switzerland
30	**67**	0.11%	**67**	0.13%	**286**	0.05%	Norway
31	**66**	0.11%	**66**	0.13%	**386**	0.06%	US Government
32	**63**	0.10%	**51**	0.10%	**216**	0.04%	Mexico
33	**56**	0.09%	**56**	0.11%	**445**	0.07%	Belgium
34	**56**	0.09%	**52**	0.10%	**391**	0.06%	Spain
35	**48**	0.08%	**48**	0.09%	**205**	0.03%	Croatia (Hrvatska)
36	**37**	0.06%	**37**	0.07%	**292**	0.05%	Israel
37	**37**	0.06%	**36**	0.07%	**492**	0.08%	South Africa
38	**32**	0.05%	**31**	0.06%	**599**	0.10%	Denmark
39	**31**	0.05%	**31**	0.06%	**64**	0.01%	Viet Nam
40	**30**	0.05%	**30**	0.06%	**156**	0.03%	Chile
41	**29**	0.05%	**29**	0.06%	**219**	0.04%	United Arab Emirates
42	**29**	0.05%	**29**	0.06%	**123**	0.02%	Philippines

43	**28**	0.05%	**28**	0.05%	**108**	0.02%	Greece
44	**28**	0.05%	**28**	0.05%	**121**	0.02%	Portugal
45	**28**	0.05%	**16**	0.03%	**153**	0.03%	Yugoslavia
46	**25**	0.04%	**23**	0.04%	**165**	0.03%	Cyprus
47	**21**	0.03%	**21**	0.04%	**117**	0.02%	Thailand
48	**18**	0.03%	**17**	0.03%	**115**	0.02%	Malaysia
49	**17**	0.03%	**17**	0.03%	**64**	0.01%	Slovak Republic
50	**14**	0.02%	**14**	0.03%	**61**	0.01%	Hong Kong
51	**14**	0.02%	**14**	0.03%	**57**	0.01%	United States
52	**13**	0.02%	**13**	0.02%	**45**	0.01%	Lithuania
53	**13**	0.02%	**13**	0.02%	**64**	0.01%	Luxembourg
54	**13**	0.02%	**13**	0.02%	**50**	0.01%	Oman
55	**12**	0.02%	**12**	0.02%	**31**	0.01%	US Military
56	**11**	0.02%	**11**	0.02%	**333**	0.06%	Taiwan
57	**10**	0.02%	**10**	0.02%	**1**	0.00%	Egypt
58	**8**	0.01%	**8**	0.02%	**45**	0.01%	Old style Arpanet (arpa)
59	**8**	0.01%	**8**	0.02%	**122**	0.02%	Seychelles
60	**6**	0.01%	**6**	0.01%	**24**	0.00%	Austria
61	**2**	0.00%	**1**	0.00%	**0**	0.00%	Estonia
62	**2**	0.00%	**2**	0.00%	**0**	0.00%	Kyrgyzstan
63	**2**	0.00%	**2**	0.00%	**0**	0.00%	Peru
64	**2**	0.00%	**2**	0.00%	**0**	0.00%	Syria
65	**2**	0.00%	**2**	0.00%	**29**	0.00%	Ukraine
66	**1**	0.00%	**1**	0.00%	**0**	0.00%	Colombia

67	**1**	0.00%	**1**	0.00%	**0**	0.00%	Guatemala
68	**1**	0.00%	**1**	0.00%	**30**	0.01%	Hungary
69	**1**	0.00%	**1**	0.00%	**0**	0.00%	Indonesia
70	**1**	0.00%	**1**	0.00%	**0**	0.00%	Lebanon
71	**1**	0.00%	**1**	0.00%	**21**	0.00%	Moldova
72	**1**	0.00%	**1**	0.00%	**0**	0.00%	Pakistan
73	**1**	0.00%	**1**	0.00%	**13**	0.00%	Saudi Arabia

Figure 5: BlogScholar website traffic by country

Surveying the BlogScholar community

While in general all of the visitors of the BlogScholar website can be classified as members of the BlogScholar user community a key distinction should be made between those users that can only "read" on the website and those that both "read" and "write" BlogScholar content. In BlogScholar administration this distinction is also marked by membership in the community: *guests* can view any of the content on the website but cannot submit content while *registered members* can view all content and submit content in the form of stories, comments on blog posts and entries to the BlogScholar directory. There remains an editorial function for the managing editor to approve any content submitted by registered members for publication on the site. While the analysis of the requirements for managing BlogScholar focused largely on the required technical skills and the user statistics section focuses on the popularity of the website on the Internet, media literacy is also about social practices. The methodology for this overall thesis involves social construction as a key element of understanding reality.

With these issues in mind the researcher conducted 12 online interviews from 1-9 August 2006 with social scientists practicing or aspiring to practice on the Internet[2] (BlogScholar 2006a). Participants were invited due to their presence in a social science category in academic blog directory at BlogScholar.com (BlogScholar 2006b). The survey took the form of online interviews with contemporary sociologist bloggers and inexperienced but willing social scientists. The goal was to get general input from sociologists interested in new media on the state of activity in the field and the extent to which online reality can be socially constructed.

On the topic of the sociology of new public spaces on the Internet Jim Barrett, doctoral candidate in modern languages at Umea University and blog author of *SoulSphincter* (http://www.soulsphincter.blogspot.com/) refers to the work of Danah Boyd on "super-publics" or what public spaces look like when infused with interconnected digital media.: "What does it mean to speak across time and space to an unknown audience? What happens when you cannot predict who will witness your act because they are not visible now, even though they may be tomorrow?"

Barrett is encouraged by the opening of public spaces in the new media narrative that can extend communication possibilities and offer flexibility in form. This can promote theatrical contexts and non-western systems of storytelling like West Javanese Gamelan music with its improvisation around themes and the theatrical practices of the Corroboree of the Australian Aboriginals. For Barrett sociology must invent new dialogues and exchanges to benefit through research methods and data collection from the growth and spread of knowledge sharing on the Internet. Sociologists online, like all web surfers, need information retrieval skills and critical methods of analysis to navigate the sea of emerging information and communication forms. Sociologists can continue to provide unique input through rigorous scholarship on how forms of digital information architectures are impacting social life and who is impacted or benefiting.

[2] The full unedited survey responses are available from the BlogScholar reference (BlogScholar 2006a). All further quotations or references to survey responses in this paper refer to material included in these full transcripts.

Eric Beekens, post-doctoral fellow at the University of Sydney researches how the global spread of the idea of a knowledge society is being adapted and implemented locally. Beerkens says that sociological inquiry on the Internet is hardly impacting the practice of sociology yet but is uncertain if this us due to a lack of awareness or a reluctance to make use of online public spaces. An online 2005-2006 poll of 100 visitors to academic blogging portal BlogScholar indicates a lot of uncertainty on how or why academics are adapting to online practice. In response to the question "Why don't more academics blog?" 30% answered "too busy", 28% indicated a concern with the medium, 24% said that academics were not yet aware of the possibilities, 14% answered "not interested" and just 4% said it was because academics had "nothing to say" (BlogScholar 2006c).

Beerkens heralds the opportunities of new media for more informal sharing of ideas and direct interaction free of the often time-consuming and rigorous peer review process. Beerkens blogs on globalization, academia and social science (http://www.beerkens.info/blog/) and, echoing a familiar theme from academic bloggers, says this motivates him to keep up with current developments in his field and "more or less forces me to critically reflect on those issues". He expects to see parallel developments in the academic publishing world that do no exclude each other between an open public space for reflection and opinion and a closed academic space for peer review.

Christopher Sessums, Director of Distance Learning for the College of Education at the University of Florida, agrees with Beerkens' empowering view of blog publishing:

> My weblog (http://elgg.net/csessums/weblog/) provides a space for me to share ideas, papers under construction, and connect to others with similar interests. More people read my weblog than read many academic journals, so it allows my scholarship to be more public, more accessible. There is also an added benefit of engaging in discussions and feedback that one rarely gets from a traditional academic journal.

Mathieu Deflem, Associate Professor of Sociology at the University of South Carolina, argues that all a sociologist needs to get practicing online is "a willingness to do it". He

does not see any need for special training, just a desire to access primary data and sociological writings online. Tama Leaver (http://ponderance.blogspot.com/), lecturer at the Centre for Advancement of Teaching and Learning at the University of Western Australia, sees exciting opportunities for accessing new forms and collections of data online. She argues that social scientists should experience a deep immersion through personal ethnography in online spaces: "you can't really understand or analyse something like MySpace from the outside!"

For the corporate world in general, knowledge management is critical as digital information is a key commodity of 21st century economics. Luis Suarez, education specialist consultant for IBM Global Business Services, blogs about collaborative methods of learning and knowledge sharing (http://www.elsua.net/). For Suarez the Internet is a democratizing force propelled by social software encouraging participation and responsiveness in both the reading and the writing of the Web. As users get more comfortable with the flexibility and possibilities of online societies "real-life" events and issues come online in the thickest of descriptions. Like Deflem, Suarez believes the technical skills for interacting online can be acquired through experience but the critical requirements for conducing online sociology are not different from traditional offline methods: "be passionate, be committed, authentic, honest, constant and trustworthy".

In a 2 May 2006 *Ideas* Interview in The Guardian (UK), Will Davies, Senior Research Fellow at the Institute for Public Policy Research in the UK, urges caution and analysis in analyzing the transition between offline and online research activities.

> There's a case for asking questions in periods of rapid change, even if they're naive-seeming questions such as: "Why are we doing this? What actual benefits is it delivering to us?" One of the things I want to suggest is that many of the benefits of this present phase of modernisation, and the technological investment that drives it, are not the traditional benefits of efficiency gains to the supplier. What's happening at the moment is that those benefits, the efficiency savings, are disproportionately benefiting the demand side, the consumer, not the manufacturer, distributor or supplier. There's greater convenience for the public at large, but not necessarily greater efficiency for society as a whole (Sutherland 2006).

In his survey response Davies says he adopts a 'beta' identity when publishing ephemeral, iterative or incomplete ideas on his blog. The purpose is not to generate new audiences, as many blogs have a tiny number of visitors, but to provide opportunities to connect and share. Online publishing is challenging sociology as it introduces a "publish-then-edit etiquette, rather than an edit-then-publish". Davies suggests that if sociologists choose to emerge from relative anonymity with public profiles through journalism or policy engagement the Internet can provide a method of following non-academic paths to interact with public events and spaces. The creation of "archives of the everyday" provide sociology with real-time access to sociological representations: "Rather than attempt to deduce what people want or what they think, we can increasingly read or see it, in the representation that they themselves have made of it".

With so few social scientists in practice on the Internet training and focus is required to allow the smooth flow of the discipline into new media. *Live Sociology* is an ESRC-funded year-long project of five workshops out of Goldsmiths College, University of London combining theoretical and practical training for UK researchers in the opportunities offered by the use of new media in ethnographic social research (Live Sociology 2006). Les Back leads the instructional team of sociologists experimenting with the practices of iterative and secondary analysis, reflexivity, and collaboration in sociological research methods.

Carol Wolkowitz, Senior Lecturer in the Department of Sociology at the University of Warwick is interested in the possibilities of multimedia in her teaching and research. She enrolled in *Live Sociology* to learn how to access new data sources, produce and interpret pictorial data, and taping and transcribing interviews. For Wolkowitz the sociological field of inquiry is without borders:

> For sociologists all info, overtly 'sociological' or otherwise, are grist for the mill … I think actually sociology, like other fields, is incredibly path dependent, and it is not clear whether we will do the same things differently or really innovate.

A key debate in current sociological theory is if there really is anything *new* about new media. Julia Frost, Research Fellow at Bristol University, is participating in *Live*

Sociology out of interest in new forms of presentation and content of sociological data. For Frost new media brings exciting possibilities: “More interesting research, answer new questions, or adding a new dimension to old issues. Immense volume of data and research. Ethical minefield!”

4.5 Conclusion

BlogScholar was designed as a platform for this case study analysis of emergent agency and forms in digital media. But it ultimately also served as a crucial resource for academics studying academic blogging and other forms of informal non-peer-reviewed publication on the Internet. This is supported by a simple December, 2010 search in Google Scholar revealing over 10 instances of peer-reviewed reference to BlogScholar in academic journals and publications. These typically appeared in papers discussing developments in academic publishing brought on by the opportunities and constraints of online publishing and the relationships of these factors to the industry of academia. Sample titles include ‘Exploring the faculty blogoverse’ by Murray (2007) and ‘Scholarly hyperwriting: The function of links in academic weblogs’ by Luzón (2009).

Just as in traditional literacy, the literacy properties of academics starting to publish or developing publishing capacities online are emergent. For example children start to learn language from birth and as they grow and develop, their speech and language skills grow increasingly more complex. Educators call the stage when children are just acquiring reading and writing skills critical for the development of literacy and practicing these skills in typically unconventional manners as *emergent literacy* (Teale, 1986). The multi-method findings of this chapter suggest a similar analogy for academics at the relative early stages of informal academic publishing. The BlogScholar study was conducted at a relatively early stage of development for this overall thesis and benefits from unique temporal positioning in the context of the overall thesis. Conducting a similar study in 2010 would likely reveal different emergent properties as the overall literacy of academics participating in publishing on the Web improves with the gradual maturity of the Internet as a publishing platform. This temporal positioning

is reflected in the indicative Netmodern Performance Map (NPM) in Figure 6 generated in this conclusion as a reflection of the findings of this case study.

In 2005 and 2006 Facebook, Twitter and many of the other now dominant social networks didn't exist and blogging was seen as a relatively advanced publishing technique on the Internet. Academics determined to enter this space were limited in the variety of options now available to academics in 2010. This lack of options did not make the process of engaging with these informal publishing platforms any less daunting and may have enhanced the challenge as it was not as readily accepted at the time that publishing online was an inevitable direction for academia. This is reflective of the general challenge of 'early-adopters' or 'trendsetters' in any innovation pursuit (Rogers, 1962). Through the BlogScholar study it was not readily accepted that the literacies required for academic blogging or similar informal online publishing techniques were a pre-requisite for participation in academia unlike children learning to read and write through the emergent literacy phase of development as a pre-requisite for basic communication capacities in social life.

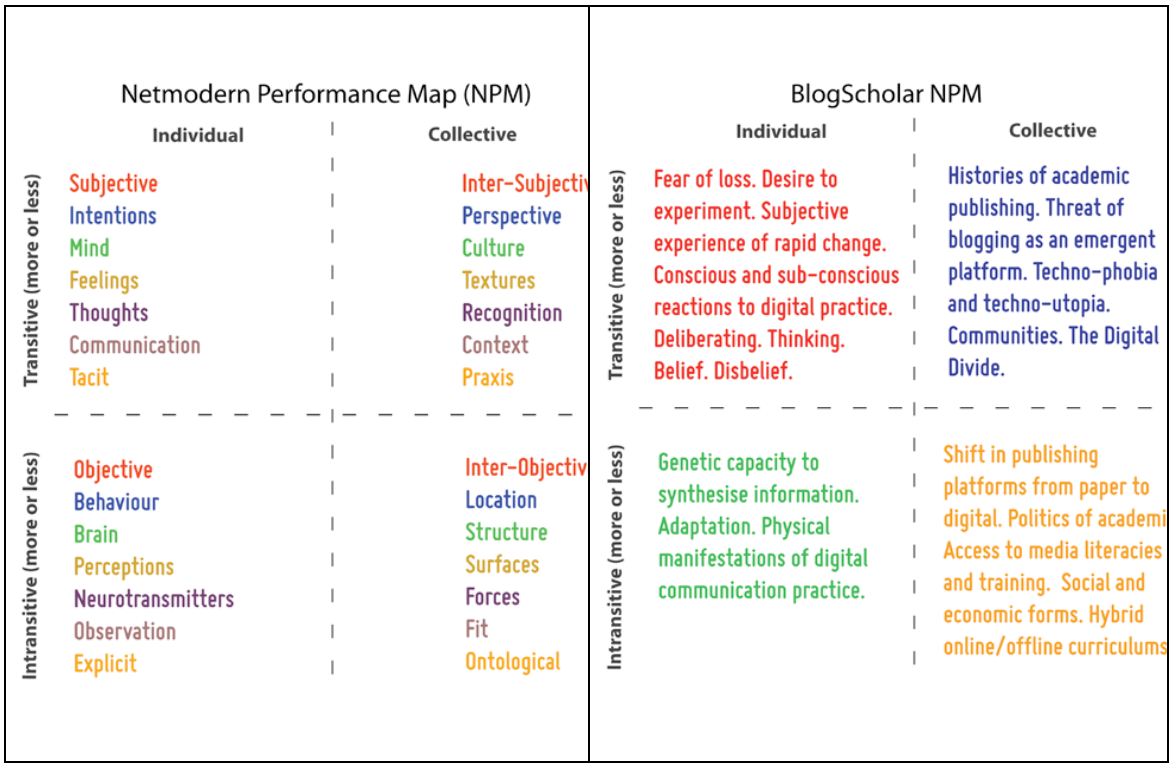


Figure 6: BlogScholar Netmodern Performance 'Map' (NPM)

The BlogScholar research project experience primarily engaged the inter-subjective and inter-objective quadrants of the Netmodern Performance Map introduced in the introduction of this thesis. The processes of submission to the directory and the self-classification and moderator approval were inter-subjective intersections with culture and context in informal academic publishing. As a publishing platform BlogScholar primarily represented a community of inter-subjective interactivity. As a directory of individual academic blogs classified into indexed communities by subject disciplines it more closely represents an ontologogical schema for an inter-objective map of informal academic publishing over the duration of the study. This is further substantiated by the relatively detailed analytics on user geo-location and referral source that form the bulk of the data on BlogScholar users presented later in this chapter.

Possibilities and Aspirations

BlogScholar was an experimental case study in Digital Sociology designed for this research project but it has potential longevity in the public domain as an informal publishing platform and community of academics engaged in online publishing. The results of the BlogScholar case study provide multiple possibilities and aspirations for digital intervention method and the broader practices of Digital Sociology. The results are based on the findings of analyzing the website usage, survey responses and reflexive management experience of operational BlogScholar.

〉 Deploying research field sites inside the academic community can be a very fruitful method of experimenting in practices of Digital Sociology. By basing the community on academics, BlogScholar inspires forms of mass reflection on the process and practices of engaging and participatory action in digital interventions. Academics are typically practiced in these arts of self-reflexivity and can provide useful sounding boards for acquiring knowledge about the formation and interactions of online communities. One lesson from the BlogScholar project is that **academia provides an excellent staging and**

testing ground for experiments in Digital Sociology. Often the outputs of the research can help inform academic research practices and even develop practical toolkits of software or code to support digital sociological methods.

〉 Although statistics for a month of BlogScholar usage reveal access from 73 different countries the vast majority of the traffic originates in English speaking nations. Language remains a critical intervening variable in the success of or ambition of producing nominally global digital interventions. The networked nature of the Web makes attempting to conduct single site and language research platforms inherently constrained. The constraints are relatively fluid as users or participants opt in and out based on actual language availability. One possibility to address this is the execution of a **multi-site approach**, potentially research franchise BlogScholars in different parts of the world authored in native languages and encouraging content submission in native languages. This distributed framework for administration retains the command and control functionality of the administrator in the digital intervention but allows for more nuanced and culturally specific communication as can be afforded by linguistic flexibility. The other current possibilities of human translation or automated translation are respectively too expensive and lacking sufficient sophistication and nuance. But the current state of play in digital media is a fast evolving ecosystem of demand-driven innovation and technology is advancing to address these constraints. For now, the establishment of single site or multi-site research communities as digital field sites in global networks raises questions of the responsibilities and field site constraints of linguistic accessibility.

〉 The BlogScholar case study informs the practices of digital sociologists conducting digital interventions in Web 1.0 environments of broadcast communication mixed in with some basic interactive functionality. The concept of membership in the BlogScholar portal through registration also reinforces this sense of a relatively closed digital system in which to research. Being able to manage the community development and operation through administrative privileges afforded the researcher the capacity to design a research blueprint and implement he plan. This same opportunity for formal administration is not available in the flattened networks and nodes of Web 2.0 and social networks as

will be illustrated in the Twae case study in the next chapter. Just because the technology has moved on and communities are now rarely formed on a global stage using a broadcast model doesn't mean the researcher cannot seek to deploy these kinds of environments for specific digital interventions and field research. It does however require a significantly more advanced set of technical and media literacies in order to execute on the blueprint for a relatively closed field research site. Software needs to be installed and managed on servers and the site administration lies with the researcher instead of the third party and cloud service providers of Web 2.0 and beyond. With this direct or remote server access comes advanced metrics and data about the behaviour, location, and movements of participants in this form of digital field site. This type of case study remains the domain of the advanced digital sociologist possessing advanced technical and media literacies. It suggests the value of **training** and 'bootcamp' like approaches for **knowledge transfer to aspiring or practicing digital sociologists in applied computing fundamentals**.

CHAPTER FIVE: IT TAKES TWAE TO TANGO

[1]

5.1 Introduction

Twae is a specific digital intervention in Twitter to form a Web 2.0 community in order to study and analyse the formation and operation of Web 2.0 communities. This ambition is the same as the BlogScholar community formation through digital intervention. But unlike the administrative privileges afforded the researcher in the BlogScholar case study, Twae doesn't operate as a community in the same sense. The networks and nodes of social media and Web 2.0 interactive communities of interest appear on the surface to be a much flatter playing field with each 'voice' both creating and interacting in conversations instead of responding to the edicts or broadcasts of a nearly all-powerful administrator. The community that forms in Web 2.0 is more a network than an audience. As will be discussed in this chapter, the production of these

[1] Twae wordcloud of the contents of this chapter

networks is directly related to the depth and reach of interactions formulated in the development of the network as community. The sophistication of these approaches to community development is once again dependent on the media literacies of the researcher and the collective intelligence of the members of any emergent community. The knowledge produced from the Twae case study is a different kind of knowledge from that of the BlogScholar case but both are formed through digital interventions in emergent technologies. One classic difference is how members of BlogScholar sign up and register with the site and therefore approximate a relatively closed field site system for research while the Twae 'members' are followers of the site and simultaneously engaged in a multiplicity of other communities and networks through their following behaviours. It gets much more difficult for the digital sociologist to assess what Web 2.0 communities can achieve in the collective intelligence as producers of shared knowledge. The affiliations between them are fragmented, temporal, and only loosely bound at the click of a follow button. The volume of voices grew exponentially on the Web between Web 1.0 and 2.0 and defining a community of specialists in a formal community like BlogScholar is increasingly irrelevant as shared interests bind and unbind in emergent and transforming social networks. Researcher practice of digital sociology are very different as instead of installing software and configuring servers, the methods employed are about establishing ties and optimising for follower behaviours. The underlying mechanisms of critical realism are much more prevalent in the Twae case study as the identity of members of the community are commoditised as followers and the methods of community development are increasingly systemised by the networks and nodes of Web 2.0. In this way it is not a flatter playing field at all but instead represents a lack of transparency and self-reflexivity about the role and influence of the relatively silent hand of the administrator of the community. Unlike in BlogScholar where the researcher's role was well defined and understood by the members of the community, the Twae community is rapidly developed by stealth and best practices for social network optimisation. The challenge is less social and more system. Members of the community wouldn't even recognise their membership in any informal community through their agency in following the Twae account. But Twae itself produces a powerful community capable of directing thousands of people to an initiative or content with the scribbling of a 140-character message. As opposed to

traditional social interventions, the digital interventions of Web 2.0 owe very little to the interaction of the researcher and the community. It is the interaction of the researcher and the network that drives the production of knowledge and community in Twae. This shift in digital sociological practice is adaptive based on the form of emergent networks in digital media but it is also largely reflective in the underlying paradigm shift in power and communications underway in the transition of the Internet content architecture from Web 1.0 to Web 2.0 that occurred between 2005-2009 and continues today.

5.2 Introducing Twitter

Twitter.com is a micro-content social networking website service started in 2006 to provide users with the ability to interact with text messages of up to 140-characters. This limit was initially set for compatibility with Short Message Service (SMS) over mobile phones but has subsequently become synonymous with the Twitter platform. Twitter is a store and forward best effort delivery system for text messages over multiple input and output delivery channels including email, mobile devices, other web applications like Facebook or a personal website, a Really Simple Syndication (RSS) feed, or as an Instant Message (IM).

Similar communication platforms have existed for a long time. In 1935 London train stations introduced ‘Notificators’ (Figure 7) on train platforms as a robot messenger “to aid persons who wish to make or cancel appointments or inform friends of the whereabouts” (Gadney, 1935).

Robot Messenger Displays Person-to-Person Notes In Public

TO AID persons who wish to make or cancel appointments or inform friends of their whereabouts, a robot message carrier has been introduced in London, England.

Known as the "notificator," the new machine is installed in streets, stores, railroad stations or other public places where individuals may leave messages for friends.

The user walks up on a small platform in front of the machine, writes a brief message on a continuous strip of paper and drops a coin in the slot. The inscription moves up behind a glass panel where it remains in public view for at least two hours so that the person for whom it is intended may have sufficient time to observe the note at the appointed place. The machine is similar in appearance to a candy-vending device.

Source: Modern Mechanix (Aug, 1935)

For a small sum Londoners may leave messages for friends in public places. When written on "notificator," message moves up behind window, remaining in view for two hours.

Figure 7: The Notifcator

Twitter distinguished itself from launch by providing a novel micro-content communication network as a platform for communication, enabling users to broadcast and share information about their activities, thoughts, opinions and status. The concept emerged from technologies like Internet Relay Chat (IRC) and instant messaging services like AIM, Windows or Yahoo Messenger, Gtalk, iChat, or ICQ (I Seek You). Twitter is also characterised as a *micro-blogging* service, contrasting its concentration on headlines of present activity, thought or news with much lengthier *blogging* content made up of larger stories or posts on publishing platforms like Wordpress, Livejournal, Blogger and Moveable Type. Micro-blogging facilitates an extremely fast mode of communication by encouraging short and frequent posts and potentially lowering the user requirement for structure and thought investment for content generation (Java et al 2007).

As of November 2010 Twitter was one of the 50 most popular websites in the world and succeeded in securing over $57 million (US) of investment from venture capitalists, angel investors and technology funds. If Facebook were a country it would be the fourth largest country in the world with over 240 million users. By comparison, Twitter is a

relative minnow with approximately 30 million users worldwide, similar to the population of Canada.

Barracuda Labs , a network security firm that surveyed and scraped 19 million Twitter accounts in 2009, reports that 73% of Twitter accounts have tweeted 10 or fewer times and 34% of Twitter accounts have never tweeted at all. Barracuda identifies the period between November 2008 and April 2009 as the Twitter 'red-carpet era' when celebrities, actors, athletes, musicians and politicians jumped on board the social networking service and began promoting it on a regular basis. Over 49% of the total Twitter user base at the end of 2009 joined up during this period as did 27 of the top 50 and 48 of the top 100 most followed Twitter accounts. Barracuda also examined the 'Twitter crime rate' as a measure of the percentage of accounts created per month that were eventually suspended for malicious or suspicious activity by Twitter administrators. This rate increased 66% during the red-carpet era and reached 12% of all accounts by October 2009 (Labs, 2010).

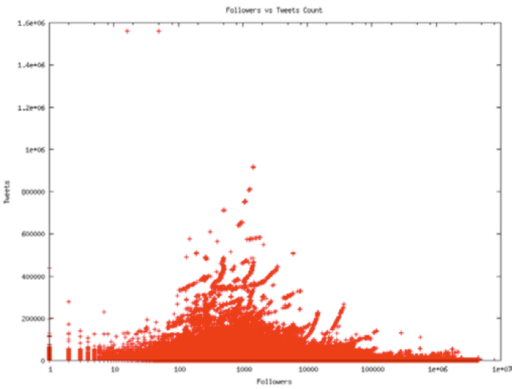


Figure 8: Most tweets by accounts with approx. 1000 followers

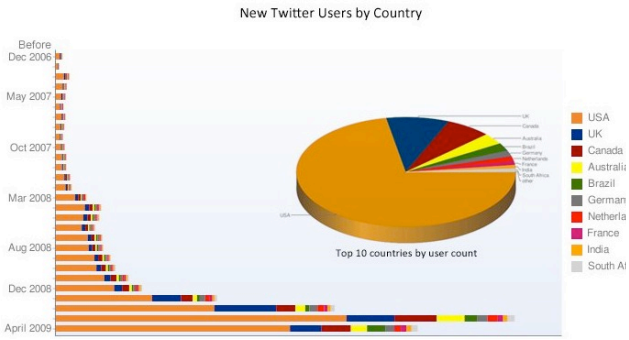


Figure 9: Accounts joining Twitter from particular countries

For this research project, Twitter provides a platform for the primary data investigation of a recent wave of innovation on the Internet focused on social interaction between online users termed Web 2.0. This chapter complements the collective case studies

chapter on Web 2.0 that includes a Twitter analysis of Digital Hacktivism. The core findings of research for this project focus on, but are not limited to, the creation of a Twitter account in April 2009 with a specific agenda of seeking to reverse engineer 'popularity' in the network and lessons learned, research and analysis conducted through and on this account for eight months to November 2009.

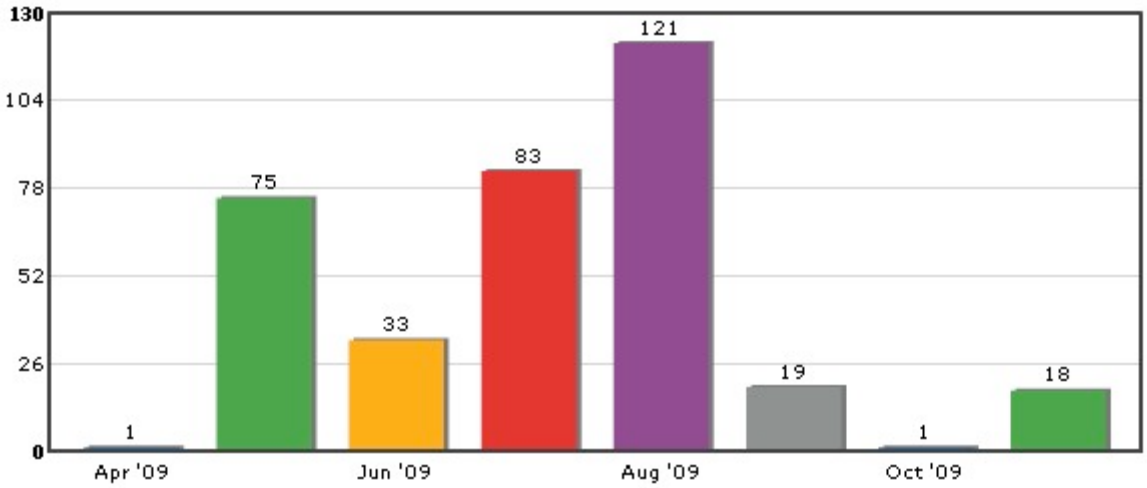


Figure 10: Tweet volume on the Twae account by 2009 month

For the purposes of this research study Twitter is analogous to a gated community of collective intelligence. Thirty million users and counting of the Twitter application contribute thoughts, ideas and ramblings into a giant mashed up conversation and draw out of this conversation selective information and knowledge. Every user of Twitter enters the conversation with their own ambitions and goals for what they are hoping to achieve through participation.

Much of the research in online communities focuses on intention detection and community structures. In Twitter's case, as in the case of most recent research on emerging online blogging or publishing platforms, the research tends to find that people use these platforms and communities to talk about their daily activities, promote specific communication agendas and seek or share information (Burns, 2009; Morozov, 2009). For users of social networks like Twitter these kinds of research findings are the kind of self-evident 'revelations' that degrade perceptions of the utility of examining

Twitter through the academy. All you need to do is participate in Twitter for a minimal period of time and it is abundantly clear that users interact, seek, share and promote through participation. While it is still useful to have these macro assumptions confirmed through statistical analysis and various analyses through data from the Twitter Application Programming Interface (API), these outputs are limited to informing on the platform itself, or the aggregate realities of the make-up of content in the communities.

The research conducted for this project focuses on the issues of what functional media literacy skills and tacit knowledge contribute to transformative and emancipatory potentials in the knowledge paradigm of Twitter. Using critical realism and the emerging theoretical properties of quantum sociology, the research assumes the potential for emergence in the realities and knowledge of social interaction in Twitter. From this perspective, the research explores the media literacies contributing to actualising potentials for social change and human liberation in discourses of a gated social network community of collective intelligence.

5.3 Introducing Twae

Mary sat in traffic in the palm of a giant hand. As usual Life was backed up to the corner of Luck & Fate. She got off at Sex.[2]

Twae is the profile name of a Twitter account started on 13 April, 2009 at 11:15am. Every account on Twitter starts with 0 followers. Six months later the account had over 10,000 followers with an average growth rate of 1,700 followers each month or about 60 new followers each day. By January 2010 this number had grown to over 15,000 followers. This trajectory is correlated with a concentrated campaign by the researcher over the duration of the study to generate 'popularity' in the Twitter network. It is a crucial defining characteristic of this case study that the results are not accidental and were formed from a hypothesis that popularity in social networks need not be accidental or even resultant from the perceived value of the feed in the network. The Twae case study started from the hypothesis that targeted application of particular media literacies in the interests of developing popularity in the collective intelligence of the Twitter

[2] Twae short story on Twitter from 21 November, 2009

network (and potentially parallel power and influence) could be engineered in a relatively short time span. To this end the case study results were overwhelmingly supportive of this hypothesis. As of November 2009, Twae was ranked the 5,658th most popular feed on Twitter from a pool of over 30 million. That ranks Twae in the top 0.0001% of Twitter feeds based on follower popularity. While geographically sorted data on Twitter is less reliable because so many accounts do not indicate the home location of the owner, Twitterholic ranks Twae as the 159th most popular Twitter feed in London. The WeFollow directory is the world's largest Twitter directory organised by interests. As of December, 2009 the Twae account was ranked 2nd most influential in the field of 'fiction' from 479 registered and tagged fiction accounts (Figure 11).

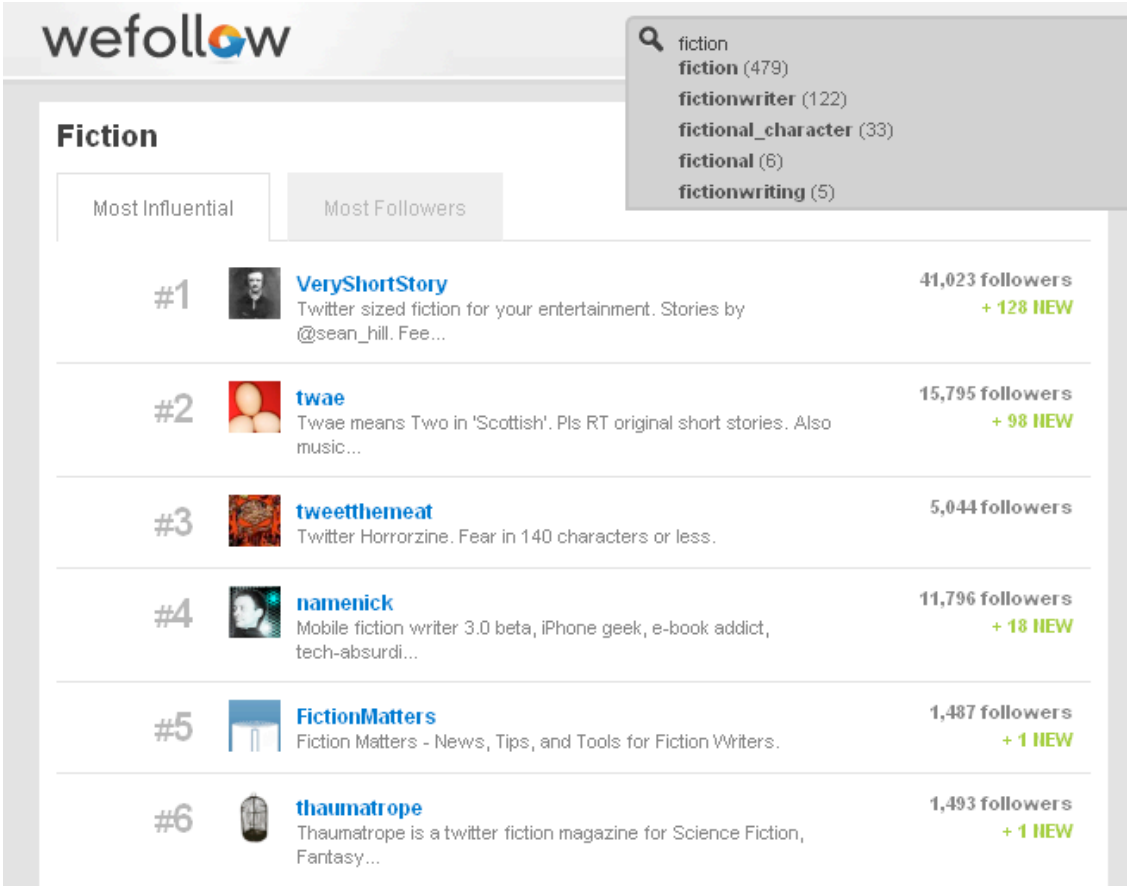


Figure 11: WeFollow (http://wefollow.com) category of Fiction

The primary social network principle in Twitter is *followers*. When Twae chooses to follow another user, the tweets from that user appear in reverse chronological order on the main page of Twae's account. As Twae follows multiple users, all of the tweets

from these users follow this principle and end up mashed up into a stream of tweets from users Twae follows. The Twae research project tends towards the network effect of potential group membership as the underlying principle that establishes power relations and the overall economics of the Twitter follower system. The Twae account consistently gained followers at a relatively steady rate through the research period (Figure 12).

