Information as Exclusion: Towards a Critical Understanding of Everyday Life

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ABSTRACT
This paper seeks to critique the theoretical components of everyday life information seeking through an exogenous incorporation of the sociology of everyday life. In particular, it focuses on the way in which everyday life spaces are increasingly being produced and sustained by practices of surveillance in order to structure information users into geo-demographic typologies of information consumers. The argument advanced is that an analysis of the production of space can enable a more theoretically solid groundwork for understanding the relationship between information users and the social contexts of everyday information seeking.

INTRODUCTION
A major emphasis within everyday life information seeking (ELIS) has been on developing a social phenomenological account of the ways in which social actors seek, use, and share information in order to participate in the mundane aspects of everyday life (Savolainen, 2008). In this model, the dominant emphasis is on the practices of individual information users, embedded within a theoretical model in which information causes, or enables, the individual to participate in everyday life, effectively reifying a model in which information is merely something which is to be accessed or shared by human information seekers. This paper seeks to demonstrate an alternative theoretical groundwork for future ELIS research, rooted in a sociological approach to understanding the production of everyday life spaces.

The theory advanced here focuses on the way in which everyday life spaces are increasingly being produced and sustained by infrastructures and practices of surveillance, in order to structure information users into geo-demographic typologies of information consumers. By exploring the political and economic ordering to everyday life spaces, it is possible to see how information is increasingly reifying institutions of social exclusion. The idea of social exclusion is a synthesis of theories of ‘reflexive modernity,’ in particular, Scott Lash’s (2002) thesis of information as a surplus of exclusion, coupled with recent developments in urban geography which draw attention to the automatic production of space through software and code (Thrift and French, 2002; Dodge and Kitchin, 2011), and emerging theories of topological protocols of surveillance and control (Graham and Marvin, 2001; Murakami Wood, 2008; Galloway, 2004). Information as social exclusion thus calls attention to the ways in which everyday life spaces structure populations of information seekers into categories based on market models of socio-economic status and risk. As such the contention of this paper is that the domain of ELIS has thus far been grounded in a normative model of information as social participation primarily due to its exclusive concern for the information practices of humans, coupled with a relative lack in engaging the social theories of everyday life.

This paper will be divided into two sections. The first concerns a theoretical overview of the ontological politics of ELIS and argues that thus far its focus has been on the capacity for information to enable social participation and inclusion. In other words, it has followed a consistent theoretical model in which users seek out information in order to enhance or further participate in everyday life situations. This has created two systematic problems within ELIS. The first consists of a black-boxing of the conceptual definition of everyday life. The second has been the systematic neglect for understanding the role of non-humans in the constitution of everyday life (cf. Latour, 1992). The result has been a weak, and taken for granted conceptual framework, and a mystification of how or why it is that ELIS perspectives have a “special” access in understanding everyday life.

The second section considers how space, particularly everyday urban spaces, are increasingly being produced through infrastructures of code and software which routinely identify, surveil, and sort users into particular categories centered around a service-sector model of economic markets. As everyday spaces such as shopping centers, domestic environments, schools and work become increasingly layered with surveillance infrastructures, users are increasingly subject to preferential databases of geo-demographic social sorting. A fundamental contention of sociological approaches to everyday life is that space is a central organizing principle for the way in which humans go about living as social beings in everyday life (cf. Lefebvre, 1991). Information needs, uses, and practices of information seeking are therefore, from this viewpoint, a product of the social and material production and organization of space. The exploration into how surveillance structures space demonstrates the need to incorporate a broader political and economic understanding of ELIS. Moreover, in doing so, it will be possible to see how information is increasingly sustaining practices of social exclusion, which in effect run counter to the normative assumptions held within the ontological politics of ELIS theory and epistemology.

PART 1: ELIS AND ONTOLOGICAL POLITICS
This section seeks first to understand how ELIS has conceptualized an ontological politic of “everyday life,” and second to demonstrate that the dominant ELIS narratives tends to (over)emphasize the relationship between information and participation of everyday life, and in many respects ignore the role of non-humans in constituting our everyday lives. The problem is not so much the presence of a gap in the literature, but the political assumptions which frame the theory and method for

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understanding the information practices of social life. Incidentally, there are many examples in which ELIS scholars have recognized the need to draw closer attention to the complex intersections between theory and method in constructing our understanding of ELIS (Bates, 2004; McKenzie, 2002; Savolainen, 2008). The goal here is to highlight some of these dominant discourses by examining some of the key ontological, theoretical and methodological tensions within the ELIS landscape, as well as to tease out the ideological narratives which structure the relationship between information practices and participation in everyday life.

According to Mol (1999), the term ontological politics concerns the way in which the real is implicated with the political, and suggests that the conditions of possibility are never given within the order of things. Instead the basic starting point is to realize that reality does not precede the mundane practices in which we interact with it, but is rather shaped within such everyday practices. Because it is political, what is ontologically real is therefore always open to contestation. The genealogy of ELIS suggests a discipline which is conceptually different from other approaches in LIS; it has its own unique identity, its own set of theoretical debates, techniques, and objects of study. In other words, that it has a ‘special’ way of understanding information in everyday life, and that in effect it becomes a matter of ascribing an ontological distinction between everyday and non-everyday information practices.