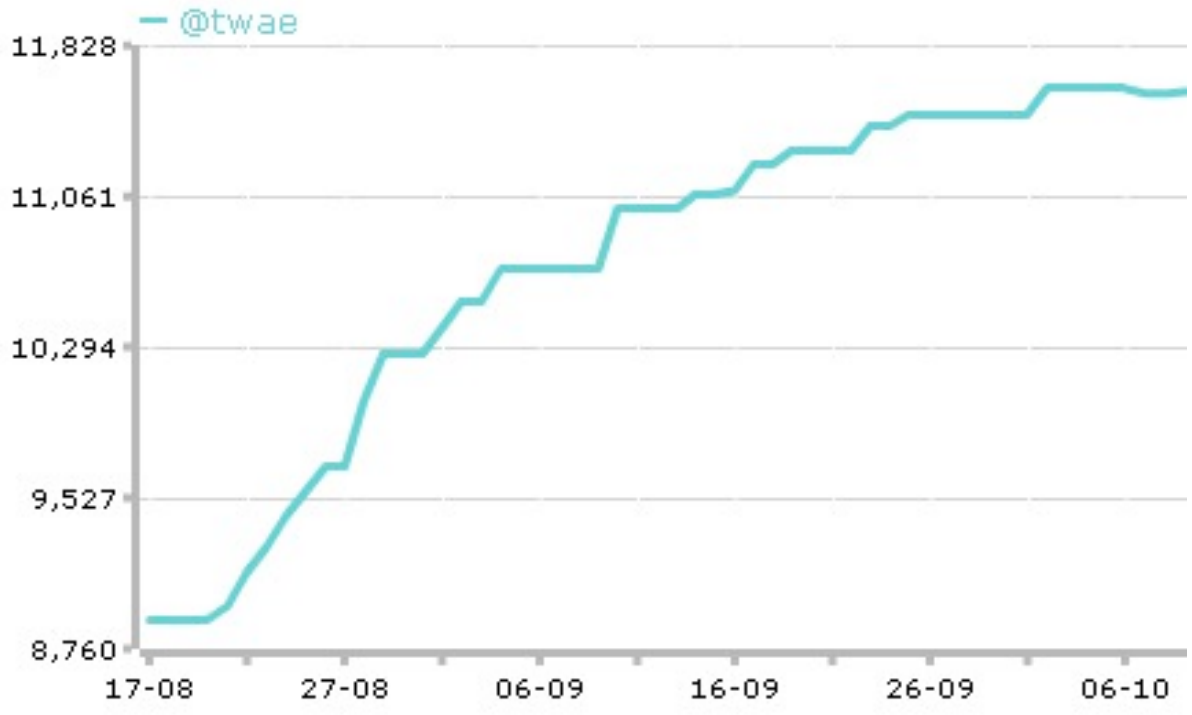


Figure 12: Twae followers from 17 August to 16 October 2009

There are multiple ways of looking at the potential network connections formulated by followers on Twitter and it is useful to analyse a few of these in turn to understand the perspective adopted by the Twae research. One way to calculate the followers of Twae is simply to count them (*N*). As the number of Twae followers is always changing we will use 15,000 as a fixed number from which to calculate. So in this case *N*=15,000. Another way to look at it is through Metcalf's Law that suggests that the value of a communications network is proportional to the square of the number of connected users of the system (*N(N-1)/2*). So in this case *N(N-1)/2*=112.5m. If we apply this to the Twae Twitter network it suggests there is 112.5m possible network connections in Twae's

followers but that assumes both that the followers follow each other and that all of the 15,000 followers are in contact or connected to the network. Obviously neither of these is likely so the actual number of network connections is likely to be far less but still exponentially in excess of the fixed follower number of 15,000. Finally we can look at the Twae follower network through Reed's Law that suggests that the value of group forming networks grows exponentially with the number of users (2^n-N-1). This suffers from the same relative issues as Metcalf's Law as it assumes members of groups follow each other which is not a requirement in Twitter. Ultimately the only reliable indicator of follower reach from these three options for counting Twae connections in a network was determined as $N + X$ where X is unknown.

The most frequent tweeting day for the Twae account was Wednesday and the most frequently tweeted timeslot was 7pm GMT. These were both carefully selected to map to the busiest times of activity on the Twitter network over the duration of the case study.

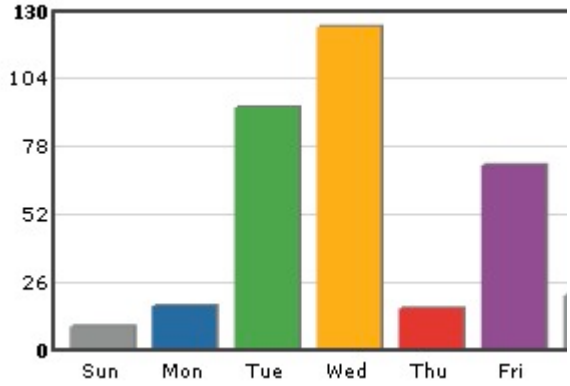


Figure 13: Days of Twae's tweets

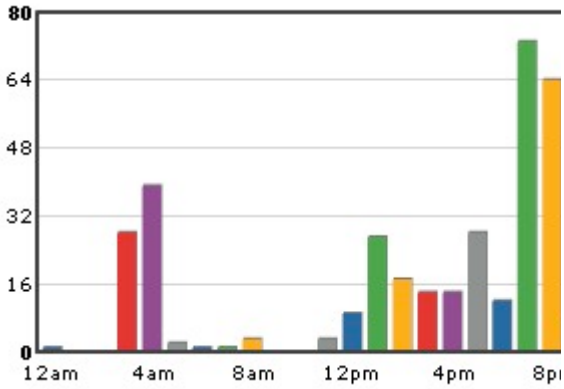


Figure 14: Times of Twae's tweets (GMT)

Defining the identity of the Twae account is a question of the length of a piece of string. The concept of Twae was carefully constructed and implemented but the perceptions of Twae are multiple, subjective and entirely fragmentary. As Harper writes when describing the apparent conflict of H.G. Wells as a pacifist who liked playing war strategy games with toy soldiers.

> It is entirely possible, from your contemplation, and informed by a range of material evidence, to construct a biography of this toy-soldiering Wells, relating his interests to his finished works, and exploring his varied relationships with war and propoganda, Socialism, science, teaching, haberdashery, sketching, the machinations of Modernity, and marriage and/or relationships. Indeed Herbert George Wells can be deservingly encapsulated. Though, if you do so, are you not already building another-Wells? Might this creature in our biographical sights be more akin, that is, to your-Wells? Their-Wells? Our-Wells? Her-Wells? His-Wells? Or not Wells at all? Might it be more akin to Shelley's Frankenstein (Harper, 2009:173)?

In the spirit of critical realism this chapter asks the question: What is it about Twitter that makes it relevant to collective intelligence and media literacy? The epistemic question of the subjective experience of communicating on Twitter is complemented by the ontological question of what it is about Twitter that is helping shape the online social networking transformation labelled Web 2.0. This case study on Twae investigates and probes these questions through examining dynamics of participating in the collective intelligence of the Twitter social network. With particular relation to collective intelligence it examines possible roles and forms of relevant media literacies addressing:

- Emancipatory potential
- Spontaneous creativity
- Culture and etiquette
- Competitive approaches to 'followers'
- Ethical issues and practices

Finally the case study describes some more functional and specific media literacies required to successfully participate and thrive in the network including application of:

- Hashtags
- Retweets (RTs)
- @replies (@mentions)
- Direct Messages
- Lists

〉 Third-party software

There is no broad ambition for the Twae case study beyond the hypothesis of engineering popularity but summarised in narrative form it might read: "Is it possible to further or achieve more general ambitions and goals through exercising specific media literacies in the collective intelligence of Twitter?"

Pierre Lévy describes collective intelligence as "a universally distributed intelligence that is enhanced, coordinated, and mobilized in real time" (Lévy, 1997). There are few areas of emerging forms of communication that better match this description than Twitter. Access is universally distributed to anyone with a screen device and a network connection. If we consider intelligence as the ability to comprehend, understand and profit from information and experience, these processes are also universally distributed in Twitter. Information in Twitter is enhanced with every tweet and communication between followers is coordinated and mobilized through the parameters and ethics of participating in the Twitter network. McLuhan famously stated the "medium is the message" and again there are few greater examples of this theory than Twitter where being *on* or *off* Twitter is equivalent to existing or not existing in this particular real-time media network. The messages and the platform are virtually indistinguishable from each other as twits tweet on Twitter. In considering Twitter as the message we must consider Hymes' critique of McLuhan that his "mode of reasoning is such that *involvement* and *importance* is transformed into *primary characteristic* and *determinant*" (Hymes, 1968:201). In the congested multimedia spaces of the 21st century it is both useful and necessary to delinieate the roles of alternative channels of communication in relative socio-cultural contexts.

Emancipatory Potential

Fundamental to this research project is the direct and carefully constructed crafting of online identities. This research project terms this *directed communication* in the spirit of an age of spin and crafted messages. One of the unashamed aims of this research project is critique and emancipation in the spirit of critical research from feminism to action research or critical realism. The Twae project is a conscious effort to unpack the social,

power and system dynamics of Twitter. But unlike many traditional forms of critical research the sole goal is not just to emancipate the oppressed but to provide guidelines and framework to any actor in the system to understand its makeup and methods of achieving success within it. This ambition fits into broader social and policy engagements with media concentrated on providing communication material that seeks to educate or empower people through service delivery rather than simply making people aware that the service exists. For example in the design industry Moor argues that the rise of interactive communication techniques like websites or mobile applications by government in the UK is part of a broader agenda to encourage people to exercise agency in their lives (Moor, 2009). This empowering approach is particularly relevant in the context of the flattened media landscapes of Web 2.0. Just as Blogscholar attempts to establish itself as a core 'broadcaster' in the Web 1.0 world of traditional client/server media relationships, Twae is an attempt to establish a 'node' identity in the networks and nodes of Web 2.0. The theory is that establishing a node presence in a particular sector or sectors of the collective intelligence empowers associated social identities to achieve associated goals and ambitions. The process of developing 'node' status involves a vast range of socio-economic and agency factors but this research focuses awareness of collective intelligence and on the particular and more general requirements of media literacies. The concept of influence transition from Blogscholar to Twae is a crucial underlying assumption of the transitory effects of a paradigm shift in media and communications. This transition is visualised in Figure 9 where Blogscholar is a 'broadcaster' receiving inputs from a select group of academic 'experts' and broadcasting out to the Internet individuals and communities interested and engaged with issues related to informal academic publishing online. This is similar to a daily newspaper print publication or scheduled evening TV news broadcast.

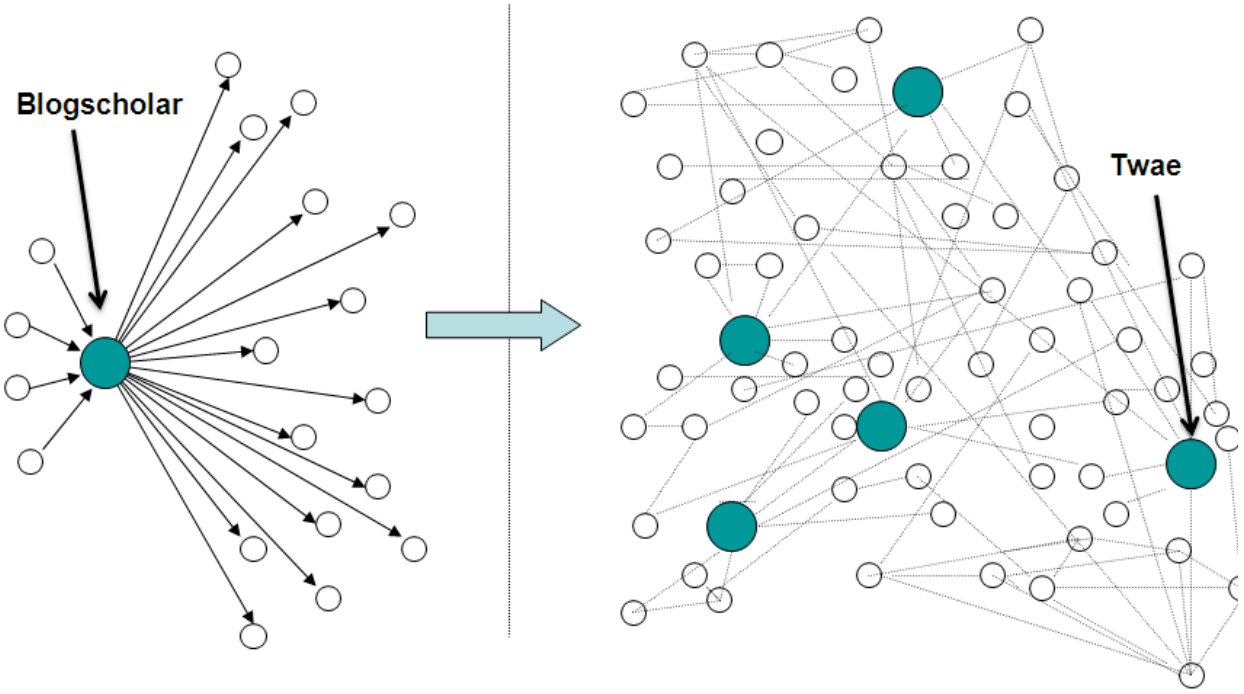


Figure 15: From Blogscholar in Broadcast to Twae in Networks & Nodes

There is virtually no interactivity present in this model beyond the ability to submit a blog for editorial approval to the directory of academic blogs or for logged-in users to comment on broadcast posts from Blogscholar. In contrast Twae is an attempt to establish a 'node' in the flattened power, influence and communication dynamics of social media or Web 2.0. The premise is that empowerment through the media was the domain of large media organisations or public relations machines in Web 1.0 so Blogscholar had to establish itself as a trusted expert in the emerging industry of online academic publishing. In Web 2.0 the position of trusted expert is opened up to any individual, government, non-profit or corporate entity in the networks and nodes. Filters are blurred as traditional access gateways like TV and radio broadcasters, editors and publishers lose influence and power in the collective intelligence (Figure 15).

> Culture evaporates into transmissible bits, fragments increasingly indistinguishable from noise. The information flood sweeps away coherence in the wobbling worlds of print and film. The digital era splatters attention spans until the shared sensibility dribbles into piecemeal, disintegrative deconstruction. Interactivity signals a process of reconstruction. The digital Humpty-Dumpty needs mending. Reconstruction is the process of designing whole, virtual

> worlds, full, rich experiences that are simultaneously received as they are actively assembled – from the user's viewpoint – as places fit for human habitation. From the fragments of the digital era arises the holism of virtual design. Virtual design means reconstructing worlds from digital fragments, engineering usable software environments from disparate information sources (Heim, 1998:89).

Twae is a directed research attempt to put the digital 'Humpty-Dumpty' together through virtual design. At its heart is a desire to produce while limiting reproduction. Some of the aspects of the account – like the choice to use 140-character fictional short stories as core content – were first practiced by others in the Twittersphere. But to the knowledge of this research project Twitter has never previously been measured and tailored for its ability to convert virtual reach and depth of interaction into real-world ambitions. It seeks to achieve something unexpected and improbable and is inspired as a sneak attack on notions like Serres' parasites "immediately making it something common or banal" as "copiers and repeaters" (Serres, 2007). The measure of success for the project is first establishing this virtually designed identity and secondly observing, assessing and measuring its ability to achieve specific strategic and tactical goals. It is not unusual for researchers or analysts to deconstruct methods of successful participation in the emerging social networks of Web 2.0. For example Tapscott and Williams offer recommended principles of mass collaboration that promote 'Wikinomics by Design' (Tapscott, 2008). The list combines media literacy practices with etiquettes, strategy and processes.

:

- Take cues from your lead users
- Build critical mass
- Supply an infrastructure for collaboration
- Take your time to get the structures and governance right
- Make sure all participants can harvest some value
- Abide by community norms and create conditions for trust
- Let the process evolve
- Do not lose sight of your objectives
- Collaboration starts internally
- Finding the internal leadership for change
- Hone your collaborative mind

The experience of conducting the Twae case are aligned with Tapscott's notion that "collaboration and openness are more art than science" but there remains principles of practice that promote success, however success is subjectively framed. The implication is that simply following these principles will not ensure successful fulfillment of ambitions for interacting as the process if fundamentally artistic and transient. The 'science' is researching and implementing tactical (and largely technical) media literacies and optimization strategies while the 'art' is in the parallel and intersecting social interaction. Twae seeks to go beyond recommendations or analysis to practical proof of concept (Hargittai, 2009). But there is virtually no research available on adopting *bricolage* in making use of what was available in achieving ambitions in social networks. For Twae there were three specific goals set in the pre-development phase of the research related to three theorised concepts – reach, depth, and goals (Figure 16).

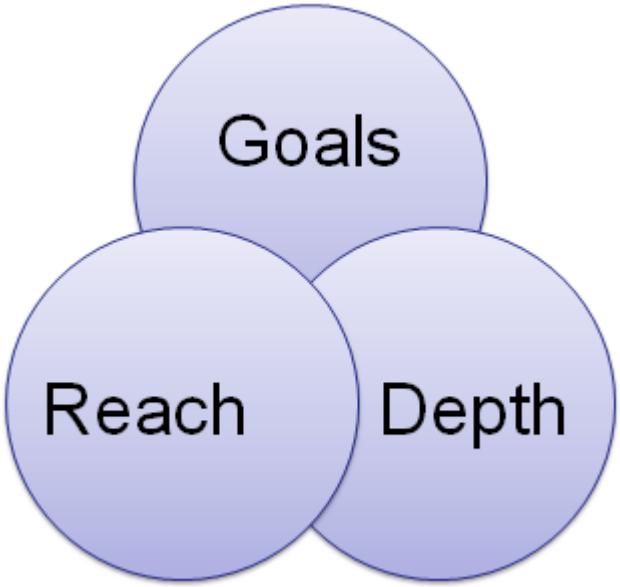


Figure 16: Goals, Research, and Depth for the Twae project

The first was to generate 15,000 followers in six months in developing *reach* for the Twae Twitter account. The target number was established in two highly subjective ways. The number matches the population of the hometown of the researcher growing up and it was in excess of any active literary account at the time of its formulation. The

use of the verb ‘generate’ reflects the overall approach of the project of building a critical mass of followers in social media is a theorised component of establishing ‘node’ status online. Certain aspects in the result of achieiving a high number of followers can be deconstructed and rebuilt, a la Humpty Dumpty. Everything in social media is socially mediated but mediation does not equal construction. Twae is a direct attempt to construct a following of 15,000+ within the designated timeframe of eight months in the interests of developing Twae into a node for literature on Twitter. Anecdotal evidence suggests spammers, life coaches, direct marketers, campaign managers, sales agents and corporate brands adopt similar Twitter strategies in the interests of converting these mass audiences into customers or supporters. The concept is similar to mass email campaigns of other electronic direct marketing techniques interested only in the converted numbers. The percentage of converts is less important than the sum of total converts. In the simplest but crudest form these campaigns try and amass as many followers as possible, regardless of relationship to target markets, because if even a fractional percentage of these followers convert to customers it is possible to have a succesful business, fundraising or volunteer model. Twae differs from these models in seeking empowerement for Twae instead of conversion of followers into ‘buyers’. The basic purpose – achieving specific goals through developing a network of critical mass – is the same but the Twae account seeks to do this through both reach and depth instead of just reach. The concept is social influence is cultivated by extending reach into the collective intelligence. This influence can translate into seeking and achieving associated economic, social or cultural goals.

The second research objective is *depth* of engagement with the community. The development of a critical mass of followers provides the social landscape for interactivity but influence is predicated on engagement. Unlike a direct marketer seeking to sell stop snoring products through an advertorial Twitter stream, Twae does not have a specific conversion objective beyond depth of interaction. This translates to interacting with followers on the Twae stream through original tweets, retweets, @replies, direct messages and lists. Interactivity is a fundamental premise of participating in networks and the concept of a node implies a virtual location of high volume of interactive activity. The empowerement concept inspiring this depth

objective is that increased social capital opens opportunities for increases in other forms of capital. There is a relation between the influence of Twae and the volume and sustainability of follower engagement with the Twae account. Every aspirational form of media and communication seeks to engage its audience. Twitter interactivity shakes up the broadcaster/audience relationship in the same way that quantum sociology questions the established roles of *observer/observed*.

The third objective, and the one most directly related to emancipatory potential, is the definition and achieving of specific *goals* in relation to the growth and popularity of the Twae account. The research hypothesis is that targeted short/medium/long term goals can be achieved through sufficient reach and depth in the collective intelligence of Twitter. All of these categories are inherently subjective as concepts like sufficient and achieved are interpretive. But this approach forms one of the core drivers for the Twae research exercise as the reach, depth and particularly goals are crafted from the subjective perspective of the researcher engaging with the collective intelligence. In the context of this project three specific goals were set prior to commencing the practice-based research.

- Develop a credible and respected Twitter identity in the field of serious literature
- Develop significant referral power to divert users from the Twae account to other destinations on the Web through embedded links in the Twitter stream
- Secure an offline book contract through the literary tweets in the Twae stream

Some reflections on the relative success or failure of these goals are included in the conclusion of this chapter.

Spontaneous Creativity

In *Authors at Work*, Sullivan and Harper explore how imagination links with environment in the formative processes of original literary texts. Voyeuristic details are provided about the physical context of literary creative expression from Milton regularly giving dictation in a sunbeam to Auden practicing reflexivity at the bar and

Trollope keeping detailed to-do lists that would fit perfectly into many of the productivity applications available on modern mobile phones. Sullivan suggests the mind of the writer is unshackled by cooperation with locations and environments of creative inspiration. Metaphorically this is about 'setting the stage' for literary creativity and productivity by making efforts to control the contextual surroundings for creative inspiration.

> The newest branches of literary criticism reverberate to the reworking of 'real' place, from publishing history to ecocriticism. In material terms (context and reception – creativity) process and output are of as much interest as producer (Sullivan C. H., 2009).

Early experimentations with crafting original short stories in 140-characters or less for the Twae Twitter stream introduced a lot of questions about the creative and editing process for this relatively novel format. Efforts to sit down at a desk and craft stories were frustrating and constantly in conflict with the real-time media of Twitter. It seemed deeply unnatural to try and craft stories through traditional literary processes, particularly as Twitter offers only creation and delete and no edit function for tweets. The first two weeks of the process involved relating to and documenting three primary challenges to the proposed Twae approach of creative and regular generation of short stories in 140-characters or less.

The first challenge involved publishing stories and almost immediately recognising errors or better ways of formulating narratives. As the tweets are immediately published the only possibility is to delete and republish but followers are aware of this process through their timelines and it does not follow standard Twitter etiquette and practices. Frequently adopting such practices resulted in followers sending @Twae replies or direct messages with comments like "already saw that one" or "Please stop retweeting the same stories or I will unfollow". The primary issue is that while the process of reposting stories was transparent to followers, the intention behind this reposting was not. The decision was taken by the researcher to always only post stories once for better or worse. If a story was posted and subsequently deemed by the author to be of significantly poor quality the only option was to delete the story and not repost in a mutated form.

The second challenge involved sourcing material for stories. When time was designated to post stories this often resulted in a mini writer's block where no obvious creative inspirations were available for posting stories of sufficient quality or variety. These 'writing blocks' contrasted greatly with impulsive moments of creative inspiration, typically when not at a laptop or terminal, when stories would suddenly occur to the author. These would often be conceptual story instigations (a woman alone at a bus stop touching her neck might inspire thought of a story of quiet sensuality) that promised evolution into fuller and formal 140-character narrative tweets. The decision was taken by the researcher to not designate set blocks of time for authoring stories but rather allow the stories to emerge when struck by inspiration in some form.

The third challenge relates closely to the second in that a pre-requisite for posting tweets is connection to a networked device with a screen. In addition Twitter features linear timelines and regardless of how many followers an account has there are times when a significantly larger audience is actually on Twitter. For example posting at 10am in the UK means the tweet will appear at 2am for all followers located on the west coast of North America. The section of this chapter discussing competitive approaches to generating and communicating with followers goes into the specific Twae experience with posting times in more detail but this issue combined with the prerequisite for network access to form a significant obstacle to resolving both the second and third identified challenge in the early stages of the account. The decision was taken by the researcher to download and utilise a mobile Twitter client as often as possible to free the creative process as much as possible from rooting in time and place. Obviously the implications for this include a requirement for network access for the mobile device but the phone also has the ability to capture stories in the internal memory without posting if network access is unavailable. Adopting this approach also led to frequent storage of stories for later posting to maximise audiences of followers. This addressed both the challenge of network access and optimised posting times without detracting from the impulsive processes of story generation.

The ethos adopted in the research context of these three challenges can be summarised as a choice to employ and promote spontaneous creativity in the literary practices of Twae. This ambition contrasts with an equally powerful research aversion to developing Twae through the use of occupational formulae of writers or the systematisation of creative practice repetition of ideas to expedite delivery. The fundamental approach is one of improvisation as a generative, relational and temporal concept embodied in the work and reflexivity of the Twae account (Ingold & Hallam, 2007). This complements the generativity, relational aspects and temporality of social and cultural processes reflected through interactions and communications on Twitter.

This approach is a common element of many industrial and creative design firms attempting to generate client solutions in a profitable and consistent manner (Dorland, 2009). In his research on radical behaviourism and positive and negative reinforcement Skinner frequently studied the "emitted" behaviour of "freely moving organisms" in literature, music and other spontaneously creative processes. Epstein argues Skinner's research only focused on the effects of interventions resulting in spontaneous behaviour, not the generative probabilistic qualities of behaviour itself (Epstein, 1991). The creation of the Twae account concerned itself much more with this intervention potential than the psychological and generative roots of spontaneity. Aspiring to emit short literary vignettes on a regular basis from the freely moving Twae account involved linking behaviour to experimental conditions and finding positive reinforcement in RTs and @Twae replies in the Twitter stream and negative reinforcement in avoiding large follower drops or lack of community engagement through frequent spontaneous original short story tweets.

Generating content in the Twae stream seeks to avoid structures and hierarchies typical to genre and publication specific conventions. Creativity in all forms typically involves inventive processes and the ability to devise and create novel ideas or concepts but this is typically restricted by awareness and constraints associated with routine and systemised tasks (Owens, 2009). As a creative process free from hierarchies the Twae stream creates short form original literary tweets through an interplay of creative and repetitive processes and through interaction with social and physical environments. The

creative processes involved are spontaneous in Skinner's form of interventions of inspiring social or physical interaction resulting in generation of novel tweets. As Florida argues: "Creativity flourishes best in a unique kind of social environment: one that is stable enough to allow continuity of effort, yet diverse and broad-minded enough to nourish creativity in all its subversive forms" (Florida, 2002:35).

Ethics and Etiquette on Twitter

In the Twae project the researcher is not external to the research. The researcher is embedded with the research group and is in fact indistinguishable from the research group. Unlike interpretist research paradigms the use of critical research approaches to reality shift the focus of the research from understanding to unpacking and rebuilding. The project assumes a desire in participants in the Twitter stream to better understand methods of succesful use of the platform in the pursuit of specific goals and objectives. As a result knowledge is interpretive, highly contexualised, and very value dependent.

The delineation of public and private spaces is particularly problematic for online researchers seeking to interact with research groups and analyse public digital data archives (Jirotka, 2009). The Twae project seeks to engage audiences to increase depth of interactivity but recognises the seminal insights of Goffman suggesting private domains often reside in public domains (Goffman, 1971). Researchers must take into account conventions used by participants in project studies to establish private territories in formally public places, like the equivalent of laying out a towel at a public beach. The same structure applies to conducting research in virtual domains like Twitter. Twae as actor must account for the character and purpose of members of the vast research group of Twae followers. But just as Douglas could not observe intimate encounters on Californian nudist beaches while wearing a parka, Twae must be a profile stream to conduct research in Twitter (Douglas, 1977). Even in the public agora of Twitter, research must respect that territories in public spaces can be private and guarded and behaviour may be observable only upon the satisfaction of certain conditions (Homan, 1991). The Twae research project adopted Goffman's concept of 'front' and 'back' behaviours to keep this virtual research process manageable and

structured within some for of definitive framework for practice. For this project the satisfaction of conditions is the exclusive engagement and research of 'front' behaviour related to the Twae stream with no research conducted on 'back' behaviours. As this is an emerging field of inquiry the delinitation of front and back was subjectively determined to as front behaviour including any active engagement with Twae and back behaviour any Twitter activity not engaged with Twae.

The chosen conditions of engagement include three primary guidelines. The first is that the Twae account never follows a user that has been unfollowed by Twae or has chosen to no longer follow Twae after initially following. This is the equivalent of spam suppression. If a user account unfollows Twae it is taken as an indication of a lack of desire for public engagement with the Twae twitter stream. As such the account should never be refollowed as this could constitute a form of harassment and a lack of respect for the privacy indication of the unfollow. Equally if Twae unfollows a Twitter account that account should never be followed again by Twae as this would constitute equally poor social awareness and practice. Secondly all the research conducted for the Twae project was done on accounts engaging with Twae through the act of following and/or listing the account or sending @Twae or direct messages. Communicating through these gestures in Twitter seems like a fairly straightforward admission of a shared understanding of the space of engagement as public. Thirdly the data and observations captured by the researcher acting in the form of the Twae account was not about individuals but about human behaviour as a phenomenon. The Twae research project has no interest in knowing the real-life identities (or even their Twitter identities for that matter) even for the purpose of checking across followers. Therefore even if the data collected through Twae research is subjectively interpreted as gathered from private situations, the data need not be regarded as private data.

The Twae project adopts a fluid and nonessentialised view of identity in follower research groups and recognises the partiality and subjectivity of the observer within the scope of the study. The project does not attempt to create an authentic or unitary view of the collective followers of the Twitter accounts or any of their individual identities. The intent is to operate as an engaged participant in significant issues related to performance

and power dynamics in a dedicated Twitter case study of real-time web communications so that others can understand and expand upon the wider significance of the particular research findings (Warren, 2008). The ethical research practices are developed in the context of new issues and innovative framings brought about by the emergence of sprawling and interactive digital platforms for social research like Twitter.

Designing the Twae case study involved certain assumptions about respecting the culture and etiquette of the platform. As an emerging communications network founded on social interactivity, Twitter is open to all forms of social interaction. Setting up accounts is free and the only method of censoring content is for corporate Twitter to ban or make accounts inactive. This prohibits the log-in to that particular account and silences its particular voice. There is little stopping the account owner from just starting a new account with similar practices until that one gets shut down. In general respecting culture and etiquette are only relevent to accounts seeking to achieve specific goals by communicating. This could be as basic as the hope of a new social conversation or as intricate as the strategies broader targets of the Twae project. At a high level there is not a lot of social functions that are possible in Twitter. Twitter accounts can follow and unfollow other users, block users who follow the account or restrict the privacy seeting of the account to filter approved followers. But at an even higher level of abstraction there are two fundamental questions that every Twitter account must answer for participation in the social network. How do I use Twitter? And what do I use it for?

How an account uses a Twitter feed relates directly to perceptions of etiquette on the platform. The Twae account followed two fundamental premises in developing etiquette in social interactions on Twitter: learn from experienced users and direct experimentation. For example when the account was initiated there were already several accounts successfully developing short stories or poetry on Twitter. It was relatively easy to peruse these accounts to get a basic understanding of the etiquette rules evident in their interactions with followers. Equally etiquette experimentation is easy on Twitter but the Twae research experience indicates it tends to evolve in parallel with audience growth or reduction. For example followers went significantly up the first two times Twae ran ‘literary bursts’ encouraging followers to @Twae with their own original

short stories for RT to Twae's followers. In the first instance a total of eight direct messages were received about the literary burst process and seven of these were overwhelmingly positive while the eighth simply wanted to know when the next one would be staged in advance. The Twae account also encountered a net follower gain of 12 at the conclusion of the burst (+13 but -1). The third time Twae ran a literary burst there were already over 3,000 followers of the account and the response was markedly different and spoke to an alternate interpretation of Twitter etiquette. The majority of followers were new to the account since the last burst and 11 out of 14 direct messages received after that literary burst were negative. One user complained that "I didn't sign up for a flood of crap stories in my stream when I chose to follow you." Another indicated unhappiness with the growth of the burst: "Last time you ran this it was great but too many RTs this time!" This third literary burst also resulted in a net loss of 22 followers (+38 but -60). This net loss scaled up as the account grew so by the time the Twae account ran its seventh literary burst with over 10,000 followers the net loss of followers from hosting a half-hour literary burst was a considerable 243 (+117 but -360). Extensive feedback in direct messages and @replies was also a lot more direct and annoyed: "Watch thousands of ur (sic) followers hit unfollow after that crap!!!" It was obvious from the cumulative experiences that a significant percentage of Twae's followers consistently found the literary bursts to be in breach of etiquette on Twitter. It was also consistently true that literary bursts tended to generally restrict the reach of the Twae account, in the sense that each instance resulted in a loss of followers who were unlikely to ever come back. But this contrasted with the significant increase in depth of interaction between Twae and followers facilitated by the literary bursts. This increase was reflected in the linear increase in Twae @replies with stories for RT during literary bursts. In the first burst there were 14 stories but by the seventh burst Twae was RTing over 90 stories in 30 minutes from followers. Clearly the literary bursts were viewed by some followers as an annoyance and by others as an opportunity to see their stories broadcast out to an audience in excess of 10,000 accounts. How a Twitter account is used is a function of etiquette and Twae's approach was to learn from more experienced users in the first instance and to develop a subsequent platform of personal experiences from which to evolve practice and accumulate lessons learned.

What a Twitter account is used for is intertwined with the situated ethics of the account holder. For Twae ethics is not a set of general principles validly and invariantly applied to all situations, but rather principles mediated in different practices with different significances in relation to those practices (Simons & Usher, 2000). There is little or no research that addresses the consequent dilemmas of conducting social research on Twitter (Hargittai, 2009). Approaching the project with a critical realist methodological framework rejects both relativism and foundationalism in pursuit of a reality with both transitive and intransitive realities. This introduces the complexity and challenge of making decisions on ethics in situations where there is no recourse to incontrovertible principles. Like visual research, examining interactions in social networks "is in its infancy, and metaphorically speaking, located near the centre of a complex moral maze" (Prosser, 2000). As a general approach the Twae project followed Macfarlane's guide to the ethics of academic inquiry by 'living the virtues' of courage, respectfulness, resoluteness, sincerity, humility and reflexivity (Macfarlane, 2009). In practice this translated to the courage to undertake a journey into the unknown, respect for not revealing the identity of the research subjects or practicing deception, resolving to undertake the project from start to finish, sincerity in the pursuit of socially constructed truths, humble recognition of the minor and largely fleeting contribution of the project despite its widespread appeal, and the reflexivity to trust with a skeptical eye the findings of the Twae research.

As a first principle the Twae account seeks to remain authentic with its followers. This translates to being as transparent as possible on how Twae wants to use Twitter. The account biography evolved through several iterations of development through the Twae research phase but its core representation remained constant. Twae is a place for literary short stories, conversation, riddles and competitions, and interesting story RTs. The selection of the Twae name and logo are the result of branding strategies to connect with the zeitgeist of cultural Twitter (the 'Tw' at the start suggests implicit integration with the platform) and expediently research and test the project goals (in particular the use of a short name was deemed critical for encouraging Twae RTs). The logo is a picture of three eggs on a red velvet cloth. They are assembled in such a fashion as to have intentionally ambiguous meaning to followers. Despite over two dozen queries and

requests from followers to clarify the inspiration for the account logo image, it was never publicly revealed. This was honest ambiguity.

The nature and hypotheses of the Twae research project meant that related social research was compelled to adopt covert methods. Bulmer argues this is not uncommon practice where the opportunity to co-operate with informants is irrelevant or inconsequential (Bulmer, 1982). It is not feasible to reveal that a Twitter account is established to increase depth, reach and live interactions and then test if it is able to establish depth, reach or live interactions. In the context of the Twae project 'the tortured moral arguments' over covert methods are dismissed as part of the standard repertory of sociological research practices include the use of undercover observational methods for particular purposes (Douglas, 1976). Also the Twae research project never implies or specifically identifies research participants. The ethical practices of the Twae research project evolved to respond flexibly to particular situations and scenarios. It rejects moral decision-making on the basis of a 'code of practice' or audit of ethical approval in favour of a fluid balance of respect for the research subjects and pursuit of the socially constructed findings of the project.

5.4 Twae reach and depth

As a company, Twitter monitors follower behaviour of all Twitter accounts to ensure accounts follow the rules of engagement on the platform. The 'Followers' concept on Twitter is relatively unique in the context of social media.

> Twitter facilitates social networking, but it's not a social networking website. In fact, the way Twitter works is quite different from social networks: when you accept friend requests on social networks, it usually means you appear in that person's network and they appear in yours. Following on Twitter is different, because instead of indicating a mutual relationship, following is a one-way action that means you want to receive information, in the form of tweets, from someone. Twitter allows people to opt-in to (or opt-out of) receiving a person's updates without requiring mutual following (Twitter, 2009).

There is no essential script for dealing with the concept of followers on Twitter. Some accounts will tweet over 10,000 times to an audience of less than 100 followers while

others will tweet four times and amass an audience in excess of 10,000. This is directly related to how the account uses Twitter. It also relates to how the account values the acts of following and being followed. For example an account with a large number of tweets and a very small follower base may relish the opportunity for depth of interaction with followers far more than the concept of increasing the reach of the account. Similarly an account with over 10,000 followers but little or no tweets may amass this following by showing no concern or regard for the identity of the followers accounts. This is common in spam accounts on Twitter that exclusively follow accounts that are highly likely to follow back. In this scenario neither party at either end of the mutual following has any regard for the value of the follow, just its existence.

To analyse approaches to the concept of followers in Twitter it is necessary to examine the primary functions of successful social interaction introduced earlier in this chapter – reach and depth. Advocates of reach and depth can be mercilessly critical of each other and righteous about the merits of one or the other facet. In support of depth the primary argument is that Twitter is a profoundly social platform and the only reasonable and authentic use of it is to engage with each other in a stream. From this perspective the volume of followers is irrelevant because this is fundamentally an ego-pursuit and does not equate to any meaningful interactions. In support of reach the primary argument is the same approach advertisers apply to web traffic – the more page views, the more conversions. As described in the introduction to this chapter, the Twae research project respects both of these perspectives and attempts to achieve both depth and reach in social interactions on Twitter. This may seem an obvious route that every account would pursue if possible. Surely there is no reason to reject reach if you can achieve it with sufficient depth of interaction or vice versa? Actually the findings of the Twae project suggest it is only possible to achieve both qualities in a Twitter account if one is consistently favoured over the other. In Twae's case reach is more critical to achieving the ambitions of the account and is therefore weighted accordingly in the development of followers.

Follower depth requires attentive, regular, engaged, and responsible use of a Twitter account. The basic formula is establishing a well-defined profile with a clear editorial

market, sending respectful and engaged direct messages and @replies to followers including expressing gratitude for mentions and positive feedback, and tweeting as regularly as possible to establish expectations in your follower base. Any Twitter account with any number of followers greater than one can potentially establish depth by following these principles. This is not to suggest that anyone can assuredly establish depth any more than it is possible to guarantee successful social interactions at a dinner party by following guidelines like listening well when others are speaking. But the most important required commodity for depth is the time of the account owner. It may take a lot of time and effort but with enough practice virtually anyone can learn to survive and even flourish in social interactions at dinner or on Twitter. Metaphorically this can be viewed as the *art* of social life on Twitter.

Follower reach is a different concept and is the metaphorical *science* of social life on Twitter. This is particularly relevant to the Twae research project with its explicit goal of increasing reach. This process is partly subjective trial and error and partly objective results. Increasing reach requires experimentation with a variety of software and tactical approaches. The functional media literacies employed for this process can range from basic manual use of twitter to follow and unfollow strategically to highly advanced mathematical and programming skills crafting algorithms or spiders designed to advance methods of strategically scraping Twitter. The first approach was found to be far too time consuming and after a weekend of following and unfollowing new accounts using the Twitter web interface the researcher suffered from early stage signs of repetitive stress injury (RSI) from the repeated mechanical clicks required to follow and unfollow large numbers of new accounts. Waking up the next morning with wrist pain and numb hands confirmed that extending the reach of the Twae account and research would require some form of automated support to be sustainable.

This led to an experiment with high level programming skills to create software designed to support the Twae reach strategies. Experimentation commenced in April 2009 to develop a custom scraping tool designed to find and retain targeted followers for the Twae account with initial guidance from the Twitter API Wiki (http://apiwiki.twitter.com) and online Twitter programming support site Twittut

(http://twittut.netsensei.nl). Programming was conducted using wrapper classes and libraries for Ruby (http://rubyforge.org/project/twittery), Python (http://code.google.com/p/python-twitter/), PHP (http://classes.verkoyen.eu/twitter/), and Java (http://winterwell.com/software/jtwitter.php). There are actually three different APIs in Twitter consisting of two distinct Representational State Transfer (REST) APIs and a low-latency high-volume streaming API. The Twitter API supports XML and JSON data formats with UTF-8 encoding and is entirely HTTP based but usage is rate and pagination limited meaning API follow requests updates and direct messages are limited by a daily cap. Approximately two weeks was spent in early May 2009 attempting to define, design, develop and deploy a custom software tool for extending the reach of the Twae account. The actual project plan for this exercise called for three months effort to develop the tool but development was curtailed and eventually stopped after just two weeks based on early results. This was largely the result of news releases and industry rumours at the time indicating Twitter intended to undertake a major overhaul of the site user interface that would impact any third-party developer plug-ins or code. This would have meant that any custom developer tool may need to be completely redesigned and re-engineered. Given the timelines and project scope it became obvious that the feasible requirements for extending the reach of the Twae account must be met by off-the-shelf third-party Twitter applications.

Following experimentation with both manual maintenance and custom automation the Twae research project strategy settled on a reach enlargement strategy of deploying third party software interacting with Twitter through the Twitter API. The process is a combination of manual activity and automated support from software configured to query or scrape specific data. New tools and opportunities are emerging all the time on Twitter but the basic requirements of the Twae account allows for consistent implementation of a fairly stable set of tools. These fit broadly into three categories: finding targeted literary accounts (Twollow, Mr Tweet, Twitseeker, Justtweetit, WeFollow), adding targeted literary accounts (Twannabe, Twitterator, Hummingbird) and managing followers (Hummingbird). This suite of software tools are all free to use with the exception of Hummingbird which cost $299 for lifetime upgrades at time of purchase. Some of the tools require particular functional media literacies to use to their

full potential but none prohibit beginner users from use. The basic usage of these tools is to find, add, and manage followers on Twitter. One resultant impact of this coordinated use for the Twae account has been a significant increase in reach.

In addition to contemplating approaches to reach and depth the Twae account formulated plans in four categories of related decisions: approach to following first as a method of generating followers, criteria to unfollow or block accounts, approach to followers while the Twae account is 'live', and various guidelines and methods for encouraging follows. The first issue is explored in the greatest depth here and relates to formulating and adopting a strategic approach to following accounts on Twitter. This relates to both accounts that follow Twae and how Twae chooses to follow accounts. The Twae case study is based on engaging followers with primarily short form literary content so Twae follows back any account with content generally related to literary, creative, or artistic endeavour. Twae does not auto-follow back accounts for two reasons. Tests on auto-following in early stages indicated this process attracts accounts interested only in amassing followers regardless of the nature or content of the follower accounts. Also auto-following cheapens the account follows in the eyes of other accounts as the only criteria for following back is getting followed instead of the relevance of merits of the account content or interactions. The act of initiating a follow of another account is a more complicated and controversial issue on Twitter. In theory Twitter encourages accounts to follow accounts to read and interact with their tweets. But looking to increase followers can also be a rationale for following an account. This is because the followed account may only become aware of the content of the following account through the act of being followed. Once aware the followed account may choose to follow back the account, thus increasing the followers of the account that initiated the follow. For example account X chooses to follow account Y. Account Y sees that account X is following and visits the stream of account X to learn more about it. Account Y likes or appreciates the content of Account X and decides to follow Account X creating a mutual following relationship between Account X and Account Y. The controversial aspect of this case is if Account X recognises the potential of this process to generate new followers and extrapolates out the process on a mass scale. Now Account X is following as many accounts as possible with the recognition that a

portion of the followed accounts is likely to follow back and thus increase the number of Account X followers.

Twitter has some basic rules in place to deter this type of behaviour. For example there is a staging limit of 2000 follows in Twitter so Account X cannot follow more than 2000 other accounts until at least 2000 accounts are following Account X. By analysing the numbers we can see that if Account X chooses to follow 1000 Twitter accounts and 200 follow back that puts the account numbers at Following: 1000 Followers: 200. If the process is repeated and Account X follows another 1000 new accounts and 200 follow back the numbers stand at Following: 2000 Followers: 400. Since 2000 is the limit of following until followers reaches 2000 this strategy clearly has reached its limit as Account X can no longer follow new accounts and employ the strategy of generating new followers through this approach. This is a frequent scenario encountered in Twitter accounts as in a June 2009 sample of 100 accounts following Twae 12 accounts are effectively disabled by merit of following 2000 with less than 2000 followers. This is also a scenario that can lead to an account on Twitter never issuing a single tweet but still building up significant followers. This is likely because the accounts following back the empty account are either auto-following accounts that follow or not analysing the content of streams they choose to follow back.

But with a small adjustment to this process it is possible to avoid the pitfall of crashing into the 2000 following ceiling on Twitter accounts. We can use a similar case process to illustrate. In this case Account X follows Account Y and Account Z (X: Following: 2 Followers: 0). Account Y visits the Account X stream and appreciated the content so chooses to follow back (X: Following: 2 Followers: 1). Account Z either does not like the content or does not bother to visit the Account X stream and ignores the fact that Account X has followed (X: Following: 2 Followers: 1). Account X waits a few days and unfollows Account Z as the account has not followed back (X: Following: 1 Followers: 1). If we extend this model out to mass follows and unfollows on Account X's stream the account arrives at Following: 2000 Followers: 2000 and continues to follow users (and increase followers as a result) as permitted by the Twitter following cap. With no further restrictions in place this approach appears to be a foolproof method

of increasing followers on a Twitter account. It assumes the owner of Account X has the time and resources to monitor status of following and followers on a regular basis on the account. This is more challenging than it sounds as there is no method in the native Twitter interface to see if an account your are following is following back except to test if it is possible to direct message the account. For example Account X can only direct message accounts following Account X.

In the first few months of the Twae research project this approach to 'follower churn' appeared to be one of the best options for rapidly expanding the reach of the Twae account. Early explorations of development of custom software tools to increase depth and reach focused on this opportunity but refined it to meet the requirements of the account. The Twae project was not interested in attracting followers not interested or neutral about the content in the stream. Achieving the overall goals of the project required not just reach but depth. Achieving the first without the second would be no more useful to the ambitions of the project than having no followers at all. The Twae project added four caveats to the process of instigating following of new accounts to attract new followers:

- The entire process should be automated so the margin for error in the process is in the algorithm and not the manual requirements for tracking and execution.
- New followers should have literary, creative or artistic interests. That prohibits following just any account on Twitter as there would be no guarantee the account would fit these requirements. A method was required of following targeted accounts with the possibility that they will follow back.
- Once an account was followed and chose not to follow back it would be unfollowed by Twae. Subsequently that account should never be followed again by Twae as it already expressed its reluctance to follow back the Twae account for whatever reason.
- Certain designated accounts should be protected from the automated follower churn process. These accounts were typically strategic accounts where it was important for them to know Twae was interested and following regardless of whether they chose to follow back.

Software specifications were developed for a tool designed to meet these requirements when running through the Twitter API. The most challenging aspect was developing reliable specifications for automatically identifying Twitter accounts in the appropriate creative and literary target market. The most obvious method would be to scrape the profiles of accounts searching for keywords matching designated literary and creative terms. When accounts have these keywords they would be followed for 72 hours and subsequently unfollowed if they chose not to follow back. Early tests of this process yielded very poor results (26/100 accounts in the Twae target market) for two apparent reasons. Accounts in this target market had no requirement to include these keywords in profiles and often chose to describe their streams in more ephemeral or personal terms. Also accounts that would normally be considered outside the target market tended to use these terms more frequently (eg. author, writer, agent, publisher, etc) as marketing instead of accurately descriptive profile information. The next two options explored included following 'followers' of a target account and/or following users of a specific descriptive hashtag. In a June 2009 Twae research survey of 100 accounts manually followed using these processes, the first followed followers of a prominent London literary agent and yielded 68/100 accounts deemed to be in the Twae target market. Following accounts using the #writing hashtag yielded a slightly better 74/100 accounts deemed to be in the Twae target market. Subsequent tests of both approaches yielded very similar results for following followers of prominent literary accounts but gradually diminished returns for use of the #writing hastag. This seemed to be primarily because of a lack of fresh supply. It remained true that accounts using the #writing hastag were largely in the target market but by the third run of the test there was insufficient number of new accounts that had not been previously followed or unfollowed. This indicated a fundamental flaw in the scalability of this approach so the approach of following followers of prominent literary accounts was deemed the best approach for Twae to increase reach by instigating following in Twitter.

With this relatively simple automation process requirement clearly defined and the looming user interface changes to Twitter the Twae research focus shifted from custom software development to a re-evaluation of potential deployment of third-party software

tools. This is how the Twae project arrived at usage of the software suite described earlier in this chapter. But the ultimate deployment of this suite to test research objectives only featured the 'follower churn' approach in the earliest stages of Twae growth up to 3000 followers. Ultimately this approach was discarded as having a poor risk-reward ratio for increasing depth and reach and ultimately the ambitions of the Twae account. This was largely because it proved relatively ineffective (once automation was introduced only an average of 39/100 followed accounts were in the Twae target market) and emerging rules on Twitter designed to discourage and even ban this type of 'follower churn' approach to expanding followers. Anecdotal evidence from anonymously engaging support and user community resources for Hummingbird indicated that particular software was typically deployed by direct marketing companies looking to rapidly expand account followers in the interests of selling products or expertise on Twitter.

In response to this possibility and other notions of 'gaming' Twitter, the site owners introduced official 'Twitter Rules' as limited circumstances when the platform will censor user content and processes on the site. Three of the rules related to "what constitutes spamming" directly impact successful implementation of the mass follow and unfollow approach described for Account X.

> If you have followed a large amount of users in a short amount of time; If you have followed and unfollowed people in a short time period, particularly by automated means (aggressive follower churn); If you repeatedly follow and unfollow people, whether to build followers or to garner more attention for your profile; (Twitter, Help Resources / Policy: Rules, Terms, Violations, 2009)

The reality of this threat to accounts practicing these methods impacted Twae when the user name 'Twae' was dropped from Twitter 'Find People' search results. When Twitter support was queried the name was re-instated into people search results with a short email warning in response: "Your account has conducted exercises in follower churn in the past so your name was removed from the search directory. It has been reinstated but do not do it again." The combination of poor targeted results and significantly increased risk to the long-term viability of the Twae account were enough to persuade the researcher that instigating followers could only play a minority and highly targeted role

in the overall follower strategy of the account in its pursuit of depth and reach. This minority role was limited to occassional very targeted autmation follows (eg. researcher making a trip to Athens so keen to develop a presence in the Athens literary community through recirprocal follows for Twae) and the very useful function of unfollowing any accounts that started but stopped following Twae.

The second issue related to Twae follower strategy is criteria to unfollow or block accounts. This was relatively easy to manage as no accounts were followed unless they fit loosely into the subjective target market of creative and literary accounts. This applied to both instigating following of accounts and following back accounts that first followed Twae. With less than 100 exceptions the Twae account does not follow any accounts that do not reciprocally follow the Twae account. Therefore a simple rule is Twae unfollows accounts that are not following Twae. This is relatively easy to manage after experimenting with the 'follower churn' approach and discarding it as a pivotal growth strategy for Twae. Over 80% of Twae's followers after the first 3000 have become followers by instigating the process and following the Twae account on their own accord without provocation from Twae. So from a logistical point of view the only accounts that Twae unfollows are accounts is a small number of accounts that Twae has followed and have chosen not to follow back. The other rationale for unfollowing an account is if the editorial content of that account is annoying or completely unrelated to the target market of the Twae growth strategy. This occassionally happens when an account at first appears to be a literary or creative content account but later turns out to be generating tweets largely outside of this target market. In these cases the Twae account blocks these accounts instead of simply unfollowing. This is so as not to be perceived by those unfollowed accounts as simply looking to gather a follower and subsequently unfollow with the hope that the following account won't notice or care that they are no longer being followed by Twae. At the stage when Twae amassed 15,000 followers the account had blocked 263 accounts.

The Twae research applied these approaches to the concept of followers in every case except during 'live' events like literary bursts or simply when posts go live on Twae. These live periods never exceeded one hour in duration but featured a customised

conceptual approach to followers. During live events Twae would frantically follow any voices engaged with the event or the conversation around the event. For example Account X might write an @reply to Account Y following Account X but not following Twae. When this @reply referred to @Twae or a related event hashtag the Twae account would immediately follow Account Y. The rationale for this unusual follow first approach with little regard for the content of the tweets of Account Y is because participation in live Twae events indicates significant depth of interaction between Account X and Twae. Anytime an account featured in both the depth and reach strategies of Twae it was assumed any communications with other accounts related to the event suggests those accounts may also have a direct interest in depth of interaction with the Twae account. While this proved to not always be the case, over 60% of all follows during the third literary burst followed back the Twae account. This contrasts with an average 39% follow back in the early stage when experimenting with follower churn as a strategic approach.

The fourth and final approach analysed as related to the Twitter concept of followers is various guidelines and methods Twae follows to encourage followers and account reach. These are largely intuitive and not formally documented as part of the research process as this would unduly restrict the possibilities of the account. Methods Twae follows to encourage followers include always tweeting on topic (short stories or similar 'cultural production'), tweeting at 'prime-time', rarely tweeting on weekends when auidences are small, attempting to write engaging content whenever possible to encourage depth of interaction with followers and subsequent @replies and RTs, periodic literary bursts and competitions to indicate interest in interactivity with the Twae follower community, and occasional particular focus on intentionally engaging interactivity with the Twitter elite community of celebrities, athletes, and accounts with over 10,000 followers.

These issues are explored in various levels of depth in other parts of this chapter but the engagement with 'elites' requires more explanation. The Twae research project largely rejected harnessing the power of existing elites in the Twittersphere in an effort to avoid granting a level of evidentiary privilege in research accounts that is on par or greater

than its local valuation. For example one strategy for amassing followers might be to recruit a high profile Twitter account as a new follower in the interests of that account promoting the Twae profile to its vast follower base. The logistics of recruiting a new follower in this fashion are particularly challenging as celebrities and athletes esteemed on Twitter typically reserve following exclusively for other high profile public figures. In some way this may relate to the concept of following equating to *currency* on Twitter. From anecdotal evidence accounts with a large variance between following and followers tend to follow accounts with similar ratio profiles. If we consider again the concept of a follow as *currency* it is possible to infer from an account following 100 but with 100,000 followers that there is recognition from this account owner as to the value of their follows. Also following back accounts is time consuming and can be perceived to be an unnecessary function for accounts amassing huge followings based on an appeal largely external or predating interaction of the account on Twitter.

The Twae research project conducted only one major experiment in this regard. In a carefully calculated plan a tweet was constructed including a perceived funny anecdote about a character in an upcoming major motion picture played by a world-famous actor with a validated personal Twitter account. The knowledge of the contents of this film and the role of the targeted actor was gleaned from internet searches on the topic and the contents of the actor's twitter stream that included references to the current activity on the film while under production. The actor was selected based on three criteria: likelihood to RT, likelihood of engaging with creative content regardless of knowledge of the source, and size of following. The selected account frequently RTs content from followers sending @replies to the account, frequently draws attention to obscure or niche accounts on Twitter, and had a following of over 100,000. Once the target account was selected a mini-goal of the research project was established to get the account to RT a short story written about the upcoming film. In this case the premise of spontaneous creativity was ignored in favour of careful calculation and construction. The subsequent RT of the Twae story by the celebrity account yielded a dramatic leap of 1,500 new Twae followers in a subsequent 48-hour period. The success of this experiment suggests repeating the significant research effort involved in its cultivation is a fruitful method of

extending reach but in a sample of 100 of these followers only 21 fell into the Twae follower target market of literary or creative accounts.

Functional Media Literacies

Hashtags

Twitter creates an 'ambient intamacy' encouraging users to create mini-communities around particular ideas with 'hashtags' included in posts and searchable by tag (O'Reilly, 2009). This user-generated-coding is actually just placing # sign in front of a searchable tag word or phrase – i.e. #iran, #iranelection, or #thingsyoudidntknow. From personal anecdotal experience in City University Online Journalism classes at the Graduate School of Journalism, use of hastags was one of the most difficult concepts for students to practice and adopt. The conceptual leap from word to code scares and deters a lot of users. Some Twitter users, like the #hashtagmafia include hash tags in virtually every post as a matter of routine. This conceptual shift from just using a word in conversation to considering it as a tag at a meta-level requires a very particular media literacy.

RT (Retweet)

Fundamental to the success of Twae as a literary stream on Twitter is interaction with followers. Reach is meaningless without depth of engagement. The purest form of recognition in Twitter is Retweets (RTs) of individual posts. Twitter users RT posts that interest them or may interest their followers. This creates a multiplicity in access. Data analysis on Twae represents this phenomenon. The following story was posted @Twae on 2 January, 2010 at 6:12pm GMT.

> In the majestic halls of Valhalla, Odin sharpened his sword. Everything was perfect except for bloody Wagner playing all the time.

Twenty-four hours later 20 Twitter accounts had retweeted the story. The cumulative following of these 20 accounts at that time was 4,578. Analyses of the shared followers of these 20 accounts and Twae indicate 1,206 of these followers also follow Twae on Twitter. That means an additional 3,372 accounts received the story beyond Twae's

following of 14,398 making a cumulative audience of 17,770. Since 20/17,700 is just 0.0011% of the overall audience, it may appear that these are outliers in the data. But these outliers account for increased distribution of the Twae story by 19% (3,372/17,700) and each RT accounts for an average 169 additional access accounts on Twitter. The actual totals of the 20 followers in order of RT (680, 388, 117, 147, 552, 961, 84, 176, 212, 106, 129, 143, 135, 193, 53, 53, 100, 215, 115, 19) have a median of 174. In three further similar studies of other story posts on Twae the median number of followers for retweeting accounts was also between 100-200. The size of Twae's following and the size of the retweeting accounts of Twae's stories are not comparable as an exponential gap exists between the numbers. This is likely partially a function of the logistics or reading in a Twitter stream. Following large numbers of people (i.e. 200+) makes it extremely difficult to access individual tweets from the account you follow. The account with 19 followers retweeted the story 23 hours after it was posted on Twae. The default home page of every Twitter account features the most recent 20 tweets from the accounts followed. An account with 19 followers is far more likely to have a tweet still active above the screen fold unless a followed account is particularly prolific.

When Twae started writing stories on Twitter, the account started with the premise of stories in 140 characters. This seemed to be a good starting point given the limits on post lengths and the growing public consciousness of the concept of writing in 140 characters or less. Quickly it became apparent that retweets of the entire story were impossible in this format as there was no space for the characters required to RT (eg RT @Twae is nine characters including spaces). In May 2009 all the stories written to date were rewritten in 130 characters or less and reposted on Twae. Even in a world of ridiculously micro fiction, even smaller units of character space are crucial. Reducing the stories sparked 172 RTs in 24 hours as users realised the stories were retweetable length and many accounts were seeing these archived stories for the first time. Twae stories were retweeted a mean average of six times per story in a survey of 25 consecutive story posts from August 2009 to October 2009. The additional audiences reached fluctuated with each story RT, ranging from 162-6,400.

Twae also employed RTs as a crucial method of occasionally opening up the Twae twitter stream to guest posts. About once every two months Twae holds “Literary Bursts” encouraging accounts following Twae to submit their own stories in 140 characters or less. Each Literary Burst lasts 30 minutes and every story written @Twae gets retweeted. From April 2009 – Nov 2009 Twae held four literary bursts and the number of submitted stories ranged from 14 in the first instance to over 90 in the last. Burst activity yielded little or negative gain as described earlier in this chapter.

@ Messages

Twitter uses the @reply designation before an account name to indicate the tweet is about or addressed to that designated account. This is utilised when a Twitter update is directed to another user, about another user, or in reply to one of their updates. These @reply tweets directed at the owner’s account are visible through a specific tab on every Twitter account home page. Twae received a total of 480 and a mean average of 16 @reply tweets per day in a one month period from 1 Nov 2009-1 Dec 2009. During this period Twae posted on Twitter on 19/31 days and followers increased by 1,879. The number of @Twae tweets ranged from 0-86 on individual days during this period. Just over 86% (412) of @Twae replies during this period came within a 12 hour period after a tweet was posted on the Twae account. This indicates the @ function really is most commonly employed as a reply function in Twitter, either through RTs or in response to the posting of an @Twae story (e.g. @twae I love "his gaze chatoyant", great expression:)). As with RTs it is very challenging to attempt to unbundle all the communication on Twitter and draw any correlation between the posting of an @Twae reply and any impact on the account followers or public awareness of the account. But followers increased on mean average by 85 on the 19 days Twae tweeted and most of the @Twae replies were also posted on these days. Followers only increased by a mean average of 22 per day on the 12 days Twae didn’t post any tweets and there was comparatively small amounts of @Twae replies. This does not indicate any correlation between the @ replies and follower traffic on Twae but a general anecdotal finding of the research case study is any sustained increase in followers is predicated on the levels of posting activity on and in reply to the Twae account.

Direct Message (DM)

Direct messages are private tweets sent or received directly to or from a Twitter account. In order to send a direct message the recipient account must be following the sending account. Twae uses direct messages very sparingly and never reads incoming messages unless expecting a reply to a sent direct message. When starting Twae it seemed a useful function to be able to send a direct message to another account so the message does not appear in the public timeline. One of the early ideas for raising public awareness and followers for the Twae account was to engage other more prominent (at the time) short story authors on Twitter in a competition of some kind. Direct messages provided an ideal format to communicate this proposal with these accounts as the accounts were early mutual followers. Direct messages were particularly not useful for Twae because of the chosen follower strategy. In particular following a lot of new accounts led to a total of 241 direct messages and an average of 8 direct messages a day to Twae through the period from 1 Oct – 1 Nov 2009. One hundred and ninety-four out of these 241 messages were automatically generated by third party applications working through the Twitter API. The decision not to employ direct messaging as a communication tool for the Twae account was largely based on the poor relative experience of the Twae account interacting with other accounts employing this method of communication on Twitter.

Lists

Lists were introduced on Twitter in September 2009 and offer new communication and tweet aggregation functionality on Twitter. Research on Twae indicates the initial uptake of lists on Twitter is sporadic and it is still very early to interpret their utility and application. Surveying the accounts of 100 followers (Twae followers 11,100-11,200) indicates just 14% of accounts create lists and the average ratio of followers to following on lists is 32/1. For example a list might follow 64 accounts but only be followed by two accounts. In this survey the total number of followers of the 14 lists that include Twae was 31 but the lists followed a cumulative total of 443 accounts. This enormous ratio and relatively finite number of total followers indicates accounts are creating lists but relatively few are following. If we consider the home page of every

Twitter account as basically an account list, these Twitter lists would appear in the form of an early Twitter adopter desperately and aggressively struggling to find an audience (e.g. if a Twitter account followed 443 people but only had 31 followers). The average number of lists created by accounts with at least one list is 2.4 and 11/14 of these lists had a name associated with books, writing or literature. The other three had more interpretive titles (e.g. thelunaticfringe-madbob).

Twitter lists also offer an additional metric for tracking the popularity of an account by publishing the number of lists including an account as part of the standard profile fields on every account home page and profile. As of 7 January, 2010 Twae was listed 419 times but no existing online service or measurement tool existed to ascertain the relative size of this total. Anecdotal study of the 100 accounts examined for studying lists on Twae indicates 419 is more lists than any of these accounts with 280 the next highest number for one of the accounts. This indicates Twae's list popularity is relatively high but this also related to the number of followers on an account.

Accounts do not need to follow an account to list it. This is an important distinction between listed totals and follower totals as conceivably an account could be listed more or less times than it is followed. As of 7 January, 2010 Twae has not started creating lists but lessons learned from the experience of being listed and browsing lists suggests at least four reasons for integrating lists into an overall account communication platform. The first two form the pillars of early development for lists on Twitter while the third and fourth indicate areas of relatively underserved application.

- Listing accounts allows Twitter accounts to showcase the accounts they follow particularly closely or find particularly interesting. This allows followers of the account or users that visit the account home page insight into the inspirations or forms of content attractive to the account.
- Listing accounts provides a basic form of aggregation and organisation of Twitter feeds. Users can list accounts in particular categories (e.g. writing, art, music, publishers) to provide a consolidated stream of tweets on specific topics. This helps fragment the otherwise unified stream into smaller channels of

particular interest. This is a particularly useful function for accounts like Twae that follow back an enormous number of accounts, greatly reducing the utility of the overall stream. Breaking this up into more manageable totals of 100 accounts or less on lists provides visibility to tweets otherwise lost in the maelstrom of stream activity.

- Listing accounts can result in reciprocal listings. Anecdotal evidence in the Twae feed indicates accounts listing other accounts often include a list for reciprocity (e.g. thanksforlisting). As there is no limit to the number of lists an account can create or how many accounts are included on the lists, this possibility should be considered a risk to indirect spamming of accounts. It is easy to imagine a scenario where an account lists other accounts exclusively in the interest of getting listed.
- Concepts of 'curating' lists are just emerging on Twitter. Twitter democratises communication through the follower format but authority remains a crucial factor of the power dynamic of the format. This is most obviously expressed through differences in follower numbers and the width or depth of follower interaction. Lists offer a new opportunity for expressing authority in particular subject areas. For example a science journalist might create a list of interesting sources on the Large Hadron Collider or a publisher can list writer accounts whose owners they are considering for publication. As Twae is an account devoted to literary arts and aesthetics the opportunity to gather creative and stimulating feeds in list categories offers obvious opportunities for expressing authority in this domain. It is the virtual equivalent of "it's not what you know, but who you know".

One interesting example of third party list functionality is *Conversationlist*, an automated list service where Twitter users sign-up and an automated list entitled Conversationlist is updated daily on the home page of the subscribed account (Conversationlist 2009). This list "reflects the people you are paying attention to right now" and works by adding accounts a user @replies or @mentions on Twitter. Every

day the list is rebuilt with accounts mentioned in @replies and not mentioned accounts of the previous day drop off the list.

Considerations

Lessons learned from the Twae research project are informed by and further inform critical realist approaches to social research. Knowledge in Twitter is both socially produced and defined but not all knowledge is equal (Bhaskar 1975, 1989). The Twae project explores a very small aspect of conflation of transitive and intransitive realities in social life on Twitter. It is an effort to gain knowledge about the realities of Twitter by exploring the problematic relationships and independence of Twitter and our knowledge of the platform.

The knowledge accumulated through this research is fallible and constantly changing, particularly as it relates to the real-time Web and its accompanying communications revolution. Crucial factors in the research shifted and changed dramatically from the onset of the six-month investigation to its conclusion. Very little of the detail accumulated in this chapter will still be relevant at a future date of potential publication. There are no hard and fast boundaries between transitive and intransitive knowledge relating to Twitter and the product of the Twae research is definitively transitive. But a reality also clearly exists in social life on Twitter whether or not it is observed or experienced. The Twae research project is an attempt to stretch across Bhaskar's map of three ontological domains, hinting at the 'real' and the 'actual' while documenting aspects of the 'empirical'. Every attempt to understand the world starts with our concepts of it and the focus of the Twae research project explores conceptual approaches negotiating and mediating social life on Twitter while crafting observations that are theory-dependent but not theory-determined.

The methodological theory is that observing finite social interactions and processes on Twitter through the lens of the Twae account informs and extends our understandings of broader social life and interactions in the social network. Just as quantum philosophy informs observations of the atomic world while informing and challenging assumptions

about the macroscopic world of social life. In quantum mechanics particles can exist in multiple states at the same time, just as in quantum sociology Twae exists in multiple states and as both observer and observed in its practices of social research.

The Twae research does not suggest any validity for the notion of causality as event regularity. Some of the observed dynamics can be classified in this fashion like for example when a celebrity joins Twitter and rapidly accumulated 1000s or even millions of followers without tweeting regularly or with any particular subjective inspiration. So it is possible to suggest that the primary cause of the mass following for that celebrity Twitter account is the celebrity status of its author. However observers of the Twae account with its ever growing follower base of 1000s of accounts may wonder what causal factors are influencing this phenomenal and sustained growth. There are no direct or allegedly conjoined events inspiring this result. Some of the experimentations on the account are recounted in this chapter but there are hundreds of short-story writing or literary accounts on Twitter practicing similar methods of creative expression with a fraction of the results. Twae is drifting in nonlocal space, both particles and anti-particles at the same time.

The Twae project occupies a superposition in literary and creative expression on Twitter. It exists in the essence of its stream, in its involvement in the flurry of direct messages and @replies related to the account, in the written and unwritten interactions and feelings of its followers. It is in one place all the time, as long as the Twitter servers are up, but the web address of the account is only partially representative of its identity and multiplicity of subjective interpretations on Twitter. The cumulative effect of the interactions and social life inspired by and participated in through the account are representative of a superposition of thought that translates to a subjectively defined and transitive cultural identity.

Experiences from conducting the Twae research project reinforce the suggestion of quantum sociology that social life does not snap to our attention just through the process of observation. We cause a metaphorical collapse of the social wavefunction by insisting on reductive, essentialist or non-interpretive understandings of meaning. Just

because Account X mediates Twae it does not mean that Account X produces Twae. That much should be clear from the observations and research included in this chapter. Each week Twae receives at least a half-dozen communications attacking the account for not following a particular account, for unfollowing a particular account, for writing a story with perceived racial bias, or other forms of subjective irritation with the activities or inactivities of the account. These accounts are producing a Twae in their own subjective image from mediation of the Twitter stream. Because of the multiplicity of interactions and cacophony of communications inherent to an account with following and followers in excess of a small town of 15,000, many of these interactions remain unresolved. Twae does not engage many of these annoyed accounts to resolve the issue of different perceptions. The perceptions often just linger and contribute to the wavefunction of understanding of the meaning and intentions of the Twae account. Knowledge of any aspect of the state of Twae does not imply any certain knowledge of its current or future state. Twae is not an exception to the indeterminism of social life.

All knowledge is not equally useful or fallible and knowledge is not true simply because it is useful. The Twae research project investigates the properties accounts possess on Twitter and adequate statements about these qualities need not be value-neutral. It is reasonable to seek transitive truths about how to promote depth, reach and objectives in Twitter. In quantum mechanics it is the act of measurement that provides a particle with position, direction and momentum. If it is only possible to understand Twitter through our own subjective discourse, our own mind-independent reality, we once again reduce mediation to construction. The Twae project does not seek absolute truths about theory or practice on Twitter, just insight into methods of practical adequacy for assessing conversion potential of virtual contacts on a social network into other real-world objectives. This translates into a validation of the allegorical *Social Uncertainty Principle* introduced in the methodology chapter of this research. There is a limit to what we can know about any social object including the Twae Twitter account. But the function of this research is to challenge and seek understanding of those limits and possibilities.

The findings of the Twae research project offer resounding support for the allegorical resolution of Hardy's Paradox. The content of the Twae stream behaves differently both when other accounts are looking at it and when it is relatively unobserved. This point cannot be misunderstood. The account behaves differently because other accounts are *not* looking at it. For example using knowledge of Twitter's busiest periods tweets are scheduled to appear during primetime hours when the largest percentage of Twae followers are likely to be connected to the social network and therefore able to see the tweets in real-time. Equally tweets like a rare personal Valentine sent to a loved one are reserved for the middle of the night. Twae is performative when unobserved.

All matter in the universe progresses from an ordered to a disordered state. Twae's fractional contribution to that dynamic is explicit in the progression from non-existence to the relative quiet or 0 following and 0 followers to the cacophony of 15,000 accounts interacting. Through the duration of the research project the Twae account has become inexorably messier and disorganised. Critical realism suggests social research translates to fragments of reified life, most relevant to the temporal and physical spaces where it is conducted. Thermodynamic chance opens up energy systems but accepting constant entropy as a state of permanent leakage. Twae is leaking tweets into the Twittersphere but this is only the most manifest representation of this process. Typically a social network might be viewed as a place of great endeavour and communication where taking something out is virtually predicated on putting something in. Quantum theory suggests Twitter is gaining disorder and complexity at an alarming rate and yet Twae's strategic initiatives to increase depth, reach and ambitions continue on a relatively steady curve, seemingly uninterrupted by the surrounding and embedded chaos. This is a form of entropic collective intelligence. Twae seeks to capture some of this energy by acknowledging its existence as it pours from the application servers and databases of Twitter.

5.5 Conclusion

Technological change often alters the social canvas of exploration for academic research. New forms of communication particularly tend to advance at rates difficult for

research to keep up with and the phenomenon tends to outstrip our ability to adequately analyse or engage on its impact and role. The Twae research project seeks to provide the first analysis of the potential for translating virtual power and influence on Twitter into achieving real-world objectives. It also explores the factors involved in developing power and influence in a particular sub-sector of Twitter social life. This project assembles data from a variety of small sample analyses of the followers of Twae to provide insight on the dynamics of Web 2.0 interactivity. In using a broad sense of analytical perspectives, the research aims to encourage and provide a launching pad for further research on the growing phenomena of social network dynamics.

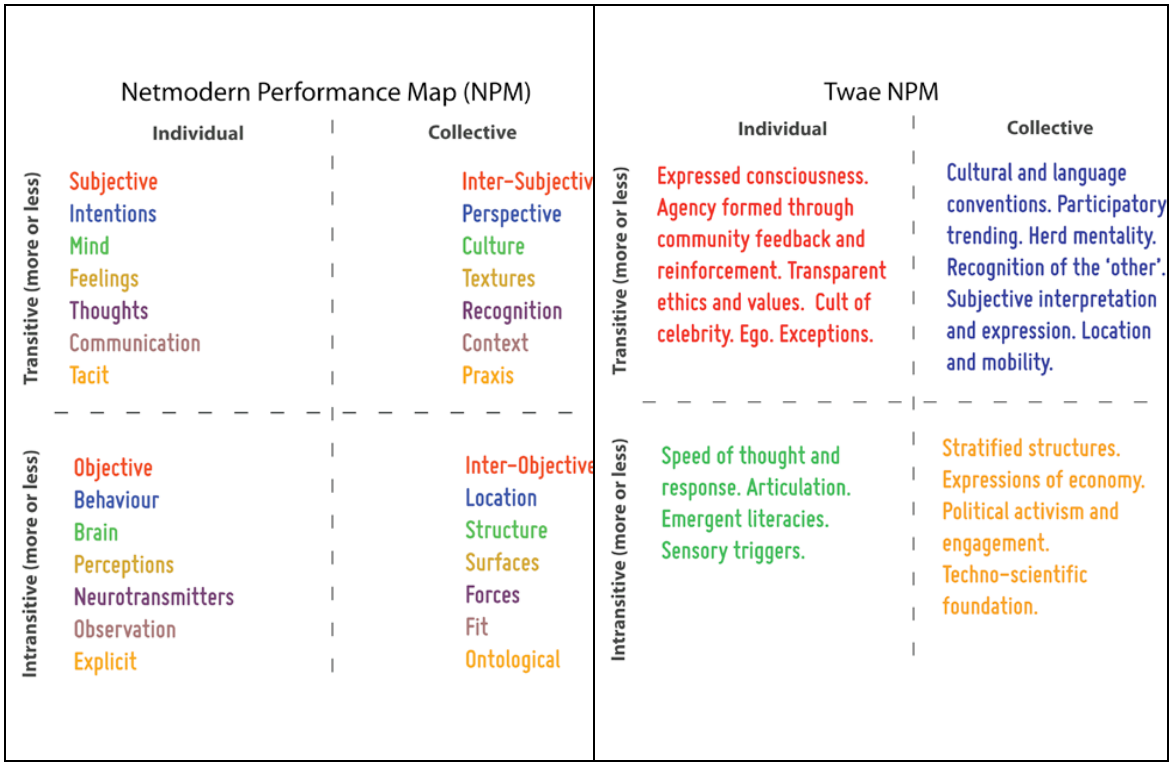


Figure 17: Twae Netmodern Performance 'Map' (NPM)

NPM of territories of individual and collective transitive and instransitive realities on the left and the Twae NPM showing samples of variety of potential realities encountered in the research

Figure 17 illustrates the conceptual results of emergent agency and forms in digital media in the Twae case study in the form of an NPM. Whereas the BlogScholar case study engaged the transitive and intransitive collective, the Twae results indicate a much

higher prevalence for individual agency and subjectivity. The Twitter network is a space of collective intelligence but pursuing the hypothesis of engineered popularity in the network was extremely reliant on individual agency and decision-making. These acts were public and relatively transparent as they took the form of written and visual expression through the Twae account. Of particular importance was the feedback loop of expressed communication, network response, and expressed communication. The implies Twae's ultimate relative popularity was the result of both the agency employed to this end and the response of the community in its individual agency to choose to follow or not follow the account based on its behaviours and profile. As such Twae if the product of both emergent individual agencies and influential structural and cultural forms.

Subjective findings of the Twae case study can be formulated by mapping the results of the experiment against the hypothesis and esoteric goals of the research. The Twae account finished 11th in voting for the 2009 'Webby Award' for fiction. This placed the account ahead of such legitimate and mainstream fiction writers in the'Academy Awards of Twitter' as Melissa Marr, PJ Haarsma, James Rollins, and international best-selling writer Paulo Coelho. This indication of people's choice popularity suggests Twae was more than able to establish a credible and respected Twitter identity in the field of serious literature. This was the first goal of the project. The second goal was to develop significant referral power to divert users from Twae to other destinations on the Web. To this end the subsequent Twae.tv experiment indicates an embedded link in the Twae stream receives a minimum of 500 referral clicks regardless of the nature of the content. That means Twae can send 500 people somewhere (and up to 2,500 on the most popular link) anywhere, anytime from Twitter. This suggests powerful referral potential. Finally, the third goal was to secure an offline book contract through the literary tweets in the Twae stream. While this goal has not yet been directly achieved by the account, Twae has received two offers to edit anthology texts of Twitter literature and a third offer to launch an iPhone stream in Japan of short story content. So while a deal has not yet been secured this is largely the result of unenviable terms for these offers.

Aspirations and Opportunities

Ultimately the project is one rooted in ambition and whether Twitter is a suitable platform to seek to convert virtual commodities into real-world results. The production of knowledge through digital intervention is formed through the establishment of a particular account as a 'node' in the networks and nodes of social media. The clear setting of goals up front and the ongoing measurement and review of those targets provided the framework for the Digital Sociology.

- The overall rate of growth of reach of the account stayed relatively stable throughout the research project. It increased in accordance with the proportional growth of the follower base. **Digital Sociology is challenged to define and understand mechanisms for targeting specific communities or interests in swirling forming and devolving networks.** Experimenting with these techniques can inform digital interventions and academic research may provide insight into the differences between 'black-hat' and 'white-hat' online techniques for community development. The Twae project suggests knowledge of the literacies and methods required for social optimisation increased significantly between Web 1.0 and Web 2.0 The collective intelligence also shifts from a relatively closed field site system to an open and fluid sea of mini multi-sites of social interaction.

- Reach and depth should be simultaneously pursued through digital intervention instead of favouring one over the other. The processes of community formation in Web 2.0 are fluid and any attempt to restrict or formalise structure in these processes is bound to disconnect with the ethos of the resultant community networks. In Twae the potential of the community as field site is predicated on a willingness to allow that community to emerge whereas in the BlogScholar case study it made sense to pursue a relatively closed system in order to access a dedicated field site for research into academic blogging practices and communities. **The digital sociologist operates more as a *mediator* than an *administrator*.** And the

media literacies required for sophisticated practice of mediation are different but related to those required for administration.

〉 There is a multiplicity of ways to practice Digital Sociology in Web 2.0 so the research agenda and its formulation remain critical to generating substantial results and reliable knowledge. Subsequent investigations could further expand our understanding of economic analysis of increasing depth and reach on Twitter. Industrial sociology could explore the commoditisation of the tweet and the notion of tweet as currency or deeper reflection on the power dynamics of inequities present in social media. Is Web 2.0 really about networks and nodes or just a reframing of the traditional power structures of broadcast media? Enterprise analysis could look at the relative challenges to entry, survival, and progress in the system forces of social networks or emerging social media threats to interactivity, privacy, public discourse. Developmental analysis could compare and contrast the Twae experience in the literary and creative sector with other niche content areas on Twitter from direct marketing to political engagement. The underlying Digital Sociology is founded on an emphasis on commoditising the community and engaging with it as emergent networks and nodes instead of focusing on social types or actors. This increasing distance from the explicit political engagement of social interventions sets digital interventions apart as method.

〉 The potentials for cultural production in Twae could take the form of any of the arts of images, video, text and audio. It also provides a much more expansive canvas for developing creative concepts than the 140-character limit in Twitter. In early tests of this process it appears the Twae Twitter stream can drive between 200-500 people in 10 minutes to virtually any topic simply by putting a link into the Twitter stream with a brief description. This may ultimately turn out to be far more powerful in seeking to convert followers into opportunities. Digital Sociology can focus on both

the community formation inspired by the specific digital intervention and the resultant capacities for residual and subsequent social action and movements.

Above all, from the Twae research it is obvious that there are huge swathes of unaddressed or investigated areas of social network interaction desperately needing further exploration. This demonstrates the potential for research on the empowering aspects of social interaction using careful calculation, functional media literacies and respect for the merits of collective intelligence. The priorities will of course depend on the researcher as varied angles were adopted for this project based on the subjective interest of the researcher in particular areas of inquiry. So the following list has a personal flavour and focuses on the implication of adopting a 'directed' approach to communication on Twitter but suggests some obvious channels of academic research for potential investigation.

- *What determines tie strength in Twitter and what impact does this have on power relations in the social network?* Social media treats all users the same and Twitter only classifies by follower and following or nothing at all. The Twae project extends this by suggesting the importance of depth and reach in followers but a really useful follow-up study would combine these two elements and ask which particular followers is it important to reach and interact at depth. It is likely that any conversion from followers to ambitions enjoyed by the Twae account will result from a very small number of the 15,000+ followers. Gilbert and Karahalios explored predicting strong and weak tie strength in Facebook but if we apply this same principle to the emancipatory potential of a particular contact in the network it could be a very powerful mapping tool for social interactions online (Gilbert & Karahalios, 2009).
- *What is the micro-impact of directed social interaction on Twitter?* The Twae research project is largely high-minded conceptual work. It would be very useful to conduct more fine-grain ethnographic or statistical research into the role Twitter plays in the lives of people operating accounts.

- *What is the meso-impact of directed social interaction on Twitter?* Further qualitative and quantitative exploration of the capabilities and media literacies required to participate and thrive on Twitter. What are the ambitions of those participating? How aware are they of the potential to harness power in the virtual space and direct it towards their own real lives? What are the ethics of this approach?
- *What is the macro-impact of directed social interaction on Twitter?* The Twae study is obviously a micro case and very difficult to reproduce in its entirety because so much of its development is related to the temporal space in which it (and the development stages of Twitter) occurred. What if these micro cases were rolled up into a bigger picture view. Could it impact issues of human rights, poverty, politics, employment, education and trade?

CHAPTER SIX: WEB 2.0 CASES – TWEETS AND WHISTLES

[1]

6.1 Introduction

The function of this chapter is to illustrate digital interventions in collective intelligence executed by external or third parties as a reflection of opportunities for producing case studies for collective intelligence on the Internet as multiple are varied. It is not explicitly necessary that a digital sociologist actually enact a digital intervention in order to benefit from analysis and social data available on digital social life on the Web. Not occupying the role of *administrator* (BlogScholar) or *mediator* (Twae) means the researcher is strictly acting in an *observer* role. Through these processes and method practices of observation and investigation the researcher can further inform the practices of Digital Sociology. These third-party digital interventions also offer opportunities for analysis of emerging practices in digital community formation. The ability to collect information from thousands, millions or even billions of people on the Web has opened up astonishing new possibilities for using media literacies to tap into combined

[1] Web 2.0 wordcloud of the contents of this chapter

knowledge, experience and insight of multiple independent contributions. Virtually every site, network or feed on the Internet can be related to collective intelligence in one form or another. This chapter complements the primary data investigations of Twae and Blogscholar by profiling and collecting secondary case studies on digital interventions in collective intelligence and media literacy. These cases reflect emerging trends in the formation of a Web 3.0 and the many potential directions this may take. It is a function of these developments that the researcher is even further away from the administrative command and control of social data featured in the BlogScholar case study and even the minimal mediation possibilities of the Twae case study. The Web is moving into the 'cloud' and remote data storage and services require further literacies and methods for effective practice of Digital Sociology. Traditional social interventions with the explicit outline of a role for the researcher are increasingly difficult to enact in these ecosystems of ephemeral and abstracted visions of social engagement in collective intelligence. Contemporary researchers have to cope with increasing complexity in accessing and analysing digital social life and this involves engagement and intersections of sociological and digital literacies. The lines of observer and observed in social research practice are set to get increasingly blurred as researchers both use and analyse platforms for social engagement online. Digital Sociology must concern itself with these new directions and the implications on current and future practice of digital interventions. Lessons learned from observing the experience of others in implementing digital interventions can inform our own practice. Each case is preceded by a brief explanation of its relationship to concepts of collective intelligence and media literacy. The research domain of online and social media is constantly evolving and shifting so it is often necessary to provide temporal placeholders framing each research description.

Enacting collective intelligence was always possible and active in human society and economy. The Internet is not a requirement for collecting, combining and analysing data from multiple or disparate sources. Collecting information from multiple respondents, as in the form of census provides statistical conclusions about the group that cannot be provided by any individual respondent. One of the earliest recorded censuses was taken in 500 BC by the military in the Persian Empire as a method for sorting out tax rates and issuing land grants (Kuhrt, 1995). McLuhan argued this form of "nose-counting" is

too cumbersome and ineffectual in a context of instant digital communication. The "public" has been replaced by a collective intelligence equivalent of the "mass audience" and this digital society needs to be nurtured and encouraged to create and participate beyond broadcasts of passive entertainment (McLuhan, 2001). Another example is *futures* in financial markets where participants trade contracts based upon intuition or belief about likely future prices. These markets are considered better at predicting potential future outcomes than predictions from any individual experts making projections. Slicing and dicing figures from these markets offers custom representations of the combined projections of participants (Segaran, 2007).

Both of these examples are forms of collective intelligence defining new conclusions from the sum or aggregation of independent contributions. This is similar to online concepts of collective intelligence like *swarm systems* to identify emergent behaviours or *data mining* to extract patterns from online data in scientific discovery. From this perspective knowledge of the big picture can help promote greater knowledge of constituent parts but this does not imply it is reducible to its parts. Online collective intelligence typically requires users to contribute information into the collective and machines running code to provide means of accessing and sorting this information. All of the examples in this chapter include some component of human shared intelligence, information or knowledge and some component of machine information processing. In the collective, knowledge is hybrid and formed through cybernetic processing between man and machine. For example in their overview of technology Google states "our technology uses the collective intelligence of the web to determine a page's importance" (Google, 2010). This survey of examples of the intersections between collective intelligence and media literacy intentionally steers clear of the elephants in the room in this regard. There are no case studies of Google or Wikipedia because what limited academic research conducted on this topic has focused on these online giants (Lichtenstein & Parker, 2009; Malone & Laubacher, 2009; Gruber, 2008; Kapetanios, 2008). The case study on Wikileaks included in this chapter was conceived of before the site arrived in such high-profile fashion in the public consciousness. But both Google and Wikipedia offer access to collective knowledge sourced from collective intelligence by combining software algorithms and human knowledge to determine

results and content. There may be a stronger case for including some of the other emerging dominant platforms for collective intelligence in these cases like Facebook with a user base of over 500 million in 2010 that would make it the third largest country in the world. Unlike the decision to exclude Google and Wikipedia from the list of cases, there was no conscious rationale for excluding Facebook, MySpace or YouTube from the research investigations included in this chapter. The decisions of what is included or excluded were simply made based on the timing of the authoring of this chapter and the researcher access to relevent materials and insight. The ambition of this chapter is not to provide a wholesale survey of collective intelligence in online action, but to provide a sense of the range and variety of interpretations of the concept.

In an era of social networks on the Internet, social capital is shaped through access (employing media literacies and participating in networks), production (generating content, original or otherwise), reach (how many people access and read your content), and engagement (depth of interaction of followers with your content). McLuhan suggests there are no inevitabilities in political or social life as long as there remains a willingness to contemplate and participate in what is happening. Through increasingly pervasive media networks all aspects of political economic, aesthetic, psychological, moral, ethical, and social life are affected, altered and touched. The 'Medium is the Message' so "change is impossible without knowledge [media literacies] of the way media work as environments" (McLuhan, 2001:26). In a digital communication age, everybody knows too much about each other to ignore the plight and circumstances of the *other*. We are compelled to participation through networks as extensions of human psychic or physical faculties in the same way as clothing is an extension of skin or tires are an extension of feet. Fluctuating sense perceptions alter in accordance with constantly shifting media environments and position us in a global village of "acoustic space" featuring a shift from the action of traditional literacy to the reaction as the results of human action are experienced without delay:

> Electric circuitry profoundly involves men with one another. Information pours upon us, instantaneously and continuously. As soon as information is acquired, it is rapidly replaced by still newer information. Our electrically-configured world has forced us to move from the habit of data classification to the mode of pattern

> recognition. We can no longer build serially, block-by-block, step-by-step, because instant communication insures that all factors of the environment and of experience co-exist in a state of active interplay (McLuhan, 2001:63).

Writing in the 1960s, McLuhan described the political Cold War as "involving everybody, all the time, everywhere". But his sentiments on media are potentially even more appropriate to the spiralling bursts of spontaneous creativity and conversations characterising Web 2.0. The traditional analogue broadcast medias of television, newspapers and radio are primarily asynchronous forms of communication. Experts extol the rights and wrongs from on high, while viewers, listeners and readers employ forms of relatively passive consumption. Receiving information is asynchronous but not necessarily a passive exercise. The opportunity to construct information and knowledge is the active domain of the synchronous social networker. There are few better descriptions of what social media enables than participants co-existing "in a state of active interplay". Expert intelligence is supplanted by collective intelligence. McLuhan argued that warfare technology in the 1960s had surpassed the ability and desire to deploy it: "The hydrogen bomb is history's exclamation point" (McLuhan, 2001:138). Traditional media is feeling the hydrogen bomb of related industry history in the form of the emerging online interactivity and all the ensuing challenges to synchronicity.

When McLuhan shared his visions of mankind extending senses through mediums author Tom Wolfe asked: "Suppose he *is* what he sounds like, the most important thinker since Newton, Darwin, Freud , Einstein, and Pavlov, studs of the intelligensia game – suppose he *is* the oracle of the modern times – *what if he is right*?" (Wolfe, 1968). Perhaps the question is not so much whether McLuhan was "right" as what is it about his thoughts that make them still (even more?) relevant to shifting social and media landscapes. This question intersects with a fundamental ontological principle of critical realism. What is it about knowledge that makes it more or less useful? This chapter asks the same question of emerging online networks and media loosely grouped under the Web 2.0 umbrella of innovation. This is a small contribution to a rapidly emerging 'Science of the Web' that is rapidly gaining support as a critical field of social and scientific inquiry (Shadbolt & Berners-Lee, 2008). In March 2010 the UK

Government announced plans for the launch of a US$45 million Institute of Web Sciences as an academic base for research into the semantic web and other emerging web technologies but after the 2010 UK General Election the plans were shelved for cost considerations and alternate priorities. There is significant global momentum in academia to analyse and help understand the ramifications of collective intelligence depositories and interactions. Typically this cannot be achieved without first ensuring participants or potential participants have the necessary network access and requisite media literacies.

Case studies in this chapter complement the primary data field projects of Twae and BlogScholar with a series of secondary data analyses from augmented reality to crowdsourcing, cloud computing, Wikileaks, digital hacktivism and gold farming. These analyses are further refracted through selected lenses of allegorical quantum sociology from cause and effect, superpositions, observer/observed, truth, social uncertainty, duality and entropy. These concepts are described in detail in the methodology chapter but coupled with critical realism to form the methodological foundation for investigating the case studies in this chapter. Each topic can easily form its own research platform and the secondary analyses are wide-ranging and only skim the surface of research possibilities. The contribution of the material to this research project is collective cases of selective practice and theory based examples individually and collectively relevant to concepts of media literacy and collective intelligence. The conclusion of this chapter suggests some starting points for further social research opportunities revealed through investigation of the assembled collective cases.

6.2 Digital Hacktivism

This mini-case represents digital interventions by activists and vested interests in political economy and culture. Collective Intelligence in Digital Hacktivism is evident in the interactions between hacker and knowledge. Media literacies are composite requirements for participation.

On December 18, 2009 headlines in the mainstream press screamed "Twitter hacked by 'Iranian Cyber Army'", "Pro-Iranian hackers hit Twitter", and "Twitter 'hijacked by Iranian hackers'" (CNN, 2009; BBC, 2009; Johnson, 2009). For two hours that morning the Twitter home page was hacked and replaced by a mixture of English and Farsi slogans: "This site has been hacked by the Iranian Cyber Army. The USA thinks they can control and manage internet access, but they do not. We control and manage the internet with our power, so do not try to incite Iranian people" (Johnson, 2009). The incident marked another event in a string of highly-publicised relationships between political power struggles in Iran and Twitter around the presidential election in June, 2009 when Iran's domestic politics erupted into civil disobedience and protests. This narrative was called "Iran's Twitter Revolution" after high-profile political blogger Andrew Sullivan announced in the *Atlantic* that "The Revolution Will Be Twittered" as a Web 2.0 variant of Gil Scott-Heron's poem and song "The Revolution Will Not Be Televised" (Sullivan, 2009). With traditional media banned from reporting from Tehran, Twitter swiftly became a highly visible link between democratic protests of alleged electoral fraud in the election of President Mahmoud Ahmadinejad and kindred voices around the world. In an interview with TED.com, Internet guru Clay Shirkey claimed this was the first revolution catapulted on to the world stage through social media (TED, 2009). Critics countered that little or no evidence exists suggesting technology fueled the protests and what pundits like Sullivan and Shirkey were actually seeing was simply public self-affirmation in a mutual admiration society of wealthy English-speaking Iranian bloggers and overly zealous and optimistic cyber-utopian Westerners (Morozov, 2009).

Such debates consider and contest the notion of *cause and effect* as event regularity and allegorically reference the quantum idea of *nonlocality*. Critical realism suggests the relationships and interactions between western tweeters and their Iranian counterparts are mediated by social structures and mechanisms expressed through disparate media channels and public conversation. Morozov compares perceptions of the implied causation relationship of new media ecosystem in the West and Iran "like the old game of 'Telephone' in which errors steadily accumulate in the transmission process, and the final message has nothing in common with the original" (Morozov, 2009:11). For social

research the concept of Twitter as battleground for trans-national geo-political movements, agency, ethics, and knowledge offers a rich and tremendously underexplored canvas for investigation and analyses.

Tweets can be viewed and authored on virtually any device with a screen and a network connection and can be distributed across both SMS and Internet networks. Through the use of hashtags and RTs, crucial messages or updates can be widely disseminated by a vast population around the world in a very short period of time. Between spring 2006 and January 2008, mobile phone ownership in Iran jumped from 45 to 65 per cent. Close to three out of four adults 35 and under has a mobile phone; among those 35-54 at least half have one; down to 25% of those over 65. There are strong correlations between phone ownership and gender and education as 71% of males own one compared to 58% of females and 86% of university graduates are owners (Intermedia, 2008). Ubiquitous access to mobile devices for the creation and aggregation of real-time politics and the onslaught of a screen culture in youth are "reconfiguring the very nature of politics, cultural production, engagement, and resistance" (Giroux, 2009). All of these factors positioned Twitter uniquely to escape any attempts to censor content moving across the platform in and out of Iran.

On 16 June 2009 Reuters reported that the US State Department asked Twitter to delay a scheduled server maintenance and upgrade: "We highlighted to them [Twitter] that this was an important form of communication" (Pleming, 2009). Further media reports indicated US diplomats and officials were monitoring Twitter chatter originating from Iran as a crucial source of intelligence as the domestic political situation evolved. The formal request to defer the Twitter maintenance marked the first time a US Government agency explicitely acknowledged the importance of social media in shaping international affairs. Burns and Eltham offer an early example of applying sociological frameworks to uses context and issues related to these events (Burns and Eltham, 2009). Their research methodology and findings reflect the sociological tradition of seeking to investigate social phenomena by bouncing off the struggles of a *duality*. In this case research binaries are proposed between the cyber utopians who "believe Twitter and other social network technologies will enable ordinary people to seize power from

oppressive regimes" and technology skeptics who recognise the dangers of essentialising Twitter's role and "consider the fate of Iran's protestors, some of whom paid for their enthusiatic adoption of Twitter with their lives". Ultimately the study concludes that "those who championed the role of Twitter to spur the anti-regime social movement failed to understand – or worse, ignored – the possibility that Iran's 'violence specialists' in its security apparatus would use Twitter to identify and hunt down pro-democarcy protestors" (Burns, 2009). These findings fail to understand – or worse, ignore – the possibility that those championing Twitter as a communication superstructure for the protests led widespread attempts to implement counter-deception measures against any surveillance. In a show of solidarity with their Iranian counterparts, Twitter users from around the world changed location and time-stamp information in profiles so they appeared to be operating from Iran: "Help shield #iranelection and confuse Iranian censors" tweeted SpartanLonewolf (LaVallee, 2009). These measures coincided with the Twae case study and at one stage led to statistics indicating over 20% of Twae's followers originate in Tehran. As *chaos theory* suggests, the flapping of butterfly wings in response to political threat from Iran changed the weather for Twae.

Burns suggests Twitter users mobilised to support and share the communitarian ideals of the Iranian protestors but "their campaigns could not deal directly with Iran's Basij paramilitaries" (Burns, 2009). Users of Twitter offer a breadcrumb-trail of their networks and connections through perusal and scraping of follower lists, indicating who is connected to who and opening up all this data to public search. Morozov suggests this provided Iran's secret services with superb platforms for gathering information about future revolutionaries and that "such nuances are lost on young Iranians and their foreign supporters; they happily exchange public messages with each other, creating a very dangerous trail of evidence that, sooner or later, could be used against them" (Morozov, 2009:12). Neither of these academic contributions to the analysis of Twitter and the Iranian protests provides any supporting evidence for these claims and in principle, they seem as much of a stretch as the cyber-utopian positions they attack for claiming causation between Twitter and the protests. The suggestion that the users of social networks are unaware that leaving @ messages in their stream or exposing their

follower lists puts this information squarely in the public domain is a very peculiar accusation. It assumes particular low levels of media literacies in otherwise apparently comfortable technologists.

Just as Deleuze (1995) argues power and control need not be invisible or faceless in a network society as we are fully aware of its presence and are even encouraged to look back into it, users of social networks understand public access as an implicit, not explicit, aspect of participation. Fear or surveillance is countered by joys of contributing and helping propel new opportunities and expansions of the collective intelligence. Global protestors let the Iranian authorities chase the long tail of protest communications on Twitter for if the virtual movements are successful their quest will forever be running to catch up as the scope and depth of communications forever broadens and deepens. Certainly it is no different but probably far less risky than smuggling physical documents across borders or revealing secrets at a clandestine cold-war meeting of tinkers, tailors, soldiers or spies. Courageous voices removed from the narratives of official power find ways to counter, critique and supplement these narratives throughout history and around the world. Social networks offer new modes of representation but also contribute as a precondition to organisation of diverse publics around social movements or political struggle (Giroux, 2009). If Twitter is the network, than both protestors, sympathetic or antagonistic third parties and representatives or Iranian authority groups are hackers. Just as putting a thermometer into a pool changes the temperature of the water while trying to read it, every tweet logged in Twitter forever changes the associated narratives. There are multiple and stratified properties shared by people using Twitter to participate in the internal politics of Iran but undoubtedly all have certain media literacies in common required to participate in the network. This is the intransitive aspect – the reality of requirements for participation. Transitive are the subjective realities forming those requirements in the structural networks of communication. Participants must look inward and outward to find the reality of their subjective experience in the Iranian protests. There is the reality of the risks of participation, both for yourself and others you impact through participation, but there is also the reality of the implied social collaboration evident in movements loosely coordinated through a messaging service like Twitter. Expectations and practices are

fallible but evolving so there is no method for social researchers to find causation (or negative causation like research 'proving' Twitter participants in the West did not help support Iranian democratic protests) between Twitter and the protests. Just as in the experiments validating Hardy's Paradox, in social life it is just as important what we do not do as what we do. While participating in the Twitter conversation on #iranelection may have put some individuals at risk or worse in Iran, who is to say what the impact is of not participating. Certainly not social researchers attempting to bound and contain the swirling cacophony of collective intelligence in oversimplified narratives of cause and effect. Most of the participants in the Twitter conversation about the Iran protests can be considered hackers of knowledge, hackers of abstraction,

> All classes fear this relentless abtraction of the world, on which their fortunes yet depend. All classes but one: the hacker class. We are the hackers of abstraction. We produce new concepts, new perceptions, new sensations, hacked out of raw data. Whatever code we hack, be it programming language, poetic language, math or music, curves or colorings, we are the abstractors of new worlds. Whether we come to represent ourselves as researchers or authors, artists or biologists, chemists or musicians, philosophers or programmers, each of these subjectivities is but a fragment of a class still becoming, bit by bit, aware of itself as such (Wark, 2004: 002).

The more traditionally classified and self-aware hackers of code from the 'Iranian Cyber Army' that attacked Twitter may or may not even have come from Iran and did not compromise the Twitter website at all in the process. The attack was a relatively basic form of online assault known as a DNS hijack so traffic to twitter.com was redirected to the hacker page and the actual content of Twitter pages was untouched. This is analogous to changing the address on a sign posted to attract visitors to a real estate open house instead of committing any offence against the house. For a while people seeing the sign end up at the wrong address but when someone realises where the sign has been changed and switches it back, the open house is back in business. Similarly once Twitter sorted out where the DNS information had been changed and switched it back, Twitter was up and running normally again two hours after the initial switch. These types of attacks are termed 'man in the middle' hacks as the hacker inserts themselves between the online users and the web servers, unbeknownst to either party. Instead of 'controlling the Internet' as the hackers claimed, it is more likely they simply

temporarily hijacked vulnerable infrastructure required to deliver pages from the Twitter website servers to social networking users. In many ways this is petty hacker crime on the Internet as the damage is not permanent and no actual resources belonging to the victim have been compromised or commandeered. But it also reflects a growing era of 'guerrilla' hacking online where small groups with relatively minimal resources can affect very public disturbances. Examples of this type of entrepreneurial hacking appear in the daily news like when insurgents in Iraq used a $26 piece of widely available software to hack into unencrypted video pictures beamed down from unmanned US spy drones during the second Gulf War (Gorman, 2009). Like Twitter, the US Army had not considered the risks of the media literacies of their enemies. Hackers are "a class that makes abstractions, and a class made abstract" and attempts to abstract hackers is to abstract the concept of class itself (Wark, 2004). The processes of hacking are bringing together different and unrelated matters into possible relation in the collective intelligence. Just as the US State Department encourages innovation from Twitter, they discourage it in insurgents. Depriving or empowering the hacker of control of his or her creation are the alternating ambitions on display.

Critical realism suggests the reality of Twitter's role in the protests and domestic politics in Iran is a mashed-up conflation and combination of transitive and intransitive realities. Quantum sociology suggests even framing the discussion in terms of the impact (or not) of Twitter distracts from the basic fundamentals of this canvas for sociological exploration and imagination. The collective intelligence of Twitter's role is reflected in the tweets on the topic originating in and outside of Iran. Tweets, blogs, videos and images from participants in this discussion form the collective intelligence for this canvas for sociological exploration. General and specific media literacies are required to participate and hack the conversation but also to participate in the conceptual debate about the role of Twitter in the protests. Despite her role as Secretary of State for the Obama administration (which generally prides itself on the scope and breadth of its digital literacies), Hillary Clinton confessed she did not understand Twitter but grasped its potential importance when confirming the State Department's request to Twitter a few days after the start of the protests in Iran.

> I wouldn't know a Twitter from a tweeter, but apparently, it is very important … to keep that line of communication open and enabling people to share information, particularly at a time when there [were] not many other sources of information … It is a fundamental right for people to be able to communicate (Clinton, 2009).

While many acknowledge that Twitter played a focal role in an otherwise relatively barren media landscape around the protests, the academic debate to-date reduces the discussion to perspectives on the actual extent of this role. Quantum sociology suggests this is an irrelevance as the *social wavefunction* collapses at the point of observation. Observations rooted in temporal space do not imply certain knowledge of future states as any insights into the role Twitter played in the Iranian protests do not imply knowledge of any future role for Twitter in political discourse or affairs. *Time* magazine may suggest Twitter is "the Medium of the Movement" for the protests but sociology must go further in exploring how social life is constructed and reconstituted through production, mediation and reception of social networking communications like Twitter (Giroux, 2009). In 1996 Bourdieu gave a series of televised lectures at the College de France critiquing the media, and TV news in particular, for attention to spectacle, disasters and human interest stories over more substantive examinations, of attention to the "games of politics" instead of the material effects of these games and even of imposing a kind of censorship through the sound bite culture that elevated certain participants in public media discourse and barred most of the general public unfamiliar or inexperienced with the format. Finally he contended that journalism practices are primarily defined through symbolic struggles internal to journalism as opposed to a focus on accurately depicting reality or creating meaningful public debate (Bourdieu, 1999). Opening the media scope of commentary, reporting and conversation in the form of social networks available to anyone with a screen device and a network connection provides a means to circumvent control over many of these issues. Marcuse argued instrumental rationality (like analyzing Twitter solely as a communication tool) undermines technology's emancipatory potential but the same argument applies to reductive attempts to classify Twitter as a strictly subjective experience (Marcuse, 1964). Alongside the practical new media skills and tools employed during the protests is the development of "a new set of theoretical tools and modes of collective resistance in which the educational force of the new media both records and challenges

representations of state, police, and militia violence while becoming part of a broader struggle for democracy itself" (Giroux, 2009). It challenges us to look beyond reductive explanations to Iran as a canvas for cultural politics based on social relations and the expressions of civic courage and social responsibilities.

This collective project challenges global systems of religion, democracy and capitalism as much as it inspires connections between tweets and protests. Pure Twitter revolution requires a state apparatus with no sense of the virtual and belligerence towards the composites of media literacy and cyberspace (Morozov, 2009). This kind of reductive absolute can never exist, just as pure media-saturation where all forms of communication overlap and obscure each other like the cinematic Matrix can never be achieved. *Entropy* tells us that information as energy is leaking at all times and the genie can never be put back in the bottle. All states are in the process of being but the case of the so-called Twitter revolution in Iran played out on a particular stage of religious, state, military and transnational rancour. The lessons learned for social life involve neither perspectives on domination and commercialization or emancipatory and democratic technology though typical studies of the strengths and limitations of online social networks. Mediating knowledge, as the participants in the Twitter conversations and the social researchers observing these actions have done, is not the same as constructing knowledge. Clearly all perspectives are relative but it does not mean that all are not more or less reliable or useful. Any action or hack in the name of the promotion or deterrence of social action in these political affairs is part of that collective intelligence and different from unrelated expressions. These expressions are more useful and reliable for social researchers in exploring the relationships between Twitter and the protests but they do not in any way explain the protests. Trying to prove that they do or prove that they do not through research study is a fruitless task. They are both material and immaterial at the same time, just as the composite and subjective reality of Twitter and the protests involve both material and immaterial realities. Hacking the conversation through Twitter depends on the material qualities of the protests, and yet discovers something independent of these protests. These discoveries are the critical and only plausible objects of study for social research.

6.3 Cloud Computing

This mini-case represents digital interventions by cloud storage companies and services as a disruptive influence on the trajectory of storage and access to social data online. Collective Intelligence in Cloud Computing is the emergence of open content clouds made up of data, information, and knowledge while blurring the epistemological divide between these three classes. Basic functional media literacies are required to interact with data in the clouds but more advanced techniques are required to establish or intervene in clouds.

On 9 March, 2006 the Guardian launched a 'Free our Data' campaign "to persuade the government to abandon copyright on essential national data, making it freely available to anyone" (Arthur & Cross, 2006). Five years later this ambition was realized. Sir Tim Berners-Lee, known as the inventor of the WWW, was asked by Prime Minster Gordon Brown how the UK could best make use of the Internet. "Just put all the government's data on it," Berners-Lee replied and to his surprise, Brown simply said "OK, let's do it."

The initial key driver for the success of this initiative was the creation of a cycling accident map for Britain. Cabinet ministers were overwhelmed when Berners-Lee demonstrated how to convert data published on government websites into Google Maps showing people suggested cycle routes and the most dangerous crossings to avoid. Local councils and communities could use the data to inform or petition urban planning decisions. This allows these bodies to explore potential connection points of *cause and effect* where for example the placement of a fire hydrant near a particular park entrance forces commuting bicyclists to swerve around and invite potential collision with cars exiting the park The dam was broken and six months later the data.gov.uk website was launched and acts as an index to the growing number of UK government datasets released openly into the public domain. The public launch of the website described the service as "an online point of access for government-held non-personal data. This is to enable people like you to take it, re-use it and make interesting things with it" (Data.gov.uk, 2010). The project is a very high-profile example of an implementation of

Linked Data, a subset of the wider Semantic Web movement[2], aiming to connect separate data sets on the Web through an official W3C set of standards.

One goal of the Semantic Web is encoding data with meaning using web ontology languages like IEML, OWL and RDF to provide facets and structure to information flow in the collective intelligence. Central to the development of a sustainable architecture for semantic web technology is the emergence of computing as a *utility service* like water, electricity, gas, and telephony. In this utility vision computing users need to pay only when they access a computing service and virtually all services are shared and available to all users. This is the allegorical *superposition* of computing resources, both present and not present in many places at the same time. Individuals, businesses, non-profits and governments need not invest heavily in developing and maintaining personalised complex IT infrastructure. Cloud Computing is the combination of the applications, data and hardware and software systems providing computing utility services on a typically massive scale. Such economies of scale and efficiency lead to factors of 5 to 7 decrease in cost of electricity, network bandwidth, operations, software, and hardware when combined with statistical multiplexing (Armbrust, et al., 2009). For example services like the Amazon Elastic Compute Cloud (Amazon EC2) "provide resizable compute capacity in the cloud" so smaller developer operations can obtain and configure capacity in minutes as their computing requirements change. Users of the service 'rent' computing cycles by the hour from Amazon data centres and storage and pay for the data processing capabilities of particular computational units.

Cloud Computing represents the commoditization of computing services so users need not concern themselves with where the service originated or how it is delivered. This is not an uncommon public approach to the Internet in general where only a fraction of users understand crucial underlying technologies like web servers, HTTP, IP or DNS (Buyya, Shin Yeo, Venugopal, Broberg, & Brandic, 2009).

[2] The semantic web tries to help machines 'understand' the data pulsing across the networks by supplementing the actual data with meta information and tagging structures to help computers process the meaning of the data more efficiently.

> Cyberspace will remain fundamentally inscrutable because the computer is an essentially opaque technology. Unlike the bicycle or the typewriter, high technology means low transparency. The bike, as a mechanical device, is transparent to its users. When a stick gets caught in the bike chain or a brake wire snaps, the bike rider can look, analyze, and intervene. High technology, however, shuts the user out from the micro-world of electrons, microchips, and bit switches that make it work. More so with the worldwide system of computer networks where even experts remain in the dark about how certain things function in the mysterious guts of cyberspace (Heim, 1998:160).

But Cloud Computing introduces crucial differences in how data is secured, stored and accessed that impacts the privacy and virtual identities of each user. The legal process for third parties to access your data in the cloud is different from having it stored on your computer at home. The security of the entire cloud systems is often only as strong as the weakest user's configuration so storing data in collaborative web applications like Gmail or Twitter introduces a whole host of particular security considerations. Cloud computing introduces unprecedented concerns about users being beholden to third parties for decisions about how they want to manage and distribute data. For example Amazon reached into personal Kindle e-book machines to delete copies of books written by George Orwell (irony!) that were not authorized for sale on the site. This is akin to a bookstore stealing into your bedroom at night to remove a book from your nightstand without your consent (Pogue, 2009). Finally, servers go down and if your data is stored in the cloud it may be unavailable when you need to access it. Many of these issues of reliability, liability, security, privacy, anaonymity, access and usage are still relatively unresolved as information policy and regulation struggles to keep pace with the rapid developments of Cloud Computing technology.

So why is Cloud Computing such a powerful emergent force in computing technology and data storage? The amazing growth of the Internet has given rise to a new class of 'Web-scale' problems like supporting millions of interacting Facebook or Twitter users, processing thousands of concurrent e-commerce transactions on the eve of sale of World Cup or Glastonbury tickets, or crunching millions of search queries virtually simultaneously. The capacity to crunch this data has increased as the requirements have emerged. Wal-Mart handles more than 1m customer transactions every hour, filling databases with more than 2.5 petabytes of information – the equivalent of 167 times the

books in America's Library of Congress. When the Sloan Digital Sky Survey started in 2000 in New Mexico it collected more data in its first few weeks than had been amassed in the entire history of astronomy (Economist, 2010). Scientists and computer engineers have coined a new term for the phenomenon: 'big data'. The ever expanding information of the online collective intelligence throws up a proliferation of data and processing intensive issues for individuals and companies for the Web and beyond (Jaeger, Lin, & Grimes, 2008). Web 2.0 companies like Facebook, MySpace, and Twitter can take remarkably different approaches to transparency and intellectual property for information stored in their particular clouds. For example MySpace changed their policy towards user data in March 2010 and allowed a large quantity of bulk user data to be put up for sale in online marketplaces including user playlists, mood updates, photos, reviews, blog posts, user names and zip codes.

The conflation of *data* and *information* is well underway and the two are increasingly difficult to tell apart. Given sufficient raw data available in the cloud, algorithms and powerful computing processors can reveal insights that would otherwise have been hidden in real-time. The epistemological hierarchy of data making up information making up knowledge is collapsing into clouds of collective intelligence.

This trend is reflected in the emergence of academic computing clouds forming megastructures like Twitter hosting large-scale social phenomena and providing opportunities to "invigorate academic research and have strong potential to spawn innovative collaboration methods and new behaviours" (Delic & Walker, 2008).

6.4 Augmented Reality

This mini-case represents digital interventions by emerging technologies related to alternate representations of virtual realities. Collective Intelligence in Augmented Reality is the layering of 3-D information on real-world objects to provide context and knowledge. Media Literacy is required to use AR hardware and software for access with greater knowledge base requirements for acts of creation and analysis.

Augmented Reality (AR) is the offspring of earlier technologies like Virtual Environments (VE), more commonly called Virtual Reality. Whereas VE systems 'replace' the real world through immersion in a virtual world navigated through a synthetic environment, AR 'supplement' reality by superimposing virtual objects with the real world. AR is a cyber-kinetic and hybrid technology as it occupies a middle ground between completely real and completely synthetic (Azuma, 1997). Typically in AR the real world is overlayed with virtual data, images or 3-D models to offer a composite world. The relevant technologies have reached a new level of development and reach with the advent of more sophisticated mobile devices capable of projecting AR objects on to real world landscapes through embedded cameras. Early-stage AR software and applications for devices like the Apple iPhone or Google Android-powered handsets offers users basic functionality like virtual maps of nearest tube stations or restaurant reviews while museums and historical sites explore possibilities for virtual heritage exhibited through AR (Miyata, 2009). On 18 August, 2009 leading new media industry magazine *Wired* cited AR as "the most convincing example of Arthur C. Clarke's third law of prediction: Any sufficiently advanced technology is indistinguishable from magic" (Conroy, 2009). But after describing the awkward use of AR in the launch of a new Simian Mobile Disco album the article follows with the decisive caveat – "When it works, that is". AR is at a decisive stage in its development with perceptions and uses of the technology in the constant flux inherent to emerging but unproven technologies.

This hybrid ground is the virtual equivalent of Serres' knowledge harlequin, removing one costume to reveal another to infinity (Serres, 1995). It is central to Lévy's vision of spiralling cyberspace cities of collective intelligence and the emergence of new ideas and opportunities through the duality of existence and non-existence. In *Becoming Virtual*, Lévy explores the axes of time and space implicit in the emergence of new ideas and the events involved in the 'new' taking concrete form. In Lévy's theory, the emerging virtual flows towards actualisation along the time axis, and the possible towards substance along the space axis (1998). Applying this to theories and practices of AR, the virtual objects superimposed on reality strive towards actualisation as they appear superimposed on real-world objects and take on substance through the mobile

camera lens. This actualisation is an ongoing process of 'becoming' as AR researchers seek better and more reliable methods of pasting virtual objects into the real world through ever-advancing geo-location technologies. Spiralling virtual hypertext both exists and does not exist, like the photons in experiments to examine Hardy's Paradox. Virtual data appears and disappears as *superpositions* and waves, layered into Levy's digital cities of spiralling hypertext, both there and not there at the same time. The wrecking ball of digital construction is the swipe of a touchscreen or the pressing of delete. Users of AR ride the allegorical waves through hybrid space of data flows and places (Castells, 1999). The virtual is not just potential, it is potential's potential, and hacking real-world knowledge through the virtual is to express the possibility of new worlds, beyond necessity (Wark, 2004).

On August 17, 2009 science fiction author Bruce Sterling delivered a keynote speech entitled "At the Dawn of the Augmented Reality Industry" at the launch of the Layar Reality Browser in Amsterdam. Layar is one of a number of fledgling mobile applications displaying real-time digital information on top of real world objects. Current AR case studies on the Layar website include a Market Hall in Rotterdam planned for completion in 2014. By pointing a mobile phone with the Layar browser at the current construction site for the Hall, visitors can walk around the building and look inside as if it was already built (Layar.com). Heralding the founders of Layar as the "four horse men of the infopocalypse", Sterling called for an immediate industry code of ethics and dedicated research journals to chart the early stages of "a techno-visionary dream come true". He tempered his utopian view with warnings that "the criminals are going to come" and warned of dark forces scheming to fill the virtual plane with spam and incendiary content. Sterling noted that the three most popular Augmented Reality languages in Google Trends at the time of his speech were "1: Korean, 2: Dutch & 3: English" implying a globally distributed power paradigm in the early stages of innovations in AR mobile cyberspace (Maarten, 2009).

Despite Sterling's enthusiasm one item not discussed at the launch was the actual methods for creating *Layers* in Layar. Layar describes Layers as the equivalent of web pages in traditional browsers and users of Layar are encouraged to move between

Layers for different access point and views into the immediately surrounding physical world. For example, two different content producers produce two different sets of restaurant reviews in London and the resultant reviews particular users see through mobile phones depends on which Layer is selected. The process of creating a Layer involves multiple functional media literacies including basic coding skills, browser navigation and graphic design but in relative technical terms the process is rudimentary. But before a user can create a Layer they must first request permission for a developer key from Layar. Though this may simply be a function of the early stage of development of Layar's business processes, there is no indication on their website that this is set to change at any point in the future. Once a Layer has been created and tested it must be submitted again for centralised approval from Layar staff. In other words access to the creation of Layars is limited to a finite authority subgroup of the collective intelligence with permission and approvals in place. The augmented realities visible through the Layar browser are representative of a very select and particular subjective and interpretive reality. While it is easy to imagine the Layar founders concern over inappropriate applications of the technology, it is equally difficult to imagine this type of approach employed in previous versions of browser technologies. If Layers are web pages than the unthinkable equivalent would be every user of Wordpress or every owner of a web server needing to request permission from some higher authority before releasing content into Cyberspace. So on one hand Layar is pushing the techno-libertarian agenda by advancing and creating widespread appeal for critical new technologies in AR while on the other reverting away from broadening access and scope in network society. Near the end of December, 2009, Layar announced on their website that Layers were closed for publication during the holidays: "Due to the holidays we will not review your pending layers for publication between 18th of December and the 4th of January. So if you want to publish your layers before Christmas please do this asap" (Layar.com). Apparently reality was on hold.

Foucault wrote of the all-seeing, all-knowing powers of the Panopticon as omnipresent and capable of surfacing reality, while itself remaining beneath the waves: "... a faceless gaze that transformed the whole social body into a field of perception" (Foucault, 1979). Shaviro joins Deleuze in recognizing that with the advent of instantaneous real-

time communication and cyberspace, this era of the disciplinary society moves towards a less visual and more tactile reality.

> Once we have all been connected, there is no longer any need for the Panopticon's rigid, relentless, centralized gaze. The new forces of control are flexible, slack, and distributed. In a totally networked world, where every point communicates directly with every other point, power is no longer faceless and invisible. Instead, it works in plain sight. Its smiley face is always there to greet us. We are fully aware that its eyes are looking at us; it even encourages us to stare back. Rather than shrouding itself in obscurity and observing us in secret, the network offers us continual feedback even as it tracks us. It does not need to put us under surveillance, because we belong to it, we exist for it, already (Shaviro, 2003:31-32).

Deleuze and Guattari term Cyberspace a "haptic" space instead of an "optical" one, accessible only to "close-range vision" and requiring "step-by-step" navigation. Users linked to screens and enveloped in networks are constantly distracted by the pulsating realms of hypertext and "... one never sees from a distance in a space of this kind, nor does one see it from a distance" (Deleuze, 1987). In Jeter's dark dystopian near-future world of *Noir,* new media corporate executives read *Connect 'Em Till They Bleed: Pimp-Style Management for a New Century* and have their hands modified into tiny squirrel claws so their fingers can flash across keyboards faster than pudgy human digits (Jeter, 1998). Haraway calls Gibson's cyberspace of consensual hallucination a place overwrought with complexity and articulation to the point of paranoia: "...in virtual space, the virtue of articulation – i.e., the power to produce connection – threatens to overwhelm and finally engulf all possibility of effective action to change the world" (Haraway, 1992; Gibson, 1984). The explosive growth of Augmented Reality on mobile devices at the start of the 21st century challenges this cybernetic interactivity from fixed positions of man and machine. Through the looking glass of mobile devices, applications combine GPS, orientation sensors, 3D graphics, live video and web services to display location-based content. Mashed-up and geo-tagged information in AR most expressively hints for the social researcher at a totality of nature and social life existing around and beyond the frame. Shields argues that sociology has long been invested in the virtual through narratives constructed by realists like Bhaskar to explore what is really taking place 'beneath the surface' of events. He uses the example of

interpreting an uprising as the manifestation of class tensions around economic entitlements and understanding these as powerful 'virtual' relations (Shields, 2003). The *duality* of viewpoints on the virtual – utopian interconnected paradise of collaboration or dystopian land of command in control in mutated squirrel hands – collapse in the deformation of spacetime in technologies like AR, reflecting nothing. The actualisation of the virtual is performative, unique in every instance and marks emergent difference and change.

> Social change, emergence, or the unfolding of processes does not merely realize an identity already present in abstract concepts, as in the realisation of a plan ... The virtual is essential to understanding the increasing weight with which we feel, and must count in, absences ... The presence of absence is virtual (Shields, 2003:211-212).

Social life exists in the early 21st century at the *event horizon* of virtual society. The increasing prominence of AR is representative of cultures dangling in general relativity on the thin boundary of virtuality beyond which events cannot affect an outside observer. Early adopters wading into AR through uses of media literacies and access points into the collective intelligence experience and participate in the mash-up of real and virtual worlds. It is a function of general relativity that from an outside observer point of view objects sent towards an event horizon never appear to cross it (Hawking, 1975). Similarly early-adopters with utopian views on the possibilities of AR are sucked into the gravitational field of possibilities while those who insist on remaining outside, for example resisting digital immersion by not purchasing a smart phone capable of projecting AR, can never experience or even see the phenomena as it evolves. Shields argues that the virtual is "the true category by which absent, distant decisions that impact on local routines may be understood as real, although not materialized in a given, parochial context" (Shields, 2003:212). In the context of AR, the implication is that regardless of cultural or socio-economic context (or simple preference) either experiencing the technologies at these early stages or not impacts all social life in the folding of virtual spacetime. The intransitive real is the virtual, the transitive the virtual society.

Virtual systems are not immune to *entropy*. Shields argues information is the common medium of exchange for all knowledge in society and in a network society "experience will be digital or not at all" (Shields, 2003:249). Numerous sociological research frameworks concentrate on what or who is left out in sweeping essentialist arguments about social change or policy. Virtual space is contested from discussions about the digital divide to analyses of the cultural origins and implications of the Internet (Castells, 1996; Norris, 2001; Selwyn, 2004). In this context Shaviro argues the greatest specific innovation of the emerging network society is the addition of surplus extraction to production at the centre of consumption. Something is always left out in the increasing commoditisation of information as a medium of exchange in virtual society.

> What's missing is *more than information*: the qualitative dimension of experience or the continuum of analog space in between all those ones and zeroes. From a certain point of view, of course, this surplus is nothing at all. It is empty and insubstantial, almost by definition. For if it did exist, it could easily be coded, quantified, and informatized, to any desired degree of accuracy. It is not that there is some hidden essence, basic to human existence, that somehow cannot be rendered by information machines. It is rather that information can all too well account for everything; there is literally nothing that it cannot capture and code. But this *nothing* is precisely the point. Because of this nothing, too much is never enough, and our desires are never satisfied. This *nothing* insinuates itself into our dreams. It is what always keeps us coming back for more (Shaviro, 2003:249-250).

Shaviro makes the point that what is lost in translation from the real to the virtual is virtual reality. Surplus imagination is leaking from the exchange process of information transactions and interactions in line with the *arrow of time*. Disentangling the complexities of social life in an open world of disorder is made yet more difficult by the introduction of technologies like AR, bridging between the real and virtual. But in this constant flow from order to disorder lies opportunities for innovation and reflections on what is lost, retained, altered and gained in the stream.

6.5 Wikileaks

This mini-case represents digital intervention by the founders of Wikileaks as an experiment in providing anonymous accessibility for whistleblowers to produce

knowledge for the access of the media and general public. Collective Intelligence in Wikileaks is reflected in the anonymous identities of a global pool of whistleblowers submitting content into the website archive for public access. It is unlikely and not necessary that any of these individual contributors know the identity of any other contributors to participate in populating the collective pool of leaked documents and data. Basic media literacy skills of uploading documents through a web interface are required to submit content but the greatest threat to the long term survival of the service is existing power structures and institutions in global geo-politics reacting to the political and economic risks of Wikileaks' publication platform and whistleblowing agenda.

The emergence of the Wikileaks website in the global consciousness in 2010 features a remarkable conflation of debates and issues surrounding emergent agency and form in collective intelligence. One of the main subplots is whether the website can be shut down by authorities for simply practicing its forthright agenda of providing a neutral platform for whistleblowers to published leaked documents and information. This is basically a question of freedom of expression on the Internet as Wikileaks has never been charged for criminal activity of any kind in any jurisdiction in the world. The website also fuels debate over vested interest in the collective as banks and credit card companies around the world scrambled to freeze Wikileaks assets using unfounded rationales of 'illegal actions' and choke donation flows after the site founder announced impending leaks about unethical acts from global financial institutions. The stability of all global superstructures and geo-political assumptions are threatened by the whistleblowing ideology and decentralised information architecture promoted by Wikileaks. Wikileaks is a showcase for how digital media can threaten and disrupt existing power relations and demonstrate the realities and complexities of emergent agency and form in digital media.

Wikileaks has been in operation since 2006 but several particularly high-profile packages of leaks in late 2010 catapulted the organisation and its agenda into global public debate. The concept of Wikileaks is not a story but rather a continuum of stories in the spirit of a quantum superposition, in many places at the same time. The release of

more than 250,000 US diplomatic cables on 28 Novermber, 2010 preceded by the 22 October, 2010 publication of 400,000 classified US military files chronicling the Iraq war and the 25 July, 2010 exposure of more than 91,000 secret reports about the war in Afghanistan were the high profile acts that brought Wikileaks to public attention and inspection. But focusing on these high profile leaks should not detract from a more general awareness that Wikileaks has consistently followed the same agenda and practices since inception. From the perspective of collective intelligence it is more relevant to consider 'how' Wikileaks works than to focus on 'what' it publishes. The ideology of Wikileaks is such that it publishes any leaked information into the public domain so the possibilities for what is leaked are boundless but the capacity for it to leak at all is now under threat. This thesis has consistently focused on the capabilities and potential of collective intelligence instead of the particulars that make it up in any specific instance.

On 5 April, 2010 the Wikileaks website released a shocking July 12, 2007 video of a US Army Apache helicopter repeatedly opening fire on a group of men in Baghdad taking no hostile action including a Reuters photographer and his driver. The day after the attack, a spokesman for the multinational forces in Baghdad issued a concise statement explaining the death of 11 people in the attack: "There is no question that coalition forces were clearly engaged in combat operations against a hostile force," said Lt. Col. Scott Bleichwehl. Wikileaks said it received the video and associated supporting documents from military whistleblowers determined to reveal the truth of the encounter. The US military subsequently apologised and admitted the forces were not hostile and the helicopter had fired on the innocent civilians as part of a "video game" simulation.

Several weeks before the release of the video Wikileaks posted the results of a US counterintelligence investigation into Wikileaks itself. It was an exercise in playing with concepts of the *observer* and *observed*. The report concluded by suggesting the method of undermining Wikileaks was to undermine trust in the service.

> Wikileaks.org uses trust as a center of gravity by assuring insiders, leakers, and whistleblowers who pass information to Wikileaks.org personnel or who post information to the Web site that they will remain anonymous. The identification, exposure, or termination of employment of or legal actions against current or former insiders, leakers, or whistleblowers could damage or destroy this center of gravity and deter others from using Wikileaks.org to make such information public (Horvath, 2008).

It is not even allegorical to speak of Wikileaks as a focal space for the *entropy* of otherwise confidential information. Wikileaks.org is an online clearinghouse for anonymous submissions of 'leaked' documents, images or data. The website is operated by the Sunshine Press, a non-profit organisation comprising investigative journalists, human rights campaigners and technologists. Wikileaks offers anonymity to whistleblowers looking to expose secrets into the public domain by distributing and encrypting servers and content 'drop boxes' around the world.

Content contributors are not required to use a real name and can adopt a pseudonym when submitting materials to the site. Fundamental to the site mission is the mantra that "there's no such thing as a bad leak" and it invites leaked documents on any subject matter or topic. On numerous occasions this mantra has been severely tested as when a member of the Wikileaks team used the CC instead of the BCC line when sending out a message to benefactors, revealing the identity of all the members of the list. The list of names was submitted to Wikileaks as a leak and the site published it thereby exposing the identity of all their financial contributors in the public domain. The organisation was awarded the 2008 Economist Freedom of Expression Award and the 2009 Amnesty International New Media Award and claims to have successfully fought off over 100 legal attacks. There are at least four different ways Wikileaks employs aspects of collective intelligence to further its ambitions and scope: content, financial, technical and legal.

The most obvious application is in content, where the Wikileaks archive has stored and made available over 1.4 million documents since its inception in 2007. These include the diplomatic cables, Afghan and Iraq war diaries, an otherwise highly confidential 238-page US military manual detailing day-to-day operations of the Guantanamo Bay

detention facility, the names, addresses and occupations of 13,500 people revealed to be members of the far-right British National Party (BNP), documents exposing $3 billion of government corruption in Kenya, messages sent from Sarah Palin's private Yahoo email account shortly before the 2008 Presidential election, the complete core doctrine of the Church of Scientology, and a list of the websites banned by the Australian government. Within an hour of publishing this list Wikileaks servers crashed as over 4 million people attempted access to the site. None of these materials were previously available in the public domain prior to publication on Wikileaks. Wikileaks is currently completely banned in China, Iran, the UAE, and internal banned at the UK Ministry of Defence (MOD). Unlike Wikipedia, Wikileaks' editorial workflows do not function in a traditional wiki form where multiple users create, modify and organise content in a collaborative manner. The collective intelligence of Wikileaks is less about collaboration and more about access to a platform for distribution. Contributors submit materials for editorial review and posting but Wikileaks will publish any document as long as "it appears on official paper and has not been previously published elsewhere" (Symington, 2009). The requirements for submission are access to a network device with an Internet connection and a screen. But the implications of participation are as multiple and subjective as any aspect of social interaction.

Frequently the stakes involved in Wikileaks' interaction with real-life social and economic issues are life and death. On 7 March, 2009 Oscar Kamau Kingara and John Paul Oulu were ambushed and shot dead as they sat in their car outside the University of Nairobi's halls of residence. Hours before the attack a Kenyan government spokesman criticised Kingara in a public speech for publishing material supporting the outlawed Mungiki criminal sect. The context is a letter sent 1 January, 2009 Kingara, executive director of the Oscar Foundation, wrote to the International Criminal Court (ICC) inviting it to investigate alleged executions and disappearances of over 8000 suspected Mungiki members. Some of these had approached the Oscar Foundation seeking free legal aid at one of its clinics in Nairobi. Kingara argued that many of these youths were arrested, detained and tortured while in police custody before they were killed (Momanyi, 2009). When the ICC took no action on his letter it was leaked and published on Wikileaks. In February further correspondence from Kingara to the ICC

was published on Wikileaks detailing evidence gathered by the foundation in the course of its investigations and personal fears from Kingara that he was the subject of a government campaign and his life was in serious danger. After the attack on Kingara, human rights organizations immediately accused the government of responsibility and students from the University pushed his bullet-filled car into the halls of residence and subsequently hid Kingara's body inside the building. "Without the body there is no evidence," said one angry student (McConnell, 2009). In a subsequent three-hour stand-off over possession of Kingara's body, police fired live ammunition while students threw rocks and chunks of masonry. By the time the police found Kingara's body and drove away with it, one student had been shot and killed. Three policeman were arrested for that killing but later released after results of a postmortem examination revealed the fatal bullet was fired from a pistol but the officers involved were said to have been carrying rifles (Otieno, 2009).

In November 2009 the front page of the Wikileaks site posted the message: "We protect the world---but will you protect us?" This question is even more relevant in 2010 when some supporters took it upon themselves to hack the Mastercard and Government of Sweden websites after the first refused to accept credit card donations to Wikileaks and the second reversed an earlier decision to drop sexual misconduct charges against Wikileaks' founder Julian Assange. The 2009 post went on to explain that Wikileaks had suspended operations (except for access to its anonymous submission tool) until sufficient fundraising occurred to meet their per annum operating budget for 2010: "We have raised just over $130,000 for this year but can not meaningfully continue operations until costs are covered. These amount to just under $200,000 PA. If staff are paid our yearly budget is $600,000" (Wikileaks, 2009). Wikileaks' fundraising strategy is similar to the micro-financing featured in open source software projects or online political campaigns. Donations are encouraged via credit card or paypal online or cash, cheques, international money grams or bank transfers.

> We have received hundreds of thousands of pages from corrupt banks, the US detainee system, the Iraq war, China, the UN and many others that we do not currently have the resources to release. You can change that and by doing so, change the world. Even $10 will pay to put one of these reports into another ten

> thousand hands and $1000, a million ... accolades do not pay the bills. Nor can we accept government or corporate funding and maintain our absolute integrity. It is *your strong support alone* that preserves our continued independence and strength (Wikileaks, 2009).

The financial structure of Wikileaks mirrors the collective intelligence of the content submission processes by encouraging the Wikileaks audience to individually contribute into a collective pool to support the continued non-profit operation of the site. On February 3, 2010 the Wikileaks Twitter feed indicated the site had apparently raised sufficient money through their fundraising drive to continue operating for the time being. "Achieved min. funraising [sic] goal. ($200k/600k); we're back fighting for another year, even if we have to eat rice to do it," read the tweet (Wikileaks, Wikileaks Twitter, 2010). This approach to microfinancing through site visitor contributions is similar to the model adopted by Wikipedia that raised $6.2 million from more than 125,000 donors in 2008 to fund 2009 operations (Modine, 2009). This approach is reliant on a critical mass of collective engagement with the website objectives and works out to about $50 per donation and is a similar approach to how Barack Obama raised $117.7 million from micro-donors (<US$200/each) for his 2008 Presidential campaign war chest or about 26% of his overall fundraising total (CFI, 2008). But the late 2010 decision of an overwhelming number of global financial institutions to refuse to store or process Wikileaks donations or operating capital including Mastercard, Visa, Swiss bank PostFinance, and Internet start-up PayPal disrupts the ability of Wikileaks to practice distributed micro-fundraising. For many observers including this researcher it was amusing to hear the trumpeted announcement from the global financial super-structure that Assange's worldwide assets had been frozen as they triumphantly announced that the grand total of €31,000 was safely inaccessible. Perhaps this reflexive reaction from the financial industry was inspired by rumours that Wikileaks was about to release leaked documents about the questionable ethics of a particular banking institution[3]. Understanding that financial motivation plays very little part in the ideology

[3] On 7 December, 2010 the Bank of America stock dropped 3.18 per cent in a day after rumours circulated that they were the potential target of the leak. "You could call it the ecosystem of corruption," Assange said about the upcoming release. "There will be some flagrant violations, unethical practices that will be revealed." (Alden, 2010)

of free information and communications espoused by Wikileaks is one of the hardest aspects of this incredibly complex story for existing power relations to understand.

The technical infrastructure of Wikileaks is shrouded in a lot of secrecy but spreads across multiple jurisdictions as protection against specific jurisdictional legal challenges. Much of the site is hosted by Sweden-based PRQ as Sweden has a particularly strong Press Freedom Act making it a criminal offence to breach source-journalist confidentiality except in specific instances related to national security (Symington, 2009). Much of Wikileaks' functionality is dependent on the strength of its technical infrastructure as it must both ensure the secrecy of the identity of contributors and the integrity of the posted content. This produces an obvious challenge to the media literacies required to participate with confidence in this multi-sited network of leaks. The physical act of contributing leaked documents is nothing more than browsing for the file on your computer and uploading it through the Wikileaks website. But this speaks to an essential disconnect between the critical realities of media literacy and any essentialist attempt to reduce the concept to IT skills training. The basic point and click literacies contrast with the swirling uncertainties implicit in participating in an act of intrigue and possibly deception. Trust becomes *the* critical literacy as the contributor prepares themselves to leak information into the public domain for the first time, and all the potential legal, professional and credibility issues that accompany the act. Contributors cannot understand if the technical infrastructure is actually able to protect their identities and privacy so the focus shifts from what the contributor knows to what Wikileaks can be trusted to know. The technical media literacies of the Wikileaks team and those of the hackers looking to infiltrate or tasked with infiltrating the content submission workflow are the critical literacies. As with a critical realist approach to knowledge, all literacies are not equally valuable and mediation is not equivalent to production.

Julian Assange, co-founder of Wikileaks, was a teenage hacker in Melbourne when he contributed as a researcher to *Underground*, a book by journalist Suelette Dreyfus detailing the non-fictional exploits of a group of British, American and Australian hackers. The book opens with the story of how hackers broke into NASA in the 1980s

as anti-nuclear protestors against the inclusion of plutonium power packs in Galileo rockets (Dreyfus, 1997). Many of the chapters in the text focus on case studies where hackers were employed or volunteered to disrupt internal or external networks only after a multitude of other forms of legal, political and economic protest and resistance were unsuccessfully deployed. There are many similarities between Assange and Mendax, one of the focal characters in the book, and just as the initial ethos of Wikileaks was to be the 'Intelligence Agency of the People', the stories in *Underground* relate tales of intrigue resolved to expose and leak information in the hacker-perceived interests of the public domain (Symington, 2009). Wark reflects on this aspect in the chapter of the *Hacker Manifesto* focused on intellectual property and rights,

> The hacker class must think tactically about property, balancing public and private property in the scales of class interest and class alliance, but in the knowledge that the privatization of information is not in its long term interest as a class. Part of its strategy may be the enlistment of other classes in an alliance for the public production of information. But another strategy may be to extend another kind of property altogether—the property that is the gift (Wark, 2004:199).

The ideological support from members of the hacker class for Wikileaks was thrust into public attention when several loosely bound organisations attacked websites in 2010 from financial institutions for refusing to process donations for the organisation. In a tactical response Assange moved quickly to distance himself from their criminal actions but did not refute their ideological basis. Everyone knows the traditional movie storyline of a hounded conspiracy theorist storing multiple copies of critical information so that in the event he 'disappears', the content still gets released into the public domain. The Wikileaks technical approach is not very different for as the authorities seek to quarantine Assange from public engagement, the Wikileaks website has already been mirrored over 2,000 times on the Internet. This is akin to a self-replicating technical infrastructure in the spirit of collective intelligence. Another case study in this chapter focused on the architecture of collective intelligence evident in cloud computing but also warned of potential loss of control by relying on the 'cloud' as a data depository for information you own or author. This threat was enacted for Wikileaks' when Amazon.com booted the website off its cloud without notice in November, 2010

and the importance of rights and ownership were intertwined with all the other debates surrounding Wikileaks.

Understanding the implications of intellectual property and the parameters for establishing an online forum for the public production (or gifting) of information is the legal domain of Wikileaks. Like the other three aspects discussed in this section, there is a collective intelligence component to the legal framework for the site. The front page of Wikileaks.org lists 18 "steadfast supporters" of the Wikileaks mission. These are primarily media organisations that benefit from the leaked information released on Wikileaks in the construction of new stories and angles. The only individual name on the list is Jordan McCorkle, and his is also the only name of the 18 not hyperlinked to a secondary and descriptive information resource. Investigating the reason for McCorkle's presence on the list reflects on the allegorical *superposition* of identities online. Attempting to understand McCorkle's role in the still unravelling drama of Wikileaks suggests it is impossible to seek sociological portraits from fragments of transient realities.

In January, 2008 Swiss bank Julius Baer (BJB) successfully filed for an injunction against the Wikileaks.org domain registration in California. Wikileaks was not represented at the hearing where the injunction was granted but the result was the temporary ordering of the Wikileaks.org domain offline. The underlying assumption was that content posted on Wikileaks was alleged by the bank to be libellous or copyright. Wikileaks had recently published a number of documents on the site from ex-BJB employee Rudolf Elmer implicating BJB in what he described as serious tax evasion. After newspapers in Switzerland refused to publish the material and Swiss tax authorities showed no interest, Elmer said "wikileaks was the only tool I had to raise my voice" (Symington, 2009). BJB initially filed a successful injunction to have the documents removed from Wikileaks but the subsequent filing of a second injunction to bring down the entire Wikileaks.org domain attracted a lot of media and NGO interest. Two weeks after the successful injunction against Wikileaks, a joint action by free-speech groups and media organisations successfully contested it as violating the US First Amendment. Joining organisations from the American Civil Liberties Union

(ACLU) to the Associated Press (AP) on the list of participants in the successful challenge was Jordan McCorkle.

Searching and scraping Google, Bing, Twitter and Facebook reveals very little insight into the reasons for McCorkle's participation. He is cited as a University of Texas student and avid Wikileaks reader at the time of the injunctions and Wikipedia describes him as "an ordinary citizen who reads the Wikileaks site regularly" (Wikipedia, 2009). His Linkedin profile describes his current profession as "Marketing Dude at Timbuk2" in San Francisco, the same location as where the injunction was granted and subsequently successfully challenged. It is a function of the collective intelligence of *wavefunctions* that identities occasionally emerge as singulars when observed but merge back into the collective wave when unobserved. The whole Wikileaks experiment is as strange and peculiar as any philosophy of quantum thought. Resolving what constructive or destructive leaks of confidential information are is like splitting photons that are both positive and negative at the same time. It is precisely that the truth of the matter lies in the perspective of the beholder. The act of mediation determines the transitive reality of Wikileaks while the very concept of a 'leak' speaks to the intransitive structures of information and communications. More than any other case study in this chapter the Wikileaks story challenges assumptions of defined spaces for transitive and intransitive realities. But it also provides the most explicit demonstration of the tension existing between these concepts in manifestations of reality.

6.6 Netflix

This mini-case represents digital interventions through crowdsourcing experiments founded on emergent algorithms and methods of collaborative filtering in digital media. In machine-learning, the collective intelligence is pooled data sets of human choices and information. Media literacy is evident in the application of sophisticated statistical methods and algorithms against this data to reveal new conclusions and opportunities that are often subsequently re-inserted into improved processes for aggregation of the collective intelligence.

Netflix is an online film rental service of physical and digital movies in the United States. In October, 2006 the company opened up a $1 million winner-takes-all public competition to come up with recommendation software that was at least 10 per cent better at accurately predicting movies customer would like than Netflix's in-house software, Cinematch. Central to the Netflix business model is intelligent recommendation systems using information about what films people buy or rent to analyse similarities between people, films and purchase histories.

> The length of service of subscribers is related to the number of movies they watch and enjoy. If subscribers fail to find movies that interest or engage them, they tend to abandon the service. Connecting subscribers to movies is therefore critical to both the subscribers and the company (Bennet, 2007).

To launch the competition, Netflix released a dataset containing 100 million anonymous movie ratings and challenged the machine learning, data mining and computing science communities to improve on the accuracy of its existing recommendation service. Machine learning is a contested subfield of artificial intelligence (AI) concerned with applying algorithms for computers to learn from information and choices submitted by humans (Segaran, 2007). In practice this usually translates to an algorithm running against a set of data to infer information about the properties of the data and creating relationships and predictions between and about future data. Models are constructed to determine important aspects of the data and identify patterns in the non-random aspects of its assemblage. Machines perform calculations using statistical methods against user data to create new information as inputs to future user experiences. Often these take the form of collaborative filtering, first used by Goldberg at Xerox PARC in 1992 with the creation of a system called *Tapestry* designed to encourage office workers to annotate documents as either interesting or uninteresting and use aggregation of the collective findings from this process to filter documents for current and future users of the system (Goldberg, 1992). Collaborative filtering is a common feature of Web 2.0 as topical sites ranging from music, news, books, dating, retail, movies, podcasts, and even jokes seek to take data from large groups of people and produce smaller sets of data relevant to people of similar tastes (Segaran, 2007). The basic principles apply to anything from supplying a Facebook user with an advertisement for plastic surgery after they write a

note on a friend's wall saying they are considering a procedure to the ability to predict when someone is lying in an email using a vast pre-tagged set of emails in which users lie or tell the truth. The Netflix example is a collective intelligence concept – reading reviews or asking friends or acquaintances for film recommendations – that existed as a commonplace method of getting advice on choices before the advent of the internet. What was always a feature of this process is how any individual was limited to the subset of editorial and people in their frame of reference in making these choices. Online collaborative filtering, like the Netflix competition involving a dataset of 100 million film choices, requires powerful computing resources to process and opens up otherwise inaccessible possibilities for members of the collective to access preferences and knowledge from within this vast data set in making choices for the rental or purchase of films. This type of massive and automated predictive analysis and collaborative filtering is a powerful form of sociological finding in its own right. Traditional empirical sociological methods dependent on the interventions of the researcher cannot possibly compete with the real-time metrics on taste, sentiment, or behaviour that are possible through these ever-evolving online algorithms. Savage and Burrows suggest this domain is already lost to sociological inquiry and sociologists in general are best positioned to research using mixed methods and thick descriptions like the case studies presented on BlogScholar and Twae in this thesis. What is missing from automated social analysis and predictive tools like the Netflix experiment is any form of critical reflection (Savage, 2007).

What made the first Netflix competition relatively unique in its collaborative filtering challenge was the format of its 'crowdsourcing' competition. Crowdsourcing is a relatively new method of distributed problem-solving and production executed online (Brabham, 2008). Typically, as in the Netflix case, questions are asked from a centralised position and responses are encouraged from a crowd of innovators. Crowdsourcing and multifaceted collaborative filtering at the scale of the Netflix competition speaks to sociological portraits fixed as narrative portraits in particular time and place. Just as in the quantum mechanics reality of *superpositions* describes the statistical distribution of the possible states of particles, Netflix sought to improve their understanding of the statistical distribution of possible states of each subscriber's film

preferences. Just as electrons can exist in two or negative places at once in quantum theory, we intuitively understand that people can both like and dislike films at the same time. The scale of possibilities in this regard are multiple as warm feelings may come from a film being a mainstay of family gatherings, while distaste may be rooted in something as simple as a more general racist or ageist perception towards an actor. Film preferences are naturally interpretive and subjective as socio-cultural constructions. And yet the reality of each individual's film preferences is subject to intransitive mathematical properties forming algorithms resulting in consistently improving tangible and relational results for Netflix through the competition.

The media literacies required to create algorithms capable of mining vast reservoirs of data to create ranked lists of suggestion are specialized and generally limited to computing scientists. It took just under three years for an entrant to win the Netflix competition but in September, 2009, Netflix formally announced the winner as a seven-person team of statisticians, machine-learning experts and computer engineers from the Unites States, Canada, Austria and Israel (Lohr, 2009). The team, BellKor's Pragmatic Chaos, was the long time frontrunner in the contest and formed through a merger of three different teams, each with relative strength in a piece of the overall puzzle. The group actually passed the 10 per cent threshold for victory in June, 2009 but this triggered a 30-day period during which other teams could try to beat them. News that the threshold had been successfully passed launched a wave of mergers between other competitive teams in an attempt to topple the leader together. Ensemble, a global alliance with over 30 members from disparate teams, managed to achieve the same success as BellKor but because their submission was equal to but not in excess, the first successful submission was declared the winner and received $1 million for their efforts. It is interesting that the same principles of collective intelligence applied to the competition proved successful for the winners and runners-up from thousands of entrants from 186 countries. It was only by combining their various resources pragmatically and intuitively that teams were able to enhance individual potentials and opportunities over the three years of competitive challenge (Bell R. K., 2007). In an interview in the *New York Times*, Chris Volinsky, a scientist at AT&T Research and leader of the Bellkor team, explained that the value of disparate collaboration towards

problem-solving was the principle lesson from the exercise: “The blending of different statistical and machine-learning techniques only works well if you combine models that approach the problem differently. That’s why collaboration has been so effective, because different people approach problems differently” (Lohr, 2009).

One of the critical issues to understand about Netflix’s quest and the efforts of the participating teams is that the questions being asked are open-ended and forever unresolved in entirety. Just as the uncertainty in Heisenberg’s Uncertainty Principle lies in being unable to say anything more with certainty beyond what we know about the state of an electron, the Netflix competition presents us with an allegorical collapse of the social wavefunction. As presented in the methodology for this research, the *Social Uncertainty Principle* suggests not all knowledge is equal about a social object but there is always a limit on what we can know or predict about the object. Researchers competing to provide Netflix with better recommendation algorithms work primarily on improving empirical statistical models but recognise we will never be able to predict with certainty what film a particular user will like or recommend. This reality is transient, relative and mind-independent.

At the official awards ceremony, Netflix announced the launch of a new machine-learning contest presenting contestants with demographic and behavioural data from Netflix servers including age, gender, and location specific information. Success will be determined by the ability of the competitive entrants to model individuals’ “taste profiles” as the next evolution in the site’s attempts to sort and aggregate subscribers and films. Sayer asks us to look not only at what works, but what is it about the world that makes it work (2000). From this perspective and a central thematic focus of the research approach of this project towards collective intelligence and media literacy, *truth* and reality is neither strictly interpretive, nor strictly independent of the internal relations of discourse that help make sense of social life. In effect, the sequel to the Netflix competition is asking competitors to focus beyond the algorithmic factors that make recommendations ‘work’ to what it is about the communities of subscribers that makes it work. On March 12, 2010 Netflix settled a lawsuit related to the Netflix Prize that asserted Netflix indirectly exposed the music preferences of its users by publishing

anonymised customer data. The terms of the settlement were not made public but Netflix announced it would not be pursuing a sequel to the prize any longer. The crucial issue of dispute was that Netflix did not use 'data masking' to randomise its data sets while still making the data available to developers. This is reflective of the gradual maturation of the transitive concept of crowd sourcing beyond the initial euphoria of possibility to the more advanced stage of evaluating the risks and constraints of this emergent form of collective intelligence against existing structural power dynamics and intransitive realities.

6.7 Gold Farming

*This mini-case explores digital interventions as economic agendas for pursuit of financial gain, power, or influence. It also intersects with cultural and social dynamics of organisation and translucent borders of the offline and online. In gold-farming collective intelligence is realised in the cumulative interactions of 200 million players worldwide of massive-multiplayer-online-role-playing-game*s (*MMORPGs). Forms of Media Literacy are required to participate in the games and surrounding communities. Specific literacy skills and knowledge are required to produce or acquire virtual capital in exchange for real-world money through the value chains of gold-farming.*

On 1 December, 2009, a 23-year-old hacker was arrested in the first case of police intervention in virtual property theft in the UK. The unidentified man stole virtual identities, cash, and weapons from 284 accounts in RuneScape, a medieval MMORPG. RuneScape has over 100 million players worldwide and revolves around collecting gold coins to buy weapons, magic or spells through activities from virtual farming, fishing or mining to battling dragons and goblins. Accounts were obtained through phishing scams but these accounts are worth a considerable amount in the real economy so the theft would have considerably impacted the value of his identity in the open market. It can take years to develop considerable relative wealth or skills in RuneScape so natural markets of supply and demand are popping up as those with more money than time or skills acquire virtual commodities and status with real-world cash from those with more skills and time than money. One identity in RuneScape sold for £46,000 in 2008 on

eBay. In 2008 Dutch courts set a precedent in Holland after two 14-year-old boys threatened another RuneScape player with a knife, forcing him to give them a virtual amulet and mask in the game. The court ruled that virtual goods are goods under Dutch law so the perpetrators were convicted. There have also been numerous cases worldwide of players in Second Life stealing virtual goods intended for sale in exchange for real cash.

Gold-farming is a term used to describe the overall phenomena of production and real-world sale of virtual goods and services for players of online games. The concept is an evolution of "real-money trading" (RMT) within text and basic GUI-based multi-user games as part of the sanctioned design of the games (Lehtiniemi, 2008). The practices associated with gold-farming have been around since the beginning of virtual gaming but have become a much larger issue in the last couple years with the 80% per annum increases in global online gamers (White, 2008). Opportunities to outsource gold-farming to low-wage labour locations in Latin America and East Asia grew alongside the rampant growth of players and platforms. According to Heeks, the origins of gold-farming can be represented as a combination of inside-out (markets for gaming emerged in East Asia so local suppliers of virtual gold emerged to satisfy local demand), and outside-in (firms in western economies outsource gold-farming tasks to gold farmers in developing countries). Gold-farming practices include selling in-game currency or items for real cash in a similar fashion to real-world foreign exchanges and power-levelling where purchaser supply their gaming username and passwords to gold-farmers to build up levels and assets for their characters through gameplay. Additional anecdotal evidence suggests gold-farming can also involve controlling of automated bots or macro scripting in games, hacking platforms to transfer and illegally acquire virtual assets, and defrauding purchasers through processes like the phishing scam used in the Runescape UK case (Heeks, 2008).

Gold-farming is part of a broader category of employment termed *cyber-work* in developing countries and an example of what Heeks calls *liminal ICT work* like the sale of digital pornography or the unlocking and re-chipping of mobile phones that is "around or just below the threshold of what is deemed socially-acceptable and/or

legally-permitted" (Ibid). The music industry was startled to find how many users would download a pirated version of a song but never consider walking into a record store and stealing a copy of the disc. Similar patterns apply to virtual theft in any environment. There is a big question of cultural understanding about these virtual intellectual property 'thefts' that needs to be resolved if they are to be considered similar in nature and gravity as real-world altercations. This *duality* of legal or illegal activity collapses in the context of the intransitive reality of multiple societies with multiple rules and the transitive realm of developing common understandings. Despite widespread mainstream media coverage and related topical conversations in the blogosphere, the academy has shown little or no interest in researching gold-farming (Toscano 2007). The shocking results of Heeks' study indicated nearly 500,000 people in developing nations earn an average real-world wage of $145/month from producing virtual goods. About 80% of these workers were estimated to be in China but the tail is lengthening as markets appear in places like Vietnam and the Philippines to service Chinese demand in a similar fashion to how Chinese gamers serviced the markets in the West in exchange for real currencies. The current global market for gold-farming is estimated at $500m-$1.6b but this virtual off-shoring continues to grow in scope and size in line with similar value chains in textile manufacturing and service sectors in the global economy (Heeks, 2008). Most of the growth areas for gold-farming buyers and sellers in the world are in developing countries or countries with vast gaps between rich and poor. Lehtiniemi estimates the Western market makes up just 18% of the total gold-farming trade (2007). Similar to any global outsourcing model, these markets are the most likely candidates for emerging organised crime and exploitation. As more of these markets come online, regulation will increase in difficulty and vast discrepancies will exist between how domains regulate and enforce oversight of virtual crime. This will make a global solution to these issues increasingly difficult.

The conflation of these issues triggered emergent discussions of "virtual sweatshops" and gold-farming as an exploitative and oppressive practice (Dibbell, 2003). It also provides insight through our critical realist methodological filter into how oversimplification of basic *cause and effect* mechanisms require further investigation and substantive data before assuming conclusions. Perceptions of poor underpaid

workers toiling long hours in developing countries to feed the insatiable demand for accelerated development of virtual characters in the western world was frequently reproduced in mainstream media, “although almost always in the absence of data” (Heeks, 2008:54). Images of virtual sweatshop gamers working for little or no money to generate huge profits for centralised organised crime and operators map well to the explosion of sweatshops in the early stages of textile manufacturing. While the incentives to develop these virtual operations will undoubtedly grow as more and more people come online there is no evidence to suggest these practices are currently dominant in gold-farming. In fact, what little studies have been conducted to-date indicate wages and conditions for workers in gold-farming are often better than other local employment options in developing countries (Jin, 2006; Dibbell, 2007).

> Most of the gold farmers I talked to love the job. In the gold farms, you can see they are enthusiastic about their job and they got a sense of achievement from it, which is rare in any other sweatshops. Most of the gold farmers I met do not have better alternatives. All the gold farmers I met are male, usually in their early 20s. They were either unemployed or had a worse job before they found this job. Many of them were already game fans before they became "professional". In some sense, they are making a living off their hobby, which is an unachievable dream for many people. What's more, the game world can be a space of empowerment and compensation for them. In contrast to their impoverished real lives, their virtual lives give them access to power, status and wealth which they can hardly imagine in real life. This is a reason why they are so addicted to their job. This is a paradox that the term "sweatshop" cannot convey: in the gold farms exploitation is entangled with empowerment and productivity is entangled with pleasure (Jin, 2006).

Reductive and non-interpretive snapshots of the lives of gold-farmers might suggest they are disconnected and unaware of the wealthy hands that feed them. Despite the need for much more primary or methodologically infused secondary data on the topic, limited empirical interviews in publication suggest the observations between buyers and sellers of gold-farming work both ways. The roles of observer and observed are constantly in flux and relative, more waves than particles. Chinese gold-farmers struggle to overcome language, cultural and social barriers to fitting into gaming communities and name-calling by US players gives gold-farmers a “sense of inferiority” despite their often superior gaming skills (Ibid.). Some workers prefer the relative freedoms of general gold-farming to the more direct one-to-one rapport of power-

levelling as this makes them feel they are working for their business more generally instead of in the employ of a wealthy outsider (Dibbell, 2007). Another singles out American players for their racist attitudes: "… they keep calling me farmer, China dog and such. I do not have any problems with other players except American players, they non-stop racist me" (Bell, 2006). These limited snapshots indicate actors in gold-farming occupy *superpositions* of social realities with transactions and negotiations in social, financial and human capital forming turbulence and uncertainty on the surface, while multiple and interpretive subjective realities lurk underneath.

But this does not discount the realities of criminal activity in online gaming. All of the major MMORPGs have either taken steps in the rules of the games to make it very difficult to exchange virtual cash or goods for real world cash or designated internal swat teams of security experts to the monitoring, limiting and removal of real money trading. But the success of these efforts is hindered by the proliferation of virtual trading in the games that is a fundamental part of the overall experience. The problematic issue is how the virtual cash and goods translate to influence and power in the games and how this power can translate to virtual and real-world capital.

Growth in the volume of theft and crime tends to increase as the overall economy grows in size and scope. We are still very early on the growth curves of online gaming, social networks and virtual worlds. About 15% of the world's population is now online but we can expect that to double in the next five years. In all aspects of online activity, the capital generated in virtual interactions is increasingly valuable in real-world terms. For example, increasing your human capital through networks and conversations in Twitter can potentially have a marked effect on the growth of your real-world financial capital. There is every reason to believe issues of theft and crime on virtual property will continue to grow in line with the continued explosion of online and networked access. As online and offline worlds increasingly converge, the lines between the capital generated in both environments will continue to blur and merge. Incentives will continue to grow for crime and theft as the real-world value of the virtual commodities grows. As in all systems, *entropy* will tend towards the maximum and disorder will leak in line with the arrow of time. It is easy to imagine a scenario where gold farming

increases the speed of currency supply in virtual worlds, destabilizing the virtual economies as an excess of virtual currency weakens the buying power of existing resources. This is virtual inflation. But if transnational black or regulated markets trading these virtual goods for real cash continue to grow it can result in a rise in real-world prices for virtual goods and an erosion of the purchasing power of units of currency in real economies.

It is unlikely this can be 'stopped' any more than we can 'stop' crime from occurring in our communities. But efforts will likely expand to reduce the proliferation and growth of these practices.

6.8 Conclusion

Conducting research case studies of online collective intelligence involves traditional methods and methodologies and emerging forms of *e-research* typically employed in the sociology of science, information science, or studies of new media. The boundaries between these disciplines are irrelevant for this research chapter as the focus is on examples of collective intelligence in action and related research. Knowledge of research into the domain of collective intelligence evolves as a sociological framework struggles to map the material bases of these changes through technological or socio-technical networks (Meyer, 2009).

The concept of collective intelligence can be seen through the case studies presented in this chapter to take multiple forms and weigh differently the human and algorithmic influence on proceedings. But each case relies on human actors providing data that forms information that forms knowledge. The pre-requisite for participating in these data flows is media literacy. From an engineering perspective there has been little evolution in the fundamental architecture of the Web from 1.0 to 2.0. It was always possible to place links on pages to other pages and draw connections between related ideas. What these cases illustrate is the transformations underway in Web 2.0 are about how we use the Web, in particular ways, for particular purposes, and according to particular philosophies.

The Web 2.0 case study NPM reflects how each individual in the cases does not respond to digitised social forms and structures in the same fashion, but that subjective and personal reflexivity for both agency and collective interaction is coupled with objective circumstances of constraints and enablements. This paradignmatic map helps explain how Netmodern theory takes an integral view of reality and processes of structure both conditioning agency through impingement like when the Iranian authorities track activist profiles by accessing public follower lists intended to encourage networking, and subjective reception and choices as in the decision to 'leak' documents on to the Web with certain interpretive understandings of the security and freedom of a chosen platform for distribution like Wikileaks.

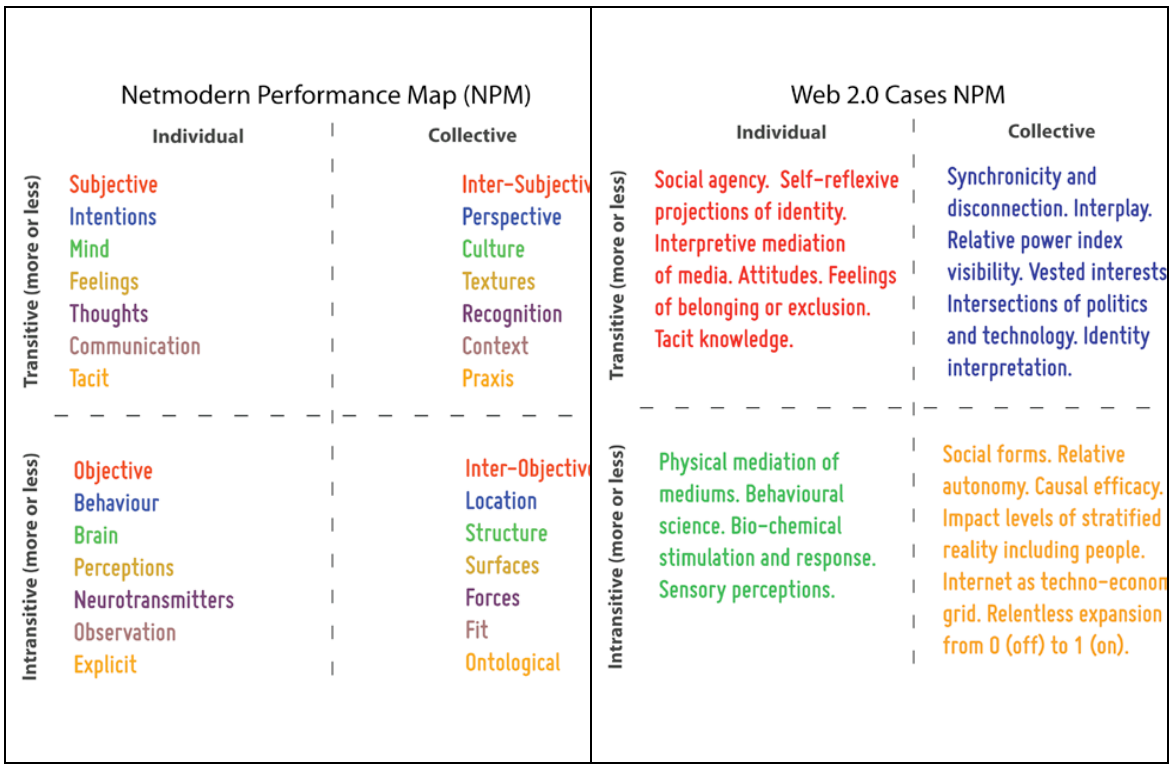


Figure 18: Web 2.0 Netmodern Performance 'Map' (NPM)

NPM of territories of individual and collective transitive and intransitive realities on the left and the Web 2.0 collective case study NPM showing samples of variety of potential realities encountered in the research.

The collective cases in this chapter suggest structural forces and forms like the relentless expansion of the Internet as a techno-economic grid for social life or causal powers associated with *structural* (lower right) emergent properties like institutions or means of distribution and dissemination. The hackers of knowledge participating in the collective intelligence are also mingling with *cultural* (upper right) emergent properties with their own causal powers like philosophies, doctrines, or theories of the 'free Web'. But these constraints and enablements do not on to themselves possess the capacity to activate in abstraction as collective agency or behaviour. For these properties to activate they must interact in a relationship with specific agential enterprise (upper left) or a catalyst or inhibitor originating in bio-chemical stimulation or response in people (lower left). Ultimately what the collective cases in this chapter suggested to the researcher is how digital reality is necessarily integral and spans these four quadrants and beyond as operations of anticipation. Social actors or agents seek to achieve specific ends using the Internet in a swirling context of varying constraints and enablements through processes of reflexive deliberation and activation or inertia of grey matter. It is the particular way that these intersections occur that makes each case study unique but the overall NPM for these collective cases speaks directly to the unbridled potential and possibility of online socio-economic life. This Netmodern theory also builds directly on critical realism as a means of seeking to blend the subjective and objective into integral reality.

> In short, constraints and enablements derive from structural and cultural emergent properties. They have the generative power to impede or facilitate projects of different kinds from groups of agents who are differentially placed. However, the activation of their causal powers is contingent upon agents who conceive of and pursue projects upon which they would impinge. Otherwise constraints and enablements remain unexercised. Because they are relatively enduring, structural and cultural emergent properties retain their generative potential to exert constraints and enablements *were* anyone or a group to adopt a project upon which they would impinge (Archer 2003:7).

There remains a critical question of whether the fragments of human effort and knowledge that make up online mass culture remain isolated fragments and/or come together to form a kind of hive mind or collective intelligence.

> A significant number of Artificial Intelligence enthusiasts, after a protracted period of failed experiments in tasks like understanding natural language, eventually found consolation in the hive mind, which yields better results because there are real people behind the curtain. Wikipedia, for instance, works through what I call the "oracle illusion," in which knowledge of the human authorship of a text is suppressed in order to give the text super human validity. (Lanier, 2010)

But collective intelligence, like virtual realism, is more a sensibility than a mindset. It is a way of living with and interpreting new creative communication and social technologies. There is little question that the accumulation of these fragments in various ontological and epistemological forms creates new and different representations or ways of looking at the fragments. The sum is not reducible to its parts. And it is in this difference that this chapter focuses, illustrating some of the varied and eclectic tapestries that have come together to form part of the ever evolving concepts of media literacy and collective intelligence.

Possibilities and Aspirations

Thus case study differs dramatically from the previous cases on BlogScholar and Twae. It is a composite of mini-cases and most importantly they do not feature digital interventions initiated and operated by the researcher. This is a function of the need to survey a broader landscape of Digital Sociology possibilities relating to digital interventions without needing to implement all possible scenarios and experiments. At this very early stage of development Digital Sociology benefits from as broad a landscape of possibilities and opportunities as possible. We need to learn from each other inside the discipline of sociology but also look outside of academic disciplines for inspirations relating to digital interventions. The experimental nature of this case study is in seeking to understand the literacies and relationships to collective intelligence involved in practical real-world examples of digital interventions helping inform our current and future practice. It also helps us develop histories towards producing knowledge about the trajectory of emergence and realities engaged with concepts of Digital Sociology. There are numerous findings from this case study that can help inform this process.

- It is not necessary to implement a digital intervention in order to practice Digital Sociology on digital interventions. When interventions are conducted by others the sociologist can seek to produce knowledge about these interventions to help inform the processes and practices of digital interventions. In the early stages of Digital Sociology researchers would often look to bulletin boards, message boards, or early stage blogs as platforms for content analysis on a specific topic. This type of research focuses on finding meaning and realities in analysis of the available knowledge. But we can equally look at interventions not just for the content they contain but also the literacies and methods required for their implementation. This is a productive process for evolving understandings about how the practices of Digital Sociology can evolve to reflect the shifting landscapes and ecosystems of digital media and social life.
- Mixed methods arte required for analysing third party digital interventions. Practicing sociologists must be both sociologists and digital sociologists in order to realise Digital Sociology. The next step for this chapter for example might be to conduct digital sociological analysis on the content of the cases presented as digital interventions. For example, looking at the changing nature of the content of Wikileaks following its arrival on the global stage as digital phenomena. We might assume this notoriety might impact the ability of the site to pursue its stated interventionary ambition of making the invisible visible. Equally traditional social research methods of interviews and ethnographic site visits could supplement the foundational interpretations of the interventions presented in this chapter.
- The emerging development of computing platforms like cloud computing presents unique challenges to the aspiring or practicing digital sociologist. Human beings living life in the clouds through use of remote data storage and services distances the individual from their digital identity. The gatekeepers and administrators of these identities are a composite mix of the individual and the services they use to store and maintain their social data. The researcher is already further removed from the social intervention through the progression of the Web architecture from 1.0 to 2.0 and beyond to the potential 3.0 realities

presented in this chapter. As user data migrates into the cloud social identity gets fragmented and even more uncertain as so much is dependent on the access points and perspectives of the observer in forming perceptions of social identities and actors.

〉 Some basic practices outlined in this chapter can be deployed as practices of Digital Sociology. For example crowdsourcing provides a tremendous opportunity for researchers to seek research candidates, engage with research participants, and pursue specific research agendas in digital social life. We need to constantly expand our toolkit for practice in creating reliable knowledge in an increasingly unreliable and unstable platform for communications.

CHAPTER SEVEN: CONCLUSION & NETMODERN THEORY

[1]

7.1 Conclusion

Following is a brief and succinct summary of the main arguments of the thesis as they relate to the practices of Digital Sociology and methods of digital intervention. The case studies in complement with the literature review and methodology produced five new forms of knowledge about Digital Sociology. Each of these is outlined here and then examined individually in more detail. First, the research project produced new knowledge about potentials for the role of the researcher in digital interventions. Second, the research project produced knowledge about community formation and the changing nature of digital platforms in the paradigm shifts of collective intelligence and communication forms on the Web. Third, the researcher project significantly informs the media, digital and sociological literacies required for adequate practice of Digital Sociology and use of digital interventions as emergent social method of inquiry. Fourth, the research project follows on Hamel's suggestion of ways in which social intervention methods improve qualitative method by exploring possible advancements in social method suggested by the experiments in digital intervention employed on the project.

[1] Wordcloud of Netmodern chapter

And fifth, the use of critical realism as a theoretical framework for methodological inquiry on the project inspires a series of emerging themes (collected as Netmodern Theory) building on this framework to produce potential new understandings in Digital Sociology to be realised in the future.

Role of the Researcher in Digital Interventions

Established methods of social intervention are not flexible enough to accommodate the various potential roles for researchers in digital interventions. Findings from the case studies as digital interventions in community formation suggest the researcher is unlikely to play as engaged a role with research participants as in traditional social interventions. This remains a possibility and can best be described as researcher as *administrator* in communities of social interest or engagement. This role offers significant capacity for establishing rules of engagement and depth of interaction with research participants but is dependent on relatively closed system architectures for the community. Web 2.0 communities, as reflected on in the Twae case study, do not offer this kind of command and control options for social field sites to researchers even if the researcher is responsible for their creation through digital interventions. In these communities the researcher is *mediator* of social interactions through digital intervention, offering rich possibilities for extending the reach of research projects into fluid streams of research participants but the researcher is challenged to establish a depth of interaction. Finally, it is not explicitly necessary for the researcher to instigate and manage a digital intervention in order to benefit from digital interventions as a research method. The Chapter 6 case study in this project illustrates how the researcher as *observer* of externally instigated digital intervention can help inform Digital Sociology practice and produce knowledge about evolving practices in digital social life and emergent architectures. Digital Sociology should seek to depersonalise the social type of 'intellectuals' so that it no longer represents a social type at all but instead represents any actor or actors with the capacity to make a public intervention in digital media (Eyal & Buchholz 2010). In summary we can perceive the research moving further away from the traditional social intervention in this temporal trajectory of the researcher moving from administrator to mediator to observer as the architectures of the

Web move from 1.0 to 2.0 and to the various possibilities of 3.0 and beyond. The administrator is also mediator and observer, the mediator is also an observer, and the observer is just an observer. It is in digital and sociological media literacies that the capacity evolves to transform the researcher experience across these different roles at the behest of the specific research requirements of any proposed digital intervention. The experience of the case studies suggests Digital Sociology needs to evolve through Digital Sociological Imagination to new ways of conceptualising field sites and research platforms, particularly in fast evolving digital ecosystems of human and computer interaction.

Emergent Collective Intelligences in Digital Sociology

The evolution of the opportunities and constraints of the practices of Digital Sociology have closely mirrored the opportunities and constraints of communication platforms for pools of collective intelligence on the Web. The fluid and constantly transforming nature of digital platforms on the Web is a huge challenge for aspiring digital sociologists. The challenge is that digital media is on a trajectory moving away from the comfort zones of traditional practices in social inquiry. We can consider the transformation from Web 1.0 to Web 2.0 and beyond to the current fluid dynamics of defining Web 3.0 as *generations* of the Web. Similarly social researchers intersecting with digital social life through digital interventions or other practices of Digital Sociology are experiencing rapid generations of practice. The first wave treated the Web as just another field-site representative of specific social actions and engagements, typically limited to the western industrial economies that were early adopters of the Internet as a communication platform. Just as in the communications platforms of Web 1.0 this was primarily a 'read-only' Digital Sociology. Researchers endeavoured to access and analyse content 'looking backwards' using traditional social methods of textual or statistical analysis. The capacity to create in the form of a digital intervention was very rare and not well documented in academic literature. The BlogScholar case study is reflective of the late stages of this period of development for both the Web and experimental Digital Sociology. The advent of Web 2.0 provided everyone with the capacity to publish and create content on the Web without significant technical

expertise, often none at all. This also provided sociologists with the opportunity to engage on the Web with others with shared interests or with targeted research participants through social media and emerging networks. This provides significant challenges to defining and communicating the discipline and expertise of the practices of formal or professional sociology. The sociologist faces the same dilemma as the journalist or politician attempting to practice their craft with specialised knowledge of the possibilities and potentials of the digital. For sociology it is critically important, as so much of social life has migrated into online conversations and interactions. For example it might be possible for a completely amateur participant in a social network to provide more relevant and rigorous social data (and even analysis!) using a basic toolkit of scripting and scraping tools accessing the real-time Web for sentiment and expressions of agency with regard to a specific topic like how locals are dealing with the build of the Olympic site in London. Contrast this with a deeply experienced academic sociologist with limited or no capacity or literacies for engaging directly with online social life. Which one is being a sociologist and what does that mean? That is the kind of question raised by the experience of the Twae case study in this research project. For example, it became clear that it was possible to engineer influence and power in the network in such a fashion as to make the presence or engineering of this power invisible to a social researcher without significant media and technical skills of digital analysis.

Media Literacies in Digital Sociology

The findings of the three case studies in this research project overwhelmingly suggest the need for sociologists to undertake serious applied computing education and training in order to practice proficiently as digital sociologists and enact successful digital interventions. Digital Sociology is as much about knowledge of the digital as it is about knowledge of sociology. Combining these knowledge bases and skill sets is not a natural progression for academic sociology or computing science. Conventional approaches to realities and reliable knowledge presuppose the ascendance or priority of subjective and objective realities respectively. But combine them we must if we are able to advance the practices of Digital Sociology in the interests of progressing methods and means of social inquiry in the ever expanding spaces of digital social life and media. At

a minimum this means sociologists must be comfortable in the use of editors and shells, text and linux/unix operations, procedural abstraction, tagging and semantics, documents, objects, and pipelines, data abstraction, web servers and clients, and programming, data, and abstraction on and over the Web. This is a lengthy laundry list of basic applied computing fundamentals and can be taken in stages but knowledge of all these areas is a pre-requisite for participating and developing digital interventions. It is the findings of the research project and the opinion of the researcher that a watered down version of Digital Sociology, for example where the researcher has strong social theory and methods but only a conceptual understanding of the technologies required for the practices of digital interventions, is as good as no Digital Sociology at all. The evidence of the case studies strongly supports this assertion. On the Twae case study the researcher was required to develop scraping scripts and modified API behaviours in order to test the hypothesis of engineering social depth and reach of engagement in the emergent social networks of Web 2.0. Without the actual literacies of being able to develop and enact the script the experiment in Digital Sociology would not have been possible. It is not reasonable to expect someone working on a thesis project to contract the technical resources to enact a plan, even if the researcher can supply the blueprint for the technical development. Quite simply, the digital sociologist must be a capable digital practitioner and developer. Equally knowledge of the technical and media literacies required for developing digital interventions without the sociological imagination and depth of sociological literacies required for adequate formation and enactment of social inquiries is insufficient to qualify as Digital Sociology. Quite simple, the digital sociologist must be a capable sociologist. Combining competencies and knowledge of sociology and applied computing teaches modes of thinking and analysis that applies to virtually any digital social ecosystem or environment. Digital Sociologists need to be able to assess, use, and develop new research instruments for collection, analysis and presentation of information and social data. The findings of this research project suggest the overarching practice of Digital Sociology is transforming the sociological imagination through digital innovation.

Qualitative Improvement of Methods

As discussed in the research methods section of the methodology chapter of this research project, Hamel suggests social interventions advance qualitative methodologies in five ways. These are detailed in the methods section with reflections on how the research project benefits from layering digital interventions as method on top of the fundamentals of social interventions as a qualitative social method of inquiry. The digital interventions providing the foundation for the practices of digital intervention in the BlogScholar and Twae case studies and that of analysis for the case study on multiple representations of collective intelligence also augment and improve qualitative social methods independent and beyond the advancements chronicled by Hamel. It is a critical finding of this research project that while digital interventions share some attributes and even outcomes with social interventions, there are also some crucial differences that can be qualified as advancements on social interventionary theories of social inquiry. Three of these stand out as findings of the case studies. First, digital interventions are often required in order to conduct investigations into digital social realities. For example, in the first two case studies in this research project, the researcher developed digital communities in order to study the formation of digital communities. There was simply no other way of accessing and analysing the opportunities and limitations presented by some of the more deeply embedded mechanisms of these communities visible only to the administrator or mediator. Second, digital interventions allow for unprecedented continuous and participatory engagement with social actors, objects and life. The ability to run automated scripts 24-7 harvesting, filtering, and sorting social data provides the researcher with a previously unimaginable depth of access to swirling social interactions. The critical factor in the success of these methods is the depth of sociological imagination deployed in their creation. Third, digital interventions offer truly interdisciplinary canvasses for academic exploration and experimentation. For example, a journalist, a sociologist, an anthropologist, an environmental scientist, and a biologist might get together to enact a digital intervention in climate change in order to provide various forms and collections of dfata informing their respective research practices. Well formed and imagined digital interventions can suit many different needs at the same time but the constant requirement across all the

academic practices is an accompanying comfort and literacy in the practices and literacies of the digital and collective intelligences in action.

Emergent Themes on Reality and Knowledge

Current methodological frameworks for engaging reality and reliable knowledge are insufficient for purpose when engaging emerging forms of digital media as discussed in detail through this thesis. The researcher deployed a theoretical framework of critical realism in order to engage digital media through a lens of integral realities accounting for subjective, inter-subjective, objective, and inter-objective approaches to reality. This provided a means for engaging what the participants did individually and collectively in the case studies. It also opened up opportunities for recognising the realities of mechanisms, structural and objective realities intersecting with the case studies and digital interventions. But critical realism was formulated at a time when internetworked digital media of the types and forms explored and experimented with in the case studies didn't exist. Thus it provides a substantive theoretical framework from which to conduct the social inquiries of the case studies but stops short of relating directly to the practices of Digital Sociology except through further theoretical analysis. Digital Sociology requires its own approach to reality, accounting for both the theoretical and practical realities present in emerging forms of digital media and the opportunities and constraints of conducting digital interventions. Digital social life is fluid, emerging, and transformative and any critical approach to the associated social realities should offer the same flexibility, imagination, and constant aspiration for that which is just beyond our grasp. One of the most robust and rigorous outputs of this thesis project is an evolving attempt to formulate the beginnings of such a theoretical framework towards digital social realities. These ideas are emergent and speculative and not representative of a fixed or established position. In the following section they are represented as a series of emerging themes to be realised in the future and united under the banner of 'Netmodern Theory'.

7.2 Introduction to Netmodern

"Could it think, the heart would stop beating"[2].

At its current infant stage of development Netmodern is a very personal theoretical framework born from the subjective experiences of the researcher in living inside and practicing digital culture for six years at a crucial stage in the development of emergent Internet technologies. As such Netmodern is adequately described as being formed as an emergent concept from the premise that *une philosophie doit être portative* (a philosophy should be portable) and there is no theory that is not a carefully prepared fragment of some autobiography (Valery, 1939). Netmodern is also the emergent product of the research findings of the collective cases presented in this thesis and the subjective experiences of the researcher in experiencing and explaining reality within the confines of the research project and beyond. Netmodern theory seeks to merge and interconnect a multiplicity of realities through sociological imagination and the abstraction of programmed routines and empirical bases of matter (Mills, 1959; Searle, 1992). For example it is possible to conceive of a unicorn in a perfectly consistent and complete way. Modernists would suggest this implies an actuality of form but not one of existence. After all, such a creature does not actually exist. Postmodernists would also suggest the unicorn does not exist as all that is real is your conception of it. Netmodern builds on both and argues for the multi-faceted reality of the unicorn as a product of biochemical reactions in your brain, the imagination of psychological conception, the mutual understandings of shared cultural mythologies of unicorns, and the ontological and symbolic reality of it as a horse with a horn. The ability to actualise unicorns in the world is irrelevant to the actuality of unicorns. In Netmodern terms, the unicorn is *potential* energy occasionally *actualised* into a variety of forms and particulars.

From a Netmodern perspective the challenge of crafting a system of online collective intelligence is not primarily a technical one as the techno-economic grid of the Internet

[2] *Fernando Pessoa, The Book of Disquiet (1991)*

looks set to fulfil its autopoietic potentials as a global and multi-dimensionally immersive knowledge and memory archival network. According to Internet World Stats[3] in December, 1995 there were 16 million Internet users or 0.4% of the world population. This rose to 361 million or 5.8% of global citizens in 2000 and further to just over 1 billion people or 15.7% in 2005. In July, 2010 the Internet usage passed 2 billion people or 30% of the world population. The traditional developed economies of North America (77%), Europe (58%), and Australia (62%) are still experiencing steady growth rates of online access towards saturation. The widespread emergence of wireless and mobile data platforms have fuelled the fastest growing regions of Africa (now 11% of the population), the Middle East (30% of citizens), and South America/Caribbean (35% of citizens). Enormous global political, cultural and economic will towards addressing access and issues of the digital divide have helped spur this remarkable growth of Internet access. Relentlessly striving towards universal access is a remarkable achievement but just having a universal grid for knowledge does not explicitly or implicitly ensure the consciousness using it will be global. It is easy to imagine digital predators or authoritarian political structures commandeering the grid as matrix for essentialised cultural hegemonies and panacea. This is all the more relevant in context of the current discussions and debates about 'net neutrality' and efforts to control the Internet platform instead of the content on it.

> The Arpanet, as it was originally envisioned, and today's Internet are not the same animal. Today's Internet only resembles the old Internet slightly. Now there are lots of choke points and fewer opportunities to bypass the big pipes. It's been re-engineered, almost by evolution, for commercial use with all the necessary efficiencies. Thus, it is more easily controlled than ever (Dvorak, 2010).

It all depends on how well they understand the known principles explored in this research and beyond that form the constituents of intransitive realities calling out for transitive actions and digital signal in the noise. It is a question not just how well we understand the character of information but also how well we understand our own character as both actors and networks in collective intelligence. Netmodern theory accepts and endorses the inevitability and potentials of universal access but progresses

[3] http://www.internetworldstats.com

the discussion to ask ‘what is required for equitable access’ (media literacies) and ‘access to what’ (collective intelligence)? Change in any dimension of reality is formed through the intersection of *potential* and *actual*. In the spirit of the trajectories of the ever changing landscape of critical theorists it seeks not just to ask ‘what is?’ but to query and explore ‘what could be?’ Recognition of intersecting multiplicity of realities and seeking an integral individual and collective respect and recognition for these realities can help us investigate potential and even desirable forms and particulars of collective intelligence. This implies a broader recognition that it is our integrity – matching up our external behaviours and actions with our internal consciousness and understandings – that is shaped by and shapes our lives and society. Digital integrity is a precious and aspirational commodity in Netmodern theory.

Netmodern theory is emergent and speculative and full of potential limitations. Nearly all of the theoretical constructs that form its foundation are conceptive and experimental. The intellectual foundation of the theories are unsubstantiated and unproven. Attempting to apply Netmodern theory at this premature stage of its development is hazardous and hypothetical. There is an inherent risk and uncertainty to any researcher even investing energy and intellectual resources engaging with the concepts presented in Netmodern. To this end it is not yet intended as a methodological toolkit or resources for conducting further qualitative research in digital media. Netmodern theory is only the result of the single PhD research project described in this thesis and maintains only loose affiliation with the direct results of the case studies explored in the research. The current ambition of Netmodern theory is not its reuse but its emergence. As noted in the research methods section of this thesis, the theory as it is constructed by the researcher is simply an alternate “representativeness” of the sociological realities produced through the case study explorations.

Each of the sections of this chapter deals with a particular aspect or case of Netmodern thought. *The Map, the Mapmaker and the Territories* considers empirical ‘maps’ as more a performance than a representation of the mapped territories and mapmaker role. Vector and causal relationships are illustrated between subjective, objective, inter-subjective, and inter-objective transitive and intransitive realities. All forms of organic

and inorganic matter can be perceived as Holons, simulateously a hole and a part (Wilber, 2007). There need not be a schism between scientific and social realities as open system fields like economics and sociology do not require lawful regularity or mind-independence for the existence of transitive or intransitive realities. This section builds on theories of *critical realism* to examine some of the forms and particulars of collective intelligence. *The Dark Matter of Élan Collective* explores fantasies of vitalist elixirs and luminiferous mediums as emergent mimetic realities. Sometimes these realities mark creative or mechanistic advance into novelty and sometimes the potential and actualised realities are beyond our comprehension, but no less real for it. *Quantum Sociology* opens with a world supported and supporting turtles all the way up and down and proceeds to explore what quantum realities can suggest about a world of complementary being and becoming. The methodology chapter of this thesis introduced the concept and this section provides specific examples of how Netmodern theory is specifically informed by quantum philosophy. As a social theory, Netmodern supports an intransitive dimension of reality where realism need not necessarily follow a trajectory through becoming into being. Objects of study within and beyond our perceptions can be both being and becoming, or simultaneously potential and actual. Considering quantum intersections with social theory from this perspective willingly embarks on a preposterous journey of contemplation and contradiction between social life and spooky action at a distance in the Cosmos. Finally the *Yoga of Knowledge* explores how emergent worldviews can replace knowledge as power with knowledge as empowered. It suggests a multi-dimensional reality with yesterday, today and tomorrow, all in the same room. Practicing our intellectual Yoga can help us recognise the contradictions in all of us and seek out mutual cultural understandings and structural awareness of potential realities in scientific and social life. In this section the fundamental Netmodern principle of the homeostatic and self-adjusting properties of all open and closed systems is introduced in metaphorical relations between concepts of neuroplasticity and socioplasticity.

All of the sections in this chapter reflect and interconnect with the other chapter topics in this thesis and particularly with collective intelligence as a material-semiotic like network exploring relations between matter and concepts on the Internet. The relatively

brief synopsis of some of the properties and characteristics of Netmodern theory in this chapter is intended to inspire broader iteration and intellectual development of the premises and constituents of this new theoretical framework for observation, denouement and interpretation of reality in social and scientific life.

7.3 The Map, the Mapmaker, and the Territories

On a dark night with the naked eye a human being on earth can see about 2,000 stars from any particular spot or 6,000 from all vantage points on the planet. With a good set of binoculars 50,000 are visible from any particular location. For stargazers equipped with a 2″ telescope up to 300,000 come into view and a 16″ telescope reveals 50,000-100,000 galaxies each containing 10s of billions of stars (Harrison, 1987). With each subsequent upgrade in instrumental extension of our senses we can draw a more and more detailed map of the Cosmos. As this chapter will indicate, this map is more a performance than a representation of the mapped territories and the mapmaker is not a disembodied and self-contained monad untouched by the world it maps. The territories, the map and the mapmaker are integral in historical processes charting these ever-expanding territories since the singularity of the Big Bang about 13.7 billion years ago. Three minutes after this event 98% of all matter there is or ever will be was produced. Every atom in the human body has almost certainly passed through several of those observed cosmic stars and been part of millions of organisms before becoming part of the mapmaker. History, structures, agency, and science all converge as the mind forms the world and vice versa in the transitive and intransitive realities of the Universe. This is as obvious in a physical sense as a conceptual one. If the amateur backyard stargazing enthusiast is in need of any inspiration perhaps it can come from the up to a billion atoms of stardust in each of us that literally passed through Ptolemy, Copernicus, Kepler, Galileo, and Newton en route to our bodies. If the goal is to complete the map, we are destined to fail as neither the world nor the self are pregiven. But if each stargazer appreciates the temporal creations of their own maps as sensory delights and fragments of precious lived experience, each glimpse is a success. But we do not have to go back billions of years to find reality theory on the confluence of scientific observation of particulars and situated histories of form.

There is a saying in philosophy that every philosophical debate is ultimately a debate between Plato and Aristotle. This adage suggests Plato's idealist Theory of Forms and the materialist counters of Aristotle set the stage for countless enduring and open-ended debates from ancient through contemporary philosophy on the nature of reality. Ontological language does not really do justice to the nuances of this discussion but we can perceive it from many perspectives, some more accurately descriptive than others. Particulars vs Forms. Science vs Social. Physical vs Metaphysical. Being vs Becoming. Empirical vs Hermeneutic. Corporeal vs Incorporeal. Brain vs Mind. Intentional vs Behavioural. It/Its vs I/We. Objective vs Subjective. Positivist vs Constructivist. Exterior vs Interior. Causal vs Universal.

These debates engage all aspects of intellectual thought from art, religion, humanities, natural, and social science. Within these disciplines there can be micro struggles for reality reminiscent of the broader debate. For example in the social sciences it can be found in proponents of quantitative vs qualitative methods, social contructivist vs realist theories, or Hegelians vs Marxists. In psychology it is psychoanalysis or talking therapies like cognitive or Gestalt vs behaviourism or drug treatments in biological psychiatry. Relentless scientific advances from the Renaissance to the Enlightenment suggested the only reasonable approaches and descriptions for reality were objective empirical scientific 'maps' of propositional truths. This theoretical stream culminated in the dogmatic empiricism of Hume – all perfectly shaped and shiny surfaces of observable reality. Kant's transcendental idealism advanced philosophies of reality through his critiques and differentiation of art, morals, and science where the world forms the mind instead of the other way around. This instigated further post-modern critiques from Hegel, Nietzsche, Heidegger, Foucault, and Derrida reinserting history and the reality of the mapmaker into theoretical debate. But many of these theories ultimately privileged being over matter and in a much subtler fashion reproduced the mapping paradigm by simply seeking a more accurate map (Wilber, 2007). The epistemic correlationist such as a Kuhnian account of science and ontology suggests that while a world outside humans exists and it is possible to think about this world, mankind can never know this world because our relationship to it is always mediated by

history, context, concepts, language and social interactions. This teaches us a lot about how the transitive dimensions of reality can influence proceedings but privileges this at the expense of real and intransitive actors and objects in the world. In contrast, Popper's post-positivist falsifiability privileges the intransitive in nominally closed systems like scientific labs or particle accelerators at the expense of both transitive intersections and the potential for intransitive realities in open system fields like economics or sociology that fail to provide particular effects or explicitly lawful regularities. Just as in the 1860s the current populist theoretical zeitgeist is hollering "back to Kant". Netmodern suggests a pluralist and integral reality of transitive and intransitive penumbras and a blending of the abstraction of idealism and the physical realities of materialism.

This is in the spirit of emergent critiques of post-Kantian *correlationism* between the duality of thinking and being inspired by Descartes. This opens opportunities to evolve Bhaskar's critical realism to incorporate emerging philosophical thought and dialogue on *speculative realism* or *metaphysical realism* (Brassier, 2007; Grant, 2008; Meillassoux, 2008; Harman, 2009; Toscano, 2010). These theories are materialist, naturalist, object-oriented, or transcendental but all follow in the tradition of Bhaskar's investigations and integrations of transcendental realism and critical naturalism. Bhaskar and the speculative realists suggest, and Netmodern theory agrees, that we can come to know this world as it is in itself and not just as it is for us. We must however be careful in over-emphasising the objective and material as a response to the universals of subjectivity prevalent in post-modern cultural and social theory. In many ways emerging forms of realist theory are a response to the extreme constructivism and paradoxes of post-modern theory and may simply ultimately mark a return to weighted empiricism in the theoretical equations of reality. Reality is a conflation of subjective, inter-subjective, objective and inter-objective interaction. The relationship between transitive *social* and intransitive *natural* is one of subtle assemblage and relations instead of systems and structures.

> It is not, for example, the Kuhnian paradigm or the Foucaultian episteme that makes Copernicus "right" or Freud "true". *If* there is truth in these theories it is a real that operates regardless of whether any humans conceive it or conceptualize it. Rather, the movement of the planets, gravity, libido, etc., enter into an

> assemblage with human actors, human history, human concepts, human language, etc., in such a way that the intransitive nonetheless maintains its separation and independence. Such would be the beginnings of a non-naive realist conception of being that was also able to take the best from the social sciences (Bryant, 2009).

Netmodern suggests perceptions of reality are like a teeter totter and there is no better time than mid-air to feel the weightless opportunities evident in movement. As the paradigms shift ideas are formulated in transitive motion from implicit concepts and existing intransitive forms just as cell theory suggests biological life cannot arise spontaneously but must come from pre-existing cells. The challenge for theoretical paradigms of knowledge and reality is still to overcome distinctions between the map, the territory, and the mapmaker and provide an integrated theoretical framework for investigating and experiencing intersections of transitive and intransitive realities. Objective and subjective realities can be cast from ineffable shadows in a map as a tool for learning and contemplation but ultimately thought and being are conjoined. In Hegelian terms the map is itself a performance of the territory it is trying to map and the mapmaker is a product of that which it seeks to know and represent (Wilber, 2007).

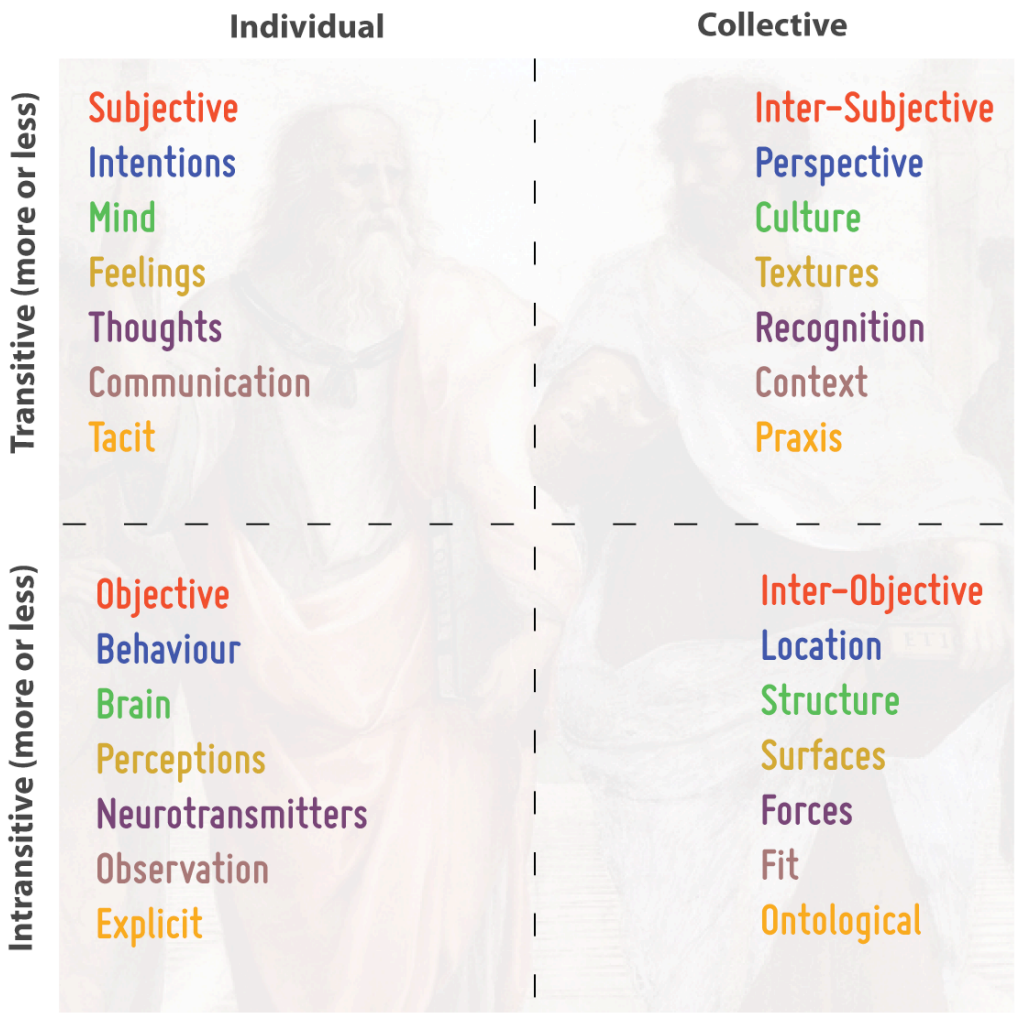


Figure 19: Netmodern Performance 'Map' (NPM)

NPM of territories of individual and collective transitive and intransitive realities[4].

The Netmodern Performance Map (NPM) introduced at the start of this thesis and again in Figure 19 is inherently abstract until we run a few case studies through the model. In education, for example, this map suggests taking into account not just the objective or physical manifestations of learning (lower left), but also cognitive science and the student's subjective perspectives and expectations (top left), the cultural hopes, attitudes and priorities for learning (top-right), and access to educational institutions or structures of curriculum (bottom-right), all of which have interconnected causal effect on the

[4] The image behind is taken from *The School of Athens* by Raphael in the Vatican. Plato gestures upwards to indicate the ascending influence of idealist forms while Aristotle's palm down represents the descending influence of material nature. You could just as easily swap the bottom and top row.

course of a person's education. This map is only performative and makes no claim of exhausting the factors relevant to the realities of the concept of 'education'. It does however hope to illustrate how adopting an integral view of reality is more inclusive and adaptive (and ultimately likely more successful regardless of the metric) than privileging one quadrant over all the others. Let us look at another example of a user on the Internet. In the top-left is the subjective interior thought and meaning of the idea of going on the Internet. It is the conscious and sub-conscious behaviours and desires exhibited and experienced while surfing the World-Wide-Web. The bottom-left is the correlative changes in the brain experienced while undertaking these activities. Dopamine and beta-brainwaves increase while acetylcholine jumps the synapses in the central nervous system. So far we have two different but equally valid claims of reality in the simple experience of going online. The first can only be discovered by interviewing the subject or understanding the psychological background of the user through communication. The second would be evident if the user was connected to an EEG machine or undergoing fMRI scans providing empirical evidence of these activities in the brain. In the top-right is the cultural understanding of the Internet in the first place. It explains why the user opts for an Internet search in cultural context instead of visiting a local library to take out a book and research the desired information. Culture provides texture and meaning to individual thoughts and language reflective of individuals situated in collective intelligence and knowledge. It forms part of the reality of the Internet in collective consciousness. In the bottom-right we find the Internet as global grid of network communications and optical transmission. The realities and neutrality of this material grid forms a substantial part of the 21st century techno-economic base that continues to grow and penetrate every aspect of global society at a startling rate.

The following is a third example using just the right hand side of the map to research reality in a Massive Multiplayer Online Role-Playing Game (MMORPG) like World of Warcraft. In the top-right quadrant of inter-subjective realities the core research investigation might explore what it means to play the game for participants. Why do they value it? According to Wilber the validity criteria for investigating this kind of reality are mutual understandings (2007). The researcher seeks to understand meaning

for participants by immersing in cultural background to find common context to make adequate interpretations. The role of the researcher is hermeneutic interpreter and the methods would likely be participant observation, ethnographic or deeply read, analysed and interpreted interviews. The function of the research is investigation of the cultural fit of the game in the context of prevalent worldviews of participants and cultural and linguistic meanings and practices. This is similar to the BlogScholar project or the research into Gold Farming described in the case study chapter of this thesis. The findings of a study of World of Warcraft using these methods might suggest participants play the game to celebrate achievement, engage in escapism, socialise, collaborate in teamwork, discover hidden things, or engage in role-playing fantasies. All of these explanations contribute to the reality of the inter-subjective *meaning* of the game. In the bottom-right quadrant of inter-objective realities the core research investigation might explore the function of MMORPGs in the behaviour of the broader virtual social system. What function does it perform? In this research what participants say the playing experience is about is not important. Researchers might observe interactions in the game and crunch huge masses of data to create a flowchart of actors in the game network. The premise of this research into reality is how the objective properties of the systems of MMORPGs determine participant action. This is similar to aspects of the Twae case study seeking to get closer to the intransitive realities governing success or failure in participation. The researcher uses primarily quantitative data analyses to identify ontological categories for participants, common attributes and emergent properties. Another approach in this quadrant would be to start from an existing participant classification system like Bartle's Player Types (Socialisers, Achievers, Killers, etc) and aggregate statistical data from participants to ascertain how much they prefer acting on things instead of interacting with them or how much they direct their attention towards the characters in the game or the game environment (Bartle, 2003). Findings from this type of study may suggest the function of World of Warcraft is provision of social cohesion for otherwise social outcasts or that the game is a form of auto-poetic self-maintenance of virtuality in social life. These findings could help game designers optimise the performance of aspects of the game (commerce, trade, player

retention, etc) in socio-economic life[5]. All of these explanations also contribute to the reality of the inter-objective *function* of the game.

Both of these interpretations could be interpreted as forms of collective intelligence. One speaks to a multiplicity of meanings of the game in collective online social interactions and the other to the function of the game in the collective techno-economic grid that is the Internet. It seems clear that these contrasting methods are not replacements or alternatives for each other as they address completely different questions of meaning and function. Researchers tackling particular cases like MMORPGs or the broader canvasses of collective intelligences must combine these and more techniques in a pluralist reality of Netmodern methods. Collective intelligence is a central research focus for this entire project. From the start a core goal was investigation into the impact of grid computing for the human brain (our know-how repositories) connecting with our inter-networked information collections (our know-about repositories) to open possibilities and improve lives. Netmodern theory is emergent from these investigations but it suggests a much bolder view of Internet that reframes the parameters of these initial investigations in deeper context and relation to the research findings. In many ways the early research for this project cast collective intelligence as a vast surface map for participant individuals and a broader canvas of social techno-economic development. While this surface perception was readily apparent to the researcher it was tempered by particular exposure to the theoretical depth from Pierre Lévy's awesome late 20th century vision of the intersection of knowledge and the Internet as "a universally distributed intelligence that is enhanced, coordinated, and mobilized in real time" (Lévy, 1997:16)? In this formation we can also see the reality of the mapmaker's (researcher) intersection with the hypothesised map of this research project.

[5] One of the great challenges to validity claims of inter-subjective understandings is just how effective inter-objective methods are in specific applications. Almost every modern game developer uses a version of Bartle's Player Types to design virtual worlds. There is even a 'Bartle Test' for gamers. The fact that this test is a tautology does not seem to deter from building successful games that are warmly received by the community of users. It is a similar phenomenon to how polling data can be so incredinly accurate at predicting election results despite the reality that so much is left out of the polls and only a tiny fraction of voters are required to extrapolate across the entire voting domain.

Lévy's late 20th century willingness to see reality and potential in the Internet without sacrificing recognition of the subjective experience inherent in engagement set his work and praxis on collective intelligence apart from utopian fantasies of digital culture. At this stage his work focused on the context and textures of inter-subjective communication and representations reminiscent of the top-right quadrant of the NPM. His writing spoke of online and virtual society as an emergent space full of bending light and hypertext and not simply location: "Imagination, memory, knowledge and religion all are virtualisation vectors that made us abandon the 'there' much sooner than informatics and digital networks" (Lévy, 1998). In relation to collective intelligence Lévy was primarily asking 'what does it mean'? In 2002 Lévy started the first academic research centre exclusively devoted to collective intelligence with the formation of the *Canada Research Chair in Collective Intelligence (CRC-IC)* at the University of Ottawa. Funding for this position and centre was predicated on the development of tools and software related to the exposure and investigation of collective intelligence. Lévy's actual role is Professor in the Department of Communications but the Collective Intelligence Research Lab is housed in the Department of Computing and nearly all of his subsequent research projects and supervisions focused on exposing and developing the material base of collective intelligence in the form of syntactic structures of symbolic systems and semantic processing, interoperability and ontologies. In Netmodern terms he had drifted into the bottom right quadrant, determined to develop a 'better map' of inter-objective intransitives and the signifiers and signified of semantic space in collective intelligence. Lévy's revised question for collective intelligence was 'what does it do'? This structural form of *knowledge management* seeks the means by which technology can enhance and multiply collective cognitive processes through digital networks in order to create, innovate and invent. Human cognition is seen to be structurally grounded in biologically determined neurotransmissions in the brain but augmented by culturally infused 'collective memory apparatuses', symbolic media systems and communication technology (Changeux, 1985; Edelman, 1987; McLuhan, 1962).

The current fulcrum of this research is Lévy's Information Economy Meta Language (IEML) to represent, analyse, synthesise, compare and simulate the dynamics of

collective intelligence in semantic space. Lévy hypothesises an interdependent relationship between collective intelligence and human development (economic prosperity, health, education, security, innovation, cultural heritage, etc) and suggests a 'self-aware' collective intelligence can be a powerful enabler for these intersections.

> The highest goal of the IEML research program is to provide a symbolic framework for the making of digital tools that can help human collective intelligence observe its own activity in cyberspace, and therefore improve human development (Lévy, 2009).

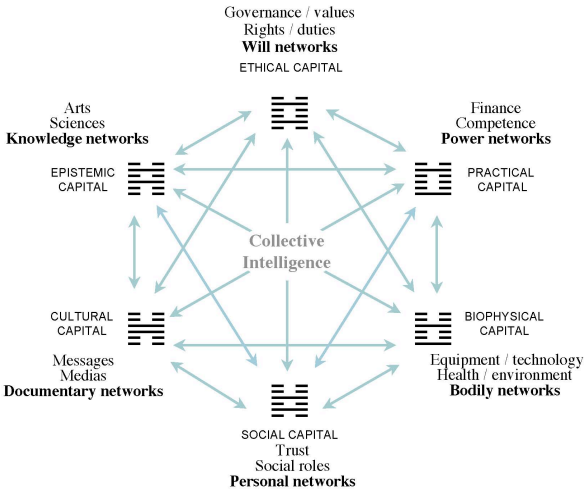
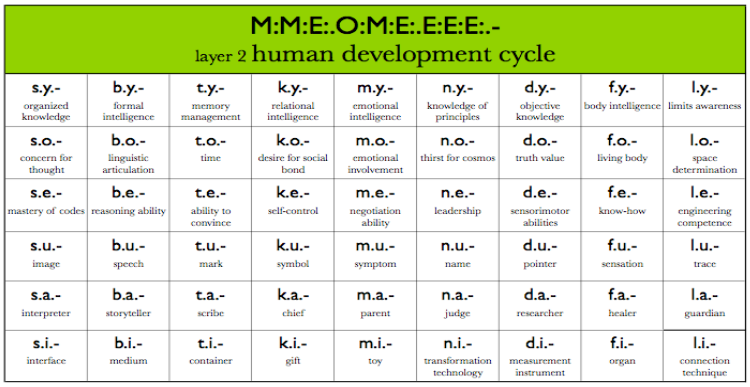


Figure 20: Model of collective intelligence

Pierre Lévy's actor-network model [Callon, Latour] of collective intelligence at the service of human development. Each form of capital is defined through the semiotic triangle of significant/interpreter/referent.



M:M:E:.O:M:E:.E:E:E:.- layer 2 human development cycle								
s.y.- organized knowledge	b.y.- formal intelligence	t.y.- memory management	k.y.- relational intelligence	m.y.- emotional intelligence	n.y.- knowledge of principles	d.y.- objective knowledge	f.y.- body intelligence	l.y.- limits awareness
s.o.- concern for thought	b.o.- linguistic articulation	t.o.- time	k.o.- desire for social bond	m.o.- emotional involvement	n.o.- thirst for cosmos	d.o.- truth value	f.o.- living body	l.o.- space determination
s.e.- mastery of codes	b.e.- reasoning ability	t.e.- ability to convince	k.e.- self-control	m.e.- negotiation ability	n.e.- leadership	d.e.- sensorimotor abilities	f.e.- know-how	l.e.- engineering competence
s.u.- image	b.u.- speech	t.u.- mark	k.u.- symbol	m.u.- symptom	n.u.- name	d.u.- pointer	f.u.- sensation	l.u.- trace
s.a.- interpreter	b.a.- storyteller	t.a.- scribe	k.a.- chief	m.a.- parent	n.a.- judge	d.a.- researcher	f.a.- healer	l.a.- guardian
s.i.- interface	b.i.- medium	t.i.- container	k.i.- gift	m.i.- toy	n.i.- transformation technology	d.i.- measurement instrument	f.i.- organ	l.i.- connection technique

Figure 21: IEML semantic dictionary

Sample from Pierre Lévy's IEML semantic dictionary creating correspondence between formal concepts that make the Uniform Semantic Locators (USLs) and the descriptors of those formal concepts in various natural languages[6].

Lévy's research energy is now devoted to creating a better map in this multiplicity of forms. This type of approach can be critiqued as seeking a holistic or a systems map instead of an atomistic or mechanistic map favoured by positivists standing back from the world, as if the two entities had nothing in common (Wilber, 2007). It is a much subtler reassertion of the dualistic distinctions between thought and being. As Hegel suggests thoughts are not just a representation of reality but also a movement of reality itself. The concept of a more accurate map including the mapmaker remains a much more subtle form of Cartesian dualism and correlationalism. Performativity suggests the map and the mapmaker are integrated performances of the represented territories. As such the map can never be trusted as anything more than a performance of that which it seeks to represent. Lévy's material investigations into collective intelligence reflect on the ongoing challenge of crafting means of storing and documenting a universal digital

[6] As a general rule, concepts having *M:** in source role - or source of the source, and so on - tend to represent nouns or entities. In *s.** (thought) information flows from sign source into the medium of sign: deduction, induction, interpretation, imagination, etc. In *b.** (language), information flows from sign source into the medium of being. In *t.** (memory), information flows from the sign source into the medium of thing. This seme manifests the elementary gesture of inscription. Without inscription of some sort there is no memory, and thus any notion of time. In *k.** (society), information flows from the being source into the medium of sign.

memory. His ‘maps’ attempt to scientifically chart the dynamic relationships between collective intelligence and human development through a *semantic coordinate system*. He recognises that such a system is best suited to the highly formalised and logically coherent language of relations, numbers, molecules and reactions in the natural sciences. In contrast, Lévy refers to the humanities and social sciences as “fragmented” in a similar fashion to how Bhaskar contrasts the “open systems” of society with the “closed systems” of the laboratory.

> The observational instruments are not well developed in terms of their engineering. Except in certain highly formalized sub-disciplines, the calculability, predictive capacity, and testability of the theories are weak. The main consequence of this situation is that the greater part of the considerable knowledge accumulated by the community of researchers in the humanities remains “implicit”. That is to say, in terms of knowledge management, the knowledge and expertise accumulated by the humanities are difficult to share in contexts that differ from the initial environment in which they emerged. And yet, the resolution for the difficult problems confronting contemporary humanity demand the effective collaboration of all cultural sciences (Lévy, 2009).

Lévy sees a collective intelligence framework as particularly capable of incorporating subjective and inter-subjective realities like those in the top left and right of the NPM by embedding distributed, fractal and self-referential social cognition from inception. That is why his maps attempt to respect both the signifier and signified of semantic space in equal measure. He calls this semantic space the “geometry” of an infinite abstract universe where the subjects, objects and processes of collective intelligence occur and intersect. Although language is useful to pay respect and inclusivity to these intersections of scientific and social life, in practice the mapping of socio-cultural life remains an elusive prospect still venerable to subtle reductionism. The attempts in Figure 20 to illustrate elements in the human development cycle illustrate this point. Surely this map is infinitely partial in its attempt to assemble the fragments of social life. In a way this is also a reduction of the grand theories and visions prevalent in the conceptual musings on cyberspace present in Lévy’s pre-IEML philosophising on collective intelligence. Certainly the maps are not ‘more’ than his global theoretical constructs and as such can be interpreted as diminished products of their source. This hierarchical construct is the domain of the empirical science of the bottom-left intransitive-individual quadrant of the NPM in the way that electrons are part of atoms

that are part of molecules that are part of compounds and the other way around towards the subatomic.

> Within it [electrons], organised into the local equivalent of galaxies and smaller structures, are an immense number of other, much tinier elementary particles, which are themselves universes at the next level and so on forever – an infinite downward regression, universes within universes, endlessly. And upward as well (Sagan, 1980).

Perhaps reality is infinitely composed of conceptual *Holons*, simultaneously a whole and a part, both self-reliant and able to independently address contingencies while also subject to the control of higher authorities in hierarchical structures (Koestler, 1967). Social holons are said to possess *nexus agency*, a phenomena most often illustrated through a flock of geese flying in formation where each goose is directed by the lead goose but not mandated to follow. More relevantly for this analysis, it can also be seen in the mimetic and explosive popularity of online viral media on YouTube or Facebook where the lead geese are the early adopters and digital culturati so coveted by advertisers and the flock is the 100s of millions who fly in relative unison to access and adopt the trend through network communication. These types of social phenomena are relatively easy for researchers to track and measure through sophisticated Application Programming Interfaces (APIs), analytics, and follow-up in-depth interviews and qualitative methods with willing participants in the cycles of popularity (Wallsten, 2008; Naim, 2007; Jordan, 2008). Through this combination of quantitative and qualitative analyses it may be possible to identify and distinguish between transitive and intransitive realities or forms in these representations of Aristolean particulars in social life. Similarly we can see emerging suggestions of intransitive methodological realities or Platoesque universal forms in case studies like the Twae Twitter project proposing underlying means of gaming or subverting social interactions towards pre-established goals or intentions. It suggests value and focus in Lévy abandoning the integral view of his early philosophising in favour of a weighted focus on the structural maps of the lower-right quadrant of the NPM. It is unlikely these maps will ever achieve a holistic representation of the Holons within but efforts towards this search for the material base of social life can continue to reveal empirical particulars suggestive of further transitive and intransitive realities of form. Ultimately this model could lead to billions upon

billions of fragmented memories and artefacts of social life upon which research can slowly and inevitably reveal explicit transitive and implicit intransitive realities in collective intelligence.

7.4 The Dark Matter of Élan Collective

Chemists in the 18th century believed in the existence of a powerful force capable of bringing inanimate objects to life. This postulated *élan vital* existed in organic substances but not in other inorganic matter (Davies, 1999). The opportunity to harvest even one of these speculative molecules inspired scientists to consider the possibility of animating dead matter, often through the intervening variable of electricity, a la Frankenstein. This concept was eventually lustily rubbished by mechanism and evolutionary biologists as irrational and ungrounded in basic scientific method. In 1907, French philosopher Henri Bergson linked this mysterious elixir much more closely with consciousness and the irrational as an omnipresent and conceptual creative force in humanity, felt more strongly in some than others, but nonetheless enduring and representative of a form of creative evolution unencumbered by scientific dogma. Unsurprisingly the ephemeral nature of this inherent creative quality in organic matter drew further fire from biologists and even 'Darwin's Rottweiler'[7].

> Life, the animate, was supposed to have some sort of vibrant, throbbing quality, some vital essence – made to sound yet more mysterious when dropped into French: élan vital ... I've always treasured Julian Huxley's sarcastic deduction that railway trains must be propelled by élan locomotif (Dawkins, 2009).

Quietly and suitably undeterred by all the explicit and empirical critiques, Deleuze sought to reinvigorate the philosophical foundations of élan vital through an idiosyncratic biography of Bergson formed through his own version of Immaculate Conception.

[7] Oxford theologian Alister McGrath coined this term to describe how Dawkins is so intent on prevailing in intellectual combat he often undermines his own argument in the process.

> I imagined myself getting onto the back of an author, and giving him a child, which would be his and which would at the same time be a monster. It is very important that it should be his child, because the author actually had to say everything that I made him say. But it also had to be a monster because it was necessary to go through all kinds of decenterings, slips, break-ins, secret emissions, which I really enjoyed (Deleuze, 1991: 8).

Deleuze's renewed vitalism is anti-humanist (against anthropocentrism) and materialist suggesting a hierarchy of emergent self-organisation from inorganic through organic and even spiritualist matter (Lash, 2006). From this perspective organic and inorganic matter gets the same potion. Life is in all things and does not distinguish between conceptual and material finds. Netmodern encourages pursuit of *élan collective* as recognition of the collective force or material collective intelligence implicit in the emergent qualities of virtuality and social life. Contemporary philosophical approaches to the Internet must avoid the pitfalls of the implicit concept-independence and pre-ordained and inherently conflicted conclusion/premises of the mind-independent approaches of subjective idealism. Post-modernist thought in this form offers no response to experience beyond perception. But equally this cannot mark a return to the dark days of positivist essentialism and scientific dogma and atomistic theories of surface reality free from emotion, feeling, intention, recognition and perspective. There is no reason élan vital cannot refer to both abstract ideas and material nature.

Netmodern theory suggests belief in *élan vital* or *élan collective* is equivalent to belief in *élan X.* For X it is possible to substitute any on the infinite canvas of organic or inorganic matter, concepts or ideas. The *Law of the Conservation of Mass* suggests matter can be transformed but not eliminated. Reality does not go anywhere, it just changes shape like Serres' harlequin. There cannot be qualitatively different forms of knowledge, only qualitatively different validity claims and contexts. Ideas are not necessarily arbitrary or idiosyncratic fantasies. From subjective and inter-subjective perspective we perceive their texture as good or bad, fallacious, false, or distorted. From objective and inter-objective perspective we perceive their surface as empirical and structured. Ideas are context bound on a canvas of infinite contexts. *Élan vital* is both false and distorted as a scientific and empirical description of the molecular constituents of organic matter. This is not an accurate description of the location or reality of *élan*

vital. But less contested and perfectly viable in Netmodern theory is *élan vital* as a conceptual form of reality articulated through language and semantic space. It supports Whitehead's assertion that the ultimate metaphysical philosophy is the relentless creative advance into novelty (Hosinski, 1993). It is more Plato's form than Aristotle's matter but it is no less real. On the Wikipedia page for *élan vital*, there is an uncited quote attributed to the same Julian Huxley so lustily revered by Dawkins for his suggestion that the explanation for the locomotion of a steam engine is its *locomotif* force.

> When I was just last in New York, I went for a walk, leaving Fifth Avenue and the Business section behind me, into the crowded streets near the Bowery. And while I was there, I had a sudden feeling of relief and confidence. There was Bergson's *élan vital*—there was assimilation causing life to exert as much pressure, though embodied here in the shape of men, as it has ever done in the earliest year of evolution: there was the driving force of progress (Wikipedia, 2010).

According to Google this quote re-appears three additional times in its entirety on the WWW. In turn, it is represented as God, a humming modern Belgian train station, and political activism in disputed territories in the Pacific. The first is a complete reproduction of the *élan vital* Wikipedia page on a political discussion forum under the thread "World Church of the Creator". The quote is used to support a suggestion that *élan vital* "is the true God" (A_Poison_Ivy, 2009). The second is a minimalist blog post on a Travel Log website where the quote is posted under a streaming audio file recording of "Central Station Ambience, Antwerp, Belgium, May, 2008". A small new window pops up and plays the audio file of a bustling train station complete with whistles and locomotion while the user is encouraged to read the Huxley quote and presumably draw relation between the metaphorical *élan vital* experienced by Huxley in New York and the traveller's experience "passing through the cavernous multi-story station in Antwerp" (Hopkins, 2008). The final example comes from a comment on a post on the *Bulan Observer* website about plans to develop a new airport for the municipality of Bulan on the southwestern tip of the island of Luzon in Sorsogon Province, Phillipines. The About page of the site describes it as a site that "observes, reacts and exposes injustice and corruption in our town, crime against its people and its

environment for the whole world to know it". The Huxley quote appears in a comment on the airport post responding to a previous comment. The start of this comment sets the stage for the argument for empowered response and action that follows.

> To True Faith ... Don't lose your faith in the future of our town just because of these unpleasant things you see around you. It is hard but there is no fight for progress that's easy. Things will get better if we work together, convince our leaders that now is the time to act and put the welfare of the town first. **We need to redefine many things in Bulan for us to move forward** [emphasis in original]. Your concern about our airport and the need to prioritize things are justified (junasun, 2008).

Further down the author of the comment extols readers to "listen to Huxley's experience of Bergsonian elan vital for you to understand what's meant by it so you can relate it to our goal for Bulan". The Wikipedia quote follows and the post concludes immediately after with, "It is my wish that this Bergson's elan vital be a daily experience among us Bulanians, this 'driving force of progress' especially for our **town leaders** [emphasis in original]".

Perhaps another example of conflated and conflicting realities will help further illustrate the point. Prior to Einstein's Theory of Special Relativity, physicists around the world were convinced of the existence of a *Luminiferous Aether*. This stable, weightless, invisible medium was said to stretch on all vectors across the ever-expanding map of the universe. Its theoretical function was the propagations of light waves across space. The illustrious list of strong proponents and believers included Descartes, Newton, Fresnel and Lorentz and it was used to explain concepts like visible refracted light. The overriding assumption was that once it was found that light travelled in waves, surely these waves required a medium just as sound waves require air or ocean waves require water. This universal ocean for light was postulated as the Luminiferous Aether. Einstein's theory negated the need for this infinite canvas by replacing the account of a single *universal* frame of reference with *inertial* frames of reference accounting for relative perspective. The Aether is a canonical example of a scientific theory that has been proven to be patently false and based on false assumptions. But while it is certainly not the case that every element of universal matter passed through the Luminiferous

Aether, the following examples suggest some of that which did include the invention of the structure of spacetime, a notion of perception from one of the great romantic poets, and dark matter/energy.

It is readily assumed that the emergence of relativity negated the need and reality of the Aether as a side effect of scientific invention. But history suggests relativity may have partially emerged from Einstein reading a book by French mathematician Henri Poincaré at turn of the 20th century that identified the lack of scientific evidence for the Luminiferous Aether as one of the three greatest unsolved problems in science (Holt, 2005). Perhaps one reality of the Aether is its existence as inspiration for a magical rewrite of the laws of physics, upsetting some of the most deeply held convictions in science in the process. Instead of canonical exemplar of bad science we can perceive it as canonical inspiration for brilliant science. Even the empirical demise of the Aether as medium did not stop Einstein from postulating for years after the theory was obsolete about the possibility of a 'new Aether' with physical properties but no substance or state of motion. The vast majority of the scientific community ignored this tangent of Einstein because of embarrassment about the initial faith of the physics academy in the concept and a general belief that Einstein only persisted with this line of investigation out of respect for the value placed on the Aether by his mentor Lorentz[8] (Kostro, 1992). But he may also have recognised similarities in the faults of the need for the Aether to support an existing theory and his own Cosmological Constant[9], a misplaced mathematical pause button arbitrarily counter balancing the effects of gravity and explaining a static universe.

In a mimetic sense this metaphorical concept of a new Aether exists as another form breathing life, like a classic élan vital, into the socio-cultural, if not physical, realities of

[8] Lorentz's electron/aether theory suggested a strict separation between matter (electrons) and aether where the aether occupied a higher plane of reality as a perfectly undetectable medium. Interestingly it was Einstein's inspiration Poincaré who improved on Lorentz's mathematics for the theory and would have been credited with inventing Special Relativity himself were it not for his preoccupation with the overarching reality of the Ether.

[9] Einstein called it the "biggest blunder of his life" but discovery in 1998 that expansion of the universe was accelerating (cosmic acceleration) has reinvigorated interest in the potential reality of a cosmological constant or something similar. Who knows? Maybe one day the Luminiferous Aether will experience such redemption.

the Luminiferous Aether. Perhaps it exists as a precursor to more powerful ethers touching the soul and spirit through vibrations of meaning as in Edgar Allan Poe's 1844 fictional account of a *Mesmeric Revelation*.

> In the ultimate, unorganized life, the external world reaches the whole body, (which is of a substance having affinity to brain, as I have said,) with no other intervention than that of an infinitely rarer ether than even the luminiferous; and to this ether–in unison with it–the whole body vibrates, setting in motion the unparticled matter which permeates it. It is to the absence of idiosyncratic organs, therefore, that we must attribute the nearly unlimited perception of the ultimate life. To rudimental beings, organs are the cages necessary to confine them until fledged (Poe, 1844).

Poe's discourses on *unparticled matter* as a medium consisting of mind (in contrast to brain) suggest his awareness of how his ruminations on matter, fictional or not, express his ongoing fascination and conflicted relationship with the natural sciences: "Science! True daughter of Old Time thou art! Who alterest all things with thy peering eyes. Why preyest thou thus upon the poet's heart …?" (Poe, Sonnet — To Science, 1989). In this example, Poe is representative of a grand tradition of scholastic philosophers engaging with the natural science through art and aesthetics. This is a tradition reinvigorated through Netmodern theory as an alternative to singular and monological reasoning on the privileging of empirical methods and encased claims of comprehension in the tradition of Hume but part of a much longer lineage of philosophical classism and prejudice.

> Philosophy is written in this grand book - I mean the universe - which stands continuously open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics... without which it is humanly impossible to understand a single word of it. Without these one is wandering about in a dark labyrinth (Galilei, 1957).

After all it was not the poets but the mathematicians who mistakenly put the mythical Luminiferous Aether everywhere in the Cosmos before shyly retracting this conviction. Poe simply placed it in narrative for posterity where it still sustains its own form of truth and perspective. Just as the over enthusiastic vigour of social constructivists leads to

shambolic reasoning and paradox, empirical science must be wary of too enthusiastically claiming ownership over the parameters of reality. It is perhaps this wariness of relentless conviction that leads to a cacophony of online scientific debates about a comparison between the Luminiferous Aether and *Dark Matter*. Some of the similarities between the concepts are uncanny. Just like the Luminiferous Aether, Dark Matter has been postulated without any physical evidence to address a gaping hole in the explanations of existing physical science theory. In theoretical terms, the primary function of Dark Matter is to preserve the integrity of the existing model of mass and gravitation. It may or may not physically exist but it MUST exist if the model is sustainable. The debate rages around whether it is the theory of gravitation that is flawed or whether 95% of the mass in the universe is undetectable with scientific instruments and methods.

> I'm unhappy about references to dark matter made as if it was a settled topic, a known, validated scientific fact on a par with photons or Pluto. Maybe the problem is with the terminology. Talking about dark matter rather than, say, "gravitational anomaly in galaxies" (GAG) is a good way to preserve the illusion that we know what we are talking about. It makes it *sound* real [emphasis in original]. But just because we gave it a fancy name doesn't make it more real than aether or the tooth fairy ... We find ourselves in the situation of physicists in 1850 whose aether-based theories predicted phenomena like aether drag and aether wind, which experiments repeatedly didn't find. It's exciting, it's fun. It's a good thing for physics, because it means there is something new to be found (de Dinechin, 2010).

Contrasting online arguments suggest that unlike the Aether, tests for the hypothesis of the existence of Dark Matter have returned positive results (Knop, 2010). Others explain away those results as accurate but not necessarily representative of the existence of Dark Matter (Angus, Famaey, & Zhao, 2006; Temple & Smoller, 2009). What is apparent is that regardless of how concrete concepts like the Cosmological Constant, Luminiferous Aether, or Dark Matter appear to science, these findings are always rooted in time, place, and context and subject to change. Interpretations of these findings are no different than examining Poe's meta-scientific dalliances in narrative form. This is one integral reality: change, evolution, and entropy in a multiplicity of creative, emergent, mechanistic, empirical, aesthetic, theoretical, ethical, ego and eco forms. One aspect

that differentiates Netmodern theory from the Enlightenment, Modernist, or Post-Modern paradigms is commitment to this ever-changing and socially mediated world without losing recognition that the vast majority of that world is beyond our comprehension or discovery, but no less real for it.

7.5 Quantum Sociology

One of the most legendary anecdotes in science has been attributed to a vast swath of the great thinkers of the last 200 years – Huxley, Pauling, Sagan, Eddington, Carroll, Thoreau, Russell, Locke, James, and Hawking to name a few. The basic story is a fable of infinite regression always involving turtles but sometimes engaging with other wild animals. In this parable a King asks a wiseperson to explain how the earth does not fall out of the sky. The wiseperson replies, "The earth is resting on an elephant." "On what is the elephant resting?" "The elephant is resting on a lion." "On what is the lion resting?" "The lion is resting on a turtle." "And on what ...?" "You can stop right there, your majesty, it's turtles all the way down."

In the spirit of the *chicken and the egg* this jocular metaphor constantly emerges in scientific discourse from both strong advocates and sceptics of privileging empirical reality. It speaks to the great difficulty of proving any truth, even in the *a priori* scientific disciplines of mathematics and logic. The regressive *truth* in the parable is that each proof requires a further proof but it could be told in another way to suggest the fallacy of circular arguments of *petitio principii* or 'begging the question'[10] where theory and proof support each other infinitely or perhaps most typically in science as an axiomatic argument where truth must rest on accepted precepts or laws. Koestler observed that in living matter and social life there was no evidence to suggest the existence of any entirely self-supporting non-interacting entities (1967). Wilber connects the turtle story with Koestler's holons as simultaneously a whole and a part of something in an infinite probability wave from the subatomic through to the cosmic.

[10] No need to to be too hard on the 'hard' sciences in this round-up of the skeptics trilemma of proof. 'Begging the Question' also applies to the paradox of theories of hardened social constructivism that suggest no realities independent of subjective experience exist except for the theory that no independent realities exist.

> Turtles all the way down, holons all the way down. No matter how far down we go, we find holons resting on holons resting on holons. Even subatomic particles disappear into a virtual cloud of bubbles within bubbles, holons within holons (Wilber, 2007).

Netmodern theory suggests this principle as one of many outlined in this chapter inspiring potentials for greater integration and integral philosophy and the siren call for our entrance into a "new era in the history of time, an era in which both being and becoming can be incorporated into a single noncontradictory vision" (Stengers & Prigogine, 1984: 255).

In general Netmodern accepts there is an element of the absurd about fashioning *a posteriori* causes in general, let alone in an outrageous bid to link quantum philosophy with social realities. Nobel Prize winning physicist Richard Feynman was typically good natured and tongue-in-cheek when at a dinner party with friends he referenced some of the challenges of reasoning from known facts back to possible causes.

> You know the most amazing thing happened to me tonight. I saw a car with the license plate ARW 357. Can you imagine? Of all the millions of license plates in the state, what was the chance I would see that particular one tonight? Amazing (Feynman, 1998:xix)!!

But Feynman was also a very accomplished safecracker claiming both physics and safecracking demanded the search for subtle clues and patterns beyond the obvious. In this spirit the case studies analysed in this thesis are deductively searching for clues about potential emergent forms of social agency and form while *Quantum Sociology* induces meaning from a metaphorically theoretical framework. Following are examples of how Netmodern is specifically informed by quantum philosophy as it can be metaphorically related to emergent social theory.

Cause, Effect and Doubt

Concepts of cause and effect are central to arguments for empirical observation as the only means of discovering reality. Causation suggests causes must always precede effects as a strict condition but Netmodern challenges this interpretation and rejects the notion of causality as exclusively event regularity. This frees up the critical or speculative realist to seek the causes of an event in something other than its allegedly conjoined event. Factors that can causally govern events in critical realist philosophy include power, relations, social structures, and mechanisms (Brown et al 2002). Einstein's principle of relativity also suggests these relationships are additionally bound by limits of distance and time. Since nothing can travel faster than the speed of light, the laws of classical physics suggest two events cannot be instantaneously intertwined in cause and effect if the physical distance between them is such that the effect must be realised in shorter time than it takes for the travel of the speed of light. But instantaneous communication between distant objects, or *nonlocality*, is a general feature of quantum mechanics and a property of the nature of the wavefunction. In 1997, physicists at the University of Geneva sent photons seven miles in opposite directions and showed how interfering with one provoked an instantaneous reaction in the other. This supported Pauli's Exclusion Principle formed in 1925 that certain pairs of subatomic particles, can each instantaneously 'know' what each other is doing even when separated by considerable distance. This violates some of the conditions of Relativity and in physics is termed 'Spooky Action at a Distance' involving **faster-than-light-speed propagation of matter, energy, or information.** If we apply this theoretical construct to social life it challenges strict interpretations of cause and effect in social activities and supports constructs like a 'feeling' of trepidation experienced by a parent halfway across the world at the same moment as their son or daughter is involved in a car accident. According to positivist or strict empiricist approaches to social theory, this type of metaphysical connection would be typically rubbished as mere coincidence. Certainly concepts like 'Spooky Action at a Distance' are more comfortable for social scientists that observe and document such phenomena every day than for strict empiricists uncomfortable with the breaching of axiomatic fundamentals. Quantum philosophy opens up new opportunities for us to consider these emotional and

involuntary responses as just as ‘real’ as a conversation between mother and daughter delaying a departure that later results in a car accident at a local intersection.

Superpositions and Ideas

While ideas and perspectives are rooted in time and place, it is futile to seek sociological portraits frozen in these moments offering eternal representations through the eyes of the visitor or the curator. This is to assume that we look in on the narrative portrait and produce infinity of meaning as the portrait is prohibited from looking upon us. The sociological dynamic of the *observer* and the *observed* is part of the transitive element of research into social life, forever changing and shifting in form, perspective and viewpoint. These are the metaphorical superpositions of social reality. Wavefunctions do not just describe a statistical distribution of the possible states of a particle. This would offer mathematical properties to explain an electron as being precisely in one state or another even if a superposed wavefunction suggests it could be in either one place or another, or both, or neither. But quantum mechanics insists an electron can and often is in two places at once, or as in the case of the negative photons in the Hardy’s Paradox experiments, in negative place despite the apparent impossibility of that reality. In many ways this fits much better with emergent theories of social life suggesting an inherently interpretive and subjective view of the reality, or location, of a social concept. It is not difficult to allegorically extend this metaphor to a concept like racism that can be seen through quantum theory to exist in many forms and places at the same time. Racism may be a socio-cultural form and occupy a reality independent of its enactments. Alternately it could be only the actions (particulars) of racism that form the reality of the concept. Either way, it does not make the socio-cultural construct of racism any less real, it just suggests that ideas and concepts can be perceived in social research as waves, equivalent to a swimming pool where lots of people are splashing and swimming around causing emergent turbulent shapes on the surface forming together through ripples and scintilla to shape a superposition of individual or collective thought.

Fluid dynamics of the Observer and the Observed

In quantum mechanics the particle is not equivalent to the wave. Instead the wavefunction is all we have to describe the reality of an atom behaving in ways that defy the laws of classical physics. Al-Khalili describes this clearly: "The wavefunction is not the atom itself but only our description of how it behaves when we are not looking at it" (2003:85). The intransitive is often the object of social research, like election results that exist as constructs beyond political discourse. Just because X mediates Y does not mean that X produces Y. But to assume that Y holds still in time and place for a social portrait with fixed and directional positions of observer and observed is to introduce an allegorical collapse of the social wavefunction. Social life does not snap to attention on our command but too often we assume it does through reductive and non-interpretive snapshots of reality in social research. This does not imply that these snapshots are any less real than the fixed locations and momentums of observed particles in classical mechanics. These observations are what we see if we insist on using a contained and positivist toolkit for social description. But if we strive to find glimpses into the multiple multiples and superpositions of stratified reality through the resolution of a Hardy's Paradox for humanity, we find sideways glances into the textual and vibrant life of the social world.

> What anthropologists call the ethnographic present (that is, the idea that eternal assertions can be made like Nuer religion is ... or middle-class culture is ...) simply seems absurd when you think about it. The idea that we are writing in time, at a particular moment, which is partial and positioned and in place is a major advance. I think we are also writing against time, trying to capture an outline of an existence that is fleeting (Back 2007:153).

In this context, it is important we recognise that any knowledge of certain aspects of the state of a social object, such as an interaction or observation rooted in temporal space, does not imply any certain knowledge of its future state. This is the indeterminism of social life and it rejects the soothsaying and forecasting of positivist social planning without discarding the transitive or intransitive aspects of the reality under investigation.

Theory, Objects and Truth

Reliable knowledge is difficult, but not impossible to obtain in the complexity, openness and ambiguity of social life. It is a challenge shared with quantum mechanics and beyond to all realms of scientific endeavour in more subtle forms. If we bounce light off an electron the electron will not be in the same place as it was when we observed it. If we put a thermometer into a swimming pool to measure the temperature, a phenomenon of exchanged heat will occur and this will unavoidably impact the temperature readings of the water in the pool. It is difficult to form concrete correspondence in reality between object and interpretation so that the reality of the object is maintained. Critical realism accepts Bauman's argument that "modernism coming to terms with its limitations" requires innovation and advancement in techniques and approaches to social research (1975). Equally it rejects evolution of social theory residing in defeatist black holes and logical death spirals of strict interpretive realities, universally subjective and lacking any intransitive meaning. For it is even more difficult to sustain a conventionalist standpoint on meaning that suggests knowledge is true only because it is useful, and as such all knowledge is equally useful. This is pure instrumentalism and as Sayer argues in the spirit of Critical Realism: "The question is not only what works, but what it is about the world that makes it work" (Sayer 2000:42). To argue for this in social life is to argue that some form of knowledge is more or less true or useful than another form of knowledge and therefore not all knowledge is equally fallible. There is a multiplicity in how we may come to have knowledge but it is not necessary that recognition of a metaphysical thesis translates to an epistemic thesis concerning how we know reality. Critical realism involves a partial switch from epistemology to ontology and within ontology a change in emphasis from events to mechanisms (Danermark 2002).

Netmodern further extends this to incorporate inter-subjective and inter-objective realities. Just as quantum mechanics seeks to unearth properties particles possess to make them possible objects of knowledge, critical realism seeks to do the same with societies and people (Bhaskar 1978). In the process critical realism argues against both a foundationalist 'epistemic fallacy', with a positivist reduction of reality to empiricism,

and the anti-foundationalist 'genetic fallacy' where reality transforms over time through the contradiction of an implied fallibility that cannot be fallible (Cruickshank 2003). Naive objectivism attempts to relate objects and meaning independently of the internal relations of discourse that help identify and makes sense of the referent. This vertical relation is replaced in relativist theory by horizontal relationships between signifier and signified leading to the death of the object, and with it any intransitive reality. In response, Sayer accepts that meanings are not locatable at single points in the network, but are formed through difference in a triangulation, not a linear line, but a triangle of signifier, signified and referent (Sayer 2000:37). This once again refers allegorically to the quantum realisation that reality is not fixed at a point on an axis of location and momentum, but instead rides on a wave in a multi-dimensional cloud of potential realities. Inter and intra objectivities are the intransitive dimensions of social reality and intra and inter subjectivity forms the core of the transitive dimensions but it does not follow that adequate statements about the world need be value-neutral. Bhaskar argues for 'epistemic relativism' that implies relativism about the transitive objects and non-relativism about the intransitive objects (Collier 1994, Sayer 2000). In social life if we suggest that it is only possible to interpret other discourses through our own, we are practicing social soliloquy by reducing mediation to construction and ignoring independent discourses outside of our own. Arguing for the mind-independence of reality undermines hopes of some privileged relation between discourse and the world by suggesting we can only look inward instead of inward and outward in our explorations of the social world. But if we try to put pins in a map to freeze social objects in time and space as some kind of referent, we are ignoring the multi-dimensional cloud of potential realities in social life. Some truths are relative and some are objective but it is in the imagination that we find our own boundaries.

> When a man desires ardently to know the truth, his first effort will be to imagine what the truth can be. He cannot prosecute his pursuit long without finding that imagination unbridled is sure to carry him off track. Yet, nonetheless, it remains true that there is, after all, nothing but imagination that can ever supply him an inkling of truth (Pierce 1955:43).

It is the anti chaos-theory to suggest we have an *a priori* infinite map of reality in our minds. "Will our life not be a tunnel between two vague clarities? Or will it not be a

clarity between two dark triangles (Neruda, 1991)?" The essence of any science is not invention, but discovery and we are limited in seeking new objects of knowledge and reflection only by our imaginations. Netmodern theory argues against an implied 'hall of mirrors' analogy and all the idealist and wishful constructs that accompany the perceived collapse of subject-object relations in reality. Knowledge does not mirror the world but rather interprets it so that expectations and practices it informs are fallible but evolving. Just as in quantum mechanics we can never know the absolute position and momentum of a particle with certainty, we can never know explicit reality of a social object, through our observations or through our mind-independence. It is not a question of seeking truth in social life but rather 'practical adequacy' similar to the engineering law of developing functions that are 'fit enough for purpose' (Sayer 1992).

Social Uncertainty Principle

Indeterminacy in quantum mechanics states that we can never know at the same time, and with infinite precision, everything about a quantum system, regardless of whether we attempt to measure it or not. Heisenberg's Uncertainty Principle is an exemplar of indeterminacy as it states we can never know the location and velocity of an electron at the same time. This version of uncertainty is often misunderstood as somehow relating to the role of the observer or the act of observation. This is particularly the case when Heisenberg's principle has suffered misplaced application in social theory or interpretations of the philosophy of science. It is frequently used as a prop for legitimising the postmodern project by suggesting that if even physics does not have an objective truth in science then it should hardly be a requirement for substantiating social, literary or humanistic theory (Aronowitz 1988). Perhaps *uncertainty* is a misnomer in this case as it seems to suggest that we are grasping for certainty but it remains just out of our grasp. What Heisenberg's principle actually says is that since wavefunctions tell us everything we can know about the state of an electron we simply cannot say anymore about it. Anything further is uncertain, which is quite different from saying we are uncertain if the wavefunction is a reliable or correct description of the electron state. In this case the wavefunction is the intransitive real and its multiple interpretations are the transitive. Rather than attempting to apply it to social life by

suggesting that Hesisenberg's principle undermines any certainty in scientific or social scientific endeavour, it is possible to consider a *Social Uncertainty Principle* simply suggesting a limit on what we can know or predict about a scientific or social object. This applies to both foundationalist and anti-foundationalist approaches as these limits are infinite and expand on both empiricist and mind-independence universals.

Duality in Balance

Despite a growing volume of internal and external critiques, the social sciences continue to engage in a struggle between methodological dualisms. Examples of the raging debates include quantitative or qualitative methods, hermeneutics or positivism, universalism or relativism, external reality or mind-independence, and theory or practice. Typically this tendency towards dualism is reinforced through hiring practices in higher education institutions, agency funding criterion, and peer pressures and expectations within the academy. One of the results of this constant friction is the splitting of the academy into thinkers in theoretical or practice-based silos regularly 'preaching to the choir' but making practices of interdisciplinary research as elusive as ever. Traditionally this meant it was difficult for academics in the 'hard' sciences like chemistry, biology, or computing to work with social scientists who adopt an entirely different – sometimes irreconcilable – paradigm of reality. In the experience of this research project, this is one of the major barriers to successful interdisciplinary collaboration. Netmodern theory seeks to address this divide by further developing sociological theory in the areas of communication, IT, and science and technology. Realists in science find it very difficult, if at times even impossible, to work with anti-realists emerging from social science or humanities and vice versa. These collaborations falter in the same way that strict creationists and strict evolutionists struggle to productively debate and discuss the origins of life. But quantum mechanics teaches us that every elementary particle has its associated antiparticle, sharing the same mass but opposite charge. When the two come into contact all their properties cancel each other out in burst of energy obeying Einstein's $E=mc^2$ equation. Until the experiments verifying Hardy's Paradox this was an established theory in science. But the story gets

really interesting when we consider the known and visible universe as made up almost exclusively of matter with virtually no visible antimatter. This *asymmetry* is one of the great unsolved problems in physics but it suggests once again that we are simply missing something in how we understand the yin and yang dynamic of particles and antiparticles (Close 2009). In social research it allegorically might also suggest that we are missing much of alternate viewpoints on issues of reality. Materialists can only see the matter of reality while idealists can only see the anti-matter. When they come in contact they can annihilate each other in anti-intellectual slugfests and orgies of theoretical violence where each side, in turn, attempts to prove the validity of a specific approach to reality.

This issue is made all the more transgressive by the often universal positions adopted on each side of the debate: strict empiricism or mind-independence. Like creationists or evolutionists, the imposition of universals, leaves little or no room for further discussion or collaboration. Netmodern theory provides the proverbial third way in this regard by building on Bhaskar's epistemic relativism or concepts of transitive and intransitive elements to research into emergent agency and forms in social life partially propelled by internetworked digital media. Whether or not you agree with these definitions of reality is perhaps less important than the opening of spaces that critical realism affords by accepting part of both universal arguments while rejecting the universal tendencies that close systems of discussion and debate. Social science must open itself to the possibilities and learn from the Hardy's Paradox experiments that matter must not always destroy anti-matter. Just because physicists can mainly only see matter does not stop them from believing just as firmly in the existence of vast anti-matter and wonder why we cannot see it. In this spirit Netmodern theory rejects the 'either-or' approach of these intractable dualisms in favour of a 'both-and' approach and methodology (Danermark 2002).

Entropy and the Arrow of Time

Entropy predates quantum mechanical concepts but it is included here as a reference because it speaks to a theoretical step beyond Newton's mechanical models and has

already enjoyed successful application in social theory (cf. Serres 1995). According to Newton no energy is lost from mechanical systems so time is reversible and the genie can be put back into the bottle at any stage. This implies there are no chance effects in principle as the system is effectively closed at all times. In contrast, the laws of thermodynamics suggest the energy of the world remains constant and entropy tends towards the maximum. This speaks to an open world of randomness and disorder where heat and life are constantly leaking in alignment with the arrow of time. Entropy is unique in this regard in physical sciences as it is the only quantity aligned with temporal direction, from the past to the future. For Michel Serres, transcending the closed Netwonian systems and the entropic tendency towards disorder is an opportunity to fuel invention in social life (Assad 1999). In this there is an alignment with Chaos Theory in quantum mechanics as the universe inexorably progresses from an ordered state to a disordered state. When the scale of this progression reaches a critical mass, equivalent to even a cubic millimetre of air, the disordered state is permanent (Gleick 1988). It is a critical concept for any intellectual theory to consider that the universe is and will infinitely be getting messier and disorganised. Consider how this contrasts with attempts in positivist theory to explain and organise all that occurs in natural and social life. Comte's positive philosophy was driven in pursuit of facts and laws against speculation and contemplation and "with organization and order instead of negation and destruction" (Marcuse, 1941:345).

From this perspective it is an implicit notion that we will eventually be able to ‘solve’ or find ‘truth’ in all things and we are only limited by our knowledge and tools. This flat modernist ontology contrasts greatly with the stratified and disordered knowledge spaces of critical realism. For Netmodern theory it is readily accepted social research constitutes reified life and fragments, most relevant to the participants, time and spaces where they are gathered. In this context, Serres speaks of knowledge as a hybrid and composite harlequin, removing one costume to reveal another, and another to infinity (Serres 1995, Lechte 1994). Analogous to how thermodynamic chance opens up the energy system and allows for its survival, knowledge as mongrel opens further research opportunities for invention and consideration in social theory.

Resolving Hardy's Paradox in Social Life

From the perspective of Netmodern theory, social life is *casus irreducibilis* and there is infinity of relations and constructions in every object and moment. The universe is filled with unlikely paradoxes and paradigms but these need not be contradictory or inherently equal in all regards. Through learning and experience and like the transporter devices on Star Trek, we can traverse vast distances in a quantum moment[11]. Reality is transitive and intransitive, subjective and objective, true and false. All objects of knowledge are Serres' mongrel harlequin, both here and there at the same time, like the photons in the quantum experiments verifying Hardy's Paradox. Seemingly fixed objects and subjects are caught up in waves and clouds of meaning and we cannot be so easily fooled when they seem to snap to attention at our glance. But glance (with all our senses and beyond) we must if we are ever to advance our constituent knowledge. Science is and must embrace the poetical other to find its imagination and 'be there' for the unexpected. The entropic world gravitates to disorder and research on any aspect of it must be open to chance and exception. We are fighting a losing battle if we seek to map the universe free of relation to mapmaker and territories for with every passing moment on the arrow of time, the situation gains disorder and complexity at an alarming rate beyond our facilities. Yet the transitive and intransitive dimensions of knowledge are intertwined and disentangling them in particular time and place is part of the responsibility of investigation.

> Picasso saw in two metal toy cars, placed bottom to bottom, the head of a baboon; in everyday nails, he saw the feet of a chicken; in bicycle handlebars, the horns of a bull; in scraps of wood and paper, a guitar. There was nothing symbolic in these transformative sights. The toy cars remain what they are (toy cars) to become what they are not (the head of a baboon) which they could be (in sculpture) if only you can see the likeness, the poetry in the banal, the fantastic in the quotidian. Such strategies are not representational. The toy cars do not represent the head of the baboon. They are the head of the baboon. And they are not. There can be a make believe without falsity, a make believe with reality (Rohdie 2002:4).

[11] In 1993 a group of scientists from IBM showed that perfect human teleportation is possible in principle, but only if the original is destroyed. The primary feature of their research was innovative use of the paradoxical feature of quantum mechanics known as the Einstein-Podolsky-Rosen effect (Bennett 1993).

The scientists who sought to resolve Hardy's Paradox through the sideways glances of weak measurement found the results baffling and ridiculous, but it is unique to quantum mechanics in scientific thought that more than one interpretation of a scientific theory can exist. Unique, except of course, for the social domain, where ideas and concepts can describe the same subject or object without nullifying each other like the annihilating meet of matter and anti-matter. It is not even allegorical to suggest the results of those experiments teach us something about how we perceive social life and interaction. One primary finding of the Hardy's Paradox experiments is reality behaves differently when we are *not* looking at it. It is an argument for reclaiming reality from the God-like power of human observation entrusted to mind-independence. Our observations are fuelled by imagination and the opportunity for mediation of reality is the greatest gift we have in observing and learning in social life. We must free ourselves from the death spiral of meaninglessness and boldly pronounce the return of reality in social life fuelled by critical thinking and imagination.

> I have become tired of reading elegant pronouncements on the unknowability of culture and social life; there is no compensation in these bold statements of defeat for me anymore. The task, it seems to me, is to pay truth the courtesy of serious effort without reducing the enigmatic and shifting nature of social existence to caricature and stereotype. (Back 2007:153)

Confidently striding the highwire act over the binaries, reductives and universals so prevalent and fashionable in social research is the task of the Netmodern theorist embarking on investigation into objects of scientific and social life.

7.6 Yoga of Knowledge

Society is really a pluralist process of multidimensional interactions. Researching transitive and intransitive realities in social life requires a multi-faceted sociological imagination: "Neither the life of an individual nor the history of a society can be understood without understanding both" (Mills, 1959). In the NPM introduced earlier in this chapter this translates to investigating the confluence of agency, biological matter, culture and structure in social realities. This basically implies the need for an integral research perspective or imagination if we seek to investigate emergent realities.

Einstein said: “Logic will get you from A to B. Imagination will take you everywhere”. But sometimes our destination is B or we want to see what B looks like when revealed. Logic can also provide invaluable intellectual bridges between *potential* A and *actual* B. When Kant wrote *The Critique of Pure Reason* seeking synthetic *a priori* truths at the expense of analytical reasoning, some of the limitations of logic as method were exposed. These were particularly relevant to social life where he suggested the only objects of knowledge were experiences of the mind and therefore analytical reasoning could not be used to expose these realties as it cannot tell us anything that is not already self-evident. As discussed in many different forms in this chapter, Netmodern accepts parts of the Kant knowledge paradigm but rejects his outright assertion that anything beyond mind-independent experiences is unknowable. The Netmodern researcher requires a combination of critical thinking and imagination to prosper when engaging objects of social research and taking them ‘everywhere’. But these investigations can be rudderless from inception if the researcher is blinded by self-absorption or incapable of transpersonal practice. Tackling the multi-dimensional and intersecting reality spaces of biological matter, agency, culture and structure requires a healthy and invigorated soul and spirit. Much of this chapter has explored the Netmodern approach to the multi-dimensional and faceted ‘territories’ of reality but it does not intend to make the common mistake of leaving the mapmaker out as some disembodied monad. The performance of social research is as much the mapmaker as it is the map or territories and the *Yoga of Knowledge* explores some relevant practices for preparing the soul and spirit for conscious engagement with social life.

In the 19th century fable of *Flatland*, a two-dimensional creature, Mr Square, is mystified by the third dimension (Abbott, 1992). He knows *left* and *right* but cannot conceptualise *up* or *down*. When he encounters a three-dimensional creature, Mr Sphere, he cannot understand the stranger’s seemingly magical ability to vanish and reappear, and to change size as he passes through the plane of Flatland. With no way to conceptualise three-dimensional phenomena, Mr Square is hopelessly perplexed by something that is self-evident to anyone capable of conceptualising depth. Eventually through the teachings of Mr Sphere, Mr Square achieves this ability and also recognises how the ignorance of his horizontal plane worldview are in fact evolved from the plight

of Mr Point who is so self-absorbed and ignorant as to perceive himself as the sole inhabitant, monarch and universe in one. Any attempt to communicate with Mr Point is perceived as originating in his own mind. But Mr Square offends Mr Sphere when he realises that his new found abilities to conceptualise previously unthinkable spaces of one or three dimensions suggests the possibility of fourth, fifth, or sixth dimensions of spacetime and beyond. While Mr Sphere was happy to teach Mr Square about the marvels of depth, he is annoyed by the presumption that his reality is not necessarily final and complete knowledge. The metaphorical value of this tale to Netmodern theory is explicit in these interactions. Mr Point is the ultimate vindication of egocentric morality and lower knowledge manifesting itself in life experience: His mind-independent experience makes up the universe. Mr Square is the descended grid with all the benefits of horizontal width but no complementary perspective or depth. Mr Sphere is the recognition of the values of depth but accompanied by a righteous indignation that is ultimately just another, more subtle, form of flattening. The potential for further dimensions is the recognition of turtles all the way up and turtles all the way down. And the promises of the Netmodern Yoga of Knowledge are in the opening of metaphorical Mr Square's mind to elevated consciousness and the transpersonal potentials of the acquisition of higher knowledge. Space curves as it is boundless and infinite. There are no edges to the Universe but there are explicit edges to the flatlands of our current model of collective intelligence[12].

Netmodern is a critical theory of the realities of the ultimate fate of the persuasively Flatland socio-cultural world we inhabit. We can question our social reality in the same way we can question the ultimate fate of the Universe in our cosmological reality. The former is dependent on the trajectory and momentum in socio-cultural properties of individual/collective existence and interaction. The latter is dependent on the physical properties of mass/energy and density in the universe and its rate of expansion, stasis or contraction. Plenty of theorising has occurred in both fields but the distilled status of the

[12] Some materialists are inclined to cite these edges as crucial to the relentless perception of social and economic advancement of the techno-economic utopians. In "The World is Flat: A Brief History of the 21st Century", Pulitzer Prize winning journalist Thomas ('Mr Square') Friedman uses the flatland metaphor to suggest we are moving into an era of equal opportunity for all global citizens. Among his "10 forces that flattened the world" is, er, 'Workflow Software' and the now defunct online browser provider 'Netscape' (Friedman, 2005).

debate is significantly more advanced for the Universe than for our social life on Earth. There are three potential arguments for the ultimate fate of the Universe. The first is 'closed' through elliptic geometry and suggests gravity will ultimately prove a little too strong and all matter will ultimately be returned through a 'Big Crunch' and eventual collapse into a singularity. The second is 'open' through hyperbolic geometry and suggests gravity and other electromagnetic binding forces will ultimately prove a little too weak resulting in a 'Big Rip' and eventual heat death through maximum entropy. The third option is Goldilocks 'flat' and depends on the Universe occupying an optimal critical density where gravity is neither too weak or too strong and forces interact for infinite duration.

The current rather unpleasant scientific consensus is with the 'open' option and disintegration of all matter into elementary particles of dark energy. Even the most aggressive estimates of the timeline for this process gives the Earth 50 billion years until it becomes tidelocked with the Moon, with each only showing one face to each other. We need to put this timeline in context. About 4.8 billion years ago two microscopic grains of dust floated close enough together to be bonded by electrostatic forces and 200 million years later this became a molten mass called Earth. Around this time an object the size of Mars crashed into Earth blowing out enough matter to form the spherical rock that is the Moon. Most of this matter came from the crust and not the core of Earth and that partially explains why the Moon is lacking in the mineral diversity necessary to support life. About 3.85 billion years ago life formed on Earth. Behaviourally modern humans have been around for less than 0.01% of this span of earth's history. So in that context 50 billion years is a long time to wait for Armageddon. The impatience of humanity has shown an insatiable desire to accelerate this process in our short history of existence and turmoil. In physical terms we basically consciously or subconsciously strive to find ways to turn the Earth into the Moon, bereft of resources in an allegorical acceleration of entropy. In metaphysical terms Aristotle may have helped us to escape the dogma of a flat physical earth but our flatlands perception of global socio-economic life occupying a plane of *critical density* instead of a multi-dimensional *openness* remains. The Netmodern Yoga of Knowledge seeks to instil context and method shaping an integral view of the map, the mapmaker and the territories instead of just

waiting around for the seemingly inevitable individual and collective 'Big-Rip' or 'Big-Crunch' of transcendent and meaningful spiritual life.

Fundamental to emerging Netmodern theory is that social life features the competing properties of all complex systems in the enduring struggle between *homeostatic state* and *self-adjusting change*. These homeostatic and self-adjusting properties are features of both open systems like social interactions or experiences and more or less closed systems like scientific laboratories or server farms. This dynamic is central to the application of Netmodern theory to the material realities of social and economic interactions. The basic premise is that both homeostasis and self-adjustment contain intransitive and transitive properties of existence. This relatively stable, constant homeostatic condition is not immune to natural laws and is therefore constantly leaking energy in the form of self-adjustments but has no means to create new energy. We can compare it to how Overbye summarises the three principle laws of thermodynamics. The first is you cannot create energy: "You can't win". The second is a little energy is being lost all the time in the form of entropy: "You can't break even". And the third is that you cannot reduce temperatures to Absolute Zero: "You can't get out of the game" (Overbye, 1991). Any appearances of added energy, halted leakage or quitting the game are really just manifestations of dynamic equilibrium adjustments and regulation mechanisms. Often the realities of this intransitive homeostatic state of all matter are beyond our perceptions and sensory tools. This is what makes the illusion of self-made life so enticing. We can only know what we know. Without intransitive realities in natural sciences or social life, we are free to craft reality in our own images of subjective experience.

Another example is the way neuroscientists have long understood that the brain can rewire itself in response to experience. This phenomenon of *neuroplasticity* has traditionally been seen as a biochemical response in the brain to external stimuli. It suggests the brain experiences things and changes shape accordingly. Breakthrough research by MIT's Picower Institute for Learning and Memory found that only certain types of environmental feedback trigger plasticity in grey matter. In testing with monkeys involving positive reinforcement for correct answers the study suggested:

"Neurons in the prefrontal cortex and striatum, where the brain tracks success and failure, sharpened their tuning after success. But after failure, there was little change to brain activity" (Loh, Pasupathy, Miller, & Deco, 2008). These types of research findings are grist for the metaphorical mill of management consultants[13] and corporate executives as they seek to consciously or subconsciously produce self-adjustments intended to maintain homeostasis in organisational cultures (Berinato, 2010). These findings suggest particular forms of feedback are useful in shaping the plasticity of neurotransmitters for future actions and decisions. But we can also turn this analysis around and suggest once we have learned about the relationship between feedback and plasticity we can form the neural network of the brain in accordance with some predefined shape. From this perspective the brain is not exclusively *becoming* through experience but rather predefined experiential stimuli can also shape the brain into a desirable predefined *being*. Put simply, it is not just transitive experiences that shape our brains, but also knowledge that particular defined experiences *can* shape our brains. This suggests we simply need the knowledge of the system of the brain in order to orchestrate certain self-adjustments. It is not hard to imagine this in practice where scientists provide subjects with very specific stimuli and lessons with a goal of shaping subject brains into optimal neuroplastic machines. Obviously we know from the quadrants of the NPM that such actions will only impact the portion of reality related to the biochemical matter of reality. But Netmodern suggests this same form of crafted self-adjustments can, and is, employed everyday in social life. Similar to the MIT experiments described here, the Twae project sought to discover the patterns and response to stimuli in Twitter conversations that would ultimately elicit an ideal and targeted social and virtual shape for the Twae Twitter account. In Twae this *socioplasticity* is formed through number of followers, types of interactions, social credibility, etc while in *neuroplasticity* this is shaped by complex brain functions but Netmodern suggests the premise is the same.

[13] In the same *Harvard Business Review* edition as the story about the neuroplasticity research is a spotlight on strategy tools using narrative plots, subplots, and characters rather than maps, graphs and numbers to define strategic goals. This is an example of a subtle attempt to create a 'better map' using qualitative methods.

Central to this theory is the socio-economic processes of *invention* and *innovation*. Popular culture does little to discriminate between these two terms but in Netmodern theory their distinction is critical to reliable interpretations in socio-economic life. Inventions are the creation of something in the mind. Inventions come before innovation but not all innovation requires invention. Innovations are the introduction of new or refreshed methods, technology, or services to ways or systems of doing things. Invention may be and often is accidental. Innovation is always planned. Innovation impact runs from incremental to disruptive on associated systems. Innovation is often interchangeable with 'problem-solving' and if an innovation does not solve a problem, it will create one. These problems do not exist in isolation and innovative solutions often have unintended consequences in associated or disassociated systems. Perhaps most importantly for Netmodern theory, innovators understand the *rules of the systems* into which they apply innovation. Innovations are commonly perceived as distinct from any concept of self-adjustment in systems as innovations are seen as the products of invention whereas self-adjustments are often perceived as the material realities of mechanistic evolution. Netmodern does not distinguish between self-adjustments and innovation and suggests innovation is simply a profoundly misunderstood form of self-adjustment. The Yoga of Knowledge suggests we cannot change the world but we can change our relation to it. We may not be able to create or add energy to our systems of life but we are fully capable of liberating our minds and social dynamics from the constraints of points and flatlands to the possibilities and potentials of infinite dimensions of reality. After all as Einstein summarised in one of the tidiest three-page scientific inventions of all time, $E=mc^2$ and energy is really just liberated matter. Equally matter is just energy waiting to happen. Stored in every human body is 7×10^{18} joules of mass and that is equal to the potential energy of 30 large hydrogen bomb explosions. The Yoga of Knowledge suggests we spend more time seeking to transcend the obvious and less time seeking to substantiate it through illusions of innovative change.

In *The Garden of Forking Paths*, Borges ruminates on the contrast between how his character experiences time and quantum temporal potentials.

> I reflected that everything, to everyone, happens precisely, precisely now. Century after century, and only in the present, do things happen. There are innumerable men in the air, on land and on sea, and everything that really happens, happens to me (Borges, 1962:90).

> He believed in an infinite series of times, in a dizzily growing, ever spreading network of diverging, converging, and parallel times. This web of time – the strands of which approach one another, bifurcate, intersect or ignore each other through the centuries – embraces every *possibility* [emphasis in original] (Borges, 1962:100).

This contrast of actual reality in our day to day lives and the quantum possibilities of diverse parallel lives and universes are not as difficult to merge in our experiences as they may appear. Actual infinity and potential infinity are inexorably linked (Zellini, 2004). Potentiality and actuality are linked through temporal and labyrinthine succession. Information on the Internet is able to move through the network because it is potentially in another place; once it has moved to another location, it is there actually and not potentially. This is common to all forms of change in physical and social life. We can only understand what we know (actually), and we can never know completely what we do not understand (potentially). Understanding is a form of knowledge and when understanding is sufficiently intense and charitable, the knowledge becomes unitive and integral knowledge. The map, the mapmaker and the territories are united through iconoclastic collective intelligence. The Yoga of Knowledge suggests that where there is no charitable understanding there is only bias and self-absorption and consequently only a fragmented, partial and distorted understanding of self and the world of matter, lives, mind, and spirit outside the self. We must avoid strict interpretations of reality that subordinate the laws of nature and spirit to our own desires and cravings for understanding.

> Nemesis follows *hubris* [emphasis in original] – sometimes in a spectacular way, as when the self-blinded man (Othello, Macbeth, Lear) falls into the trap which his own ambition or possessiveness or petulant vanity has prepared for him; sometimes in a less obvious way, as in the cases where power, prosperity and reputation endure to the end but at a cost of an ever-increasing imperviousness to grace and enlightenment, an ever completer inability to escape, now or hereafter, from the stifling prison of selfness and separateness (Huxley, 1970:81).

The soulful and spiritual intuitions of the Yoga of Knowledge suggest means of overcoming dissociations between self, culture, social, and nature. In the Netmodern theorist's interpretation of emergent social agency and forms we can simultaneously pay homage to Plato's divine forms in liberation from body to mind to spirit while embodying compassion and recognition of the other in Aristotle's particulars of social life and relationships. In that spirit, Netmodern is emergent from this research project and is at an infant stage of development so broader application to subsequent research as a theoretical *form* for sociological inquiry is encouraged and a *particular* experience of the researcher in reflecting on the outcomes of this thesis.

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