Scholarly attempts provide a concise overview of the ELIS landscape prove to be quite difficult in that it appears that ELIS is incredibly elusive in its scope. For Savolainen (2010), ELIS ought to be understood as a major force within the study of information practices because it marks a shift away from non-human information infrastructural analyses towards a conceptual and empirical examination of the relationship between humans, information practices, and “everyday life.” In Savolainen’s (2008) review of the ELIS literature, he suggests that although the discipline itself tries to be relatively broad in scope, nonetheless certain elements concerning the paradigmatic assumptions of ELIS continue to be taken for granted in order to maintain a disciplinary emphasis on the ways in which individuals go about seeking, using, and sharing information within the mundane aspects of everyday life (2008: 51). Savolainen does make a nominal description of everyday life, where he understands it to be “a set of attributes characterizing relatively stable and recurrent qualities of both work and free time activities. The most central attributes of everyday life are familiar, ordinary, and routine, and they qualify the structural conditions of action (e.g., the recurrent ‘rhythms’ of work and leisure hours)” (Savolainen, 2010: 1781). For Savolainen, ELIS might best be understood as a concentration upon routine behaviours and practices pertaining to information seeking, but has led to a false dichotomy between work and non-work contexts. As such, he suggests that ELIS “may be reserved to denote information acquisition taking place in less clearly specified contexts and activities such as hobbies and household care.” (2010: 1781). Thus, ELIS can be understood as conceptualizing everyday life within the domain of non-work, meaning that the paradigm does posit that it is possible to make relatively clear distinctions between work and play (Davenport 2010: 533).

At the same time, ELIS does consider the information practices of “serious” purposes, such as to “monitor everyday events and solve everyday problems” (2008: 51). This explains why, for some scholars, ELIS has been overly concerned about the more sombre aspects of everyday life. For Hartel (2003), it is therefore important to consider the elements of leisure in everyday life settings (see also Prigoda and McKenzie, 2007). The first impression of this broad definition suggests that ELIS is the study of how humans routinely interact with information on an everyday basis, irrespective of institutions of production and consumption. However, the problem here is that the definition in some respects immediately black-boxes the anterior matters which concern the structuring of everyday life. This definition becomes synonymous with routine practices, typically sustained within non-work environments. Still, Savolainen argues that ELIS can be broken down into two primary conceptual approaches for studying information practices. The first examines how people seek information by monitoring daily events through various media such as newspapers or the internet, the second pertains to the problem-specific information seeking brought about by needs (2008: 1786). This in other words, can be seen as a conceptual difference between nomothetic and idiographic approaches: everyday life is therefore conceptualized as either and yet both that which is banal and that which is unique. In a similar vein, Davenport (2010) notes an inherent methodological tension in ELIS in that while the goal of typical qualitative ELIS ethnographic work is to elicit hidden truths or meanings from the subjects, usually truths which cannot be directly observed; at the same time, this poses important questions concerning the researcher’s relationship to the researched, and moreover the status of the participant as either a subject or object of inquiry. This suggests that while ELIS must adhere to a broad definition, it is one which is distinctly rooted in the post-modern tradition which situates subjects within particular discursive formations and communities of practice.

However, despite being a relatively post-modern domain which tries to move beyond a strictly positivist epistemology, the emphasis on human information behaviour (HIB) remains as a powerful force in the discursive norms which ground the methodological practices of ELIS (Spink and Cole, 2006). Be it for routine monitoring or problem solving, a central aim is to develop a theoretical model which establishes very clear boundaries between individuals and social contexts or scenarios, and posits information as the key to bridging these ontological
boundaries. It becomes necessary to review some of the common metatheoretical assumptions in ELIS because the literature has noted a substantial shift from its earlier inception rooted in cognitive psychology towards the more recent proliferation of social science approaches, in effect demonstrating a plurality of theoretical constructs within the field (cf. Talja et al., 2005). In turn, this may permit an understanding of the broader narratives and discourses which have structured the ELIS paradigm. Savolainen argues that the earliest attempts at defining the ELIS landscape included the work of Bates who restricted the analysis in terms of information needed for survival and “successful living” (Savolainen, 2010: 1781). It was not until later that the strictly psychological orientation to ELIS was expanded to situate information seekers within particular socio-economic and cultural contexts, such that everyday life has become much more focused around the way in which an “order of things” is presented to social actors in the maintenance of the material substratum of their world (Savolainen, 2008: 51). This has been expanded to include highly abstract and contingent epistemological concepts such as Anthony Giddens’ concept of ontological security, or Savolainen’s theses of the life-world and “teleoaffective structure” (Savolainen, 2008: 57). These concepts significantly dependent upon a definition of ELIS rooted in the social phenomenological tradition, but also the normative claim that information seeking necessarily reinforces the capacity for individual’s to participate in social communities, or more generally to achieve a sense of coherence within life world narratives. Thus, the order of everyday life becomes a complex of factors pertaining to the way in which the individual is inserted within the fabric of social life, and how a person’s interests intersect with the construction of a meaningful social order.

Another suggestion assumes people use information to participate in everyday life, and tends to follow a relatively static causal model of information seeking. In its earliest genesis, ELIS was originally the study of citizen information needs and seeking, denoting the tasks by which individuals are reified into a political community of state obligations (Savolainen, 2010: 1781). However, it is also important to consider the relationship of information and participation because it has played an instrumental role in shaping the outcomes of various research designs and overall assumptions of everyday life practices. Brenda Dervin’s “Sense-Making” approach is a suitable example into the discursive formation of ELIS as participation, where individuals identify particular gaps within their semantic relationships with the world. The model can be seen as an early attempt to contextualize users within spatio-temporal contexts where gaps emerge as a result of one’s pre-dispositions and interactions with the environment; the act of seeking information is therefore an act of bridging gaps between humans and contexts, and is a narrative which reinforces the belief that access to information is instrumental in filling such phenomenological gaps in one’s life-world.

Information practices are not only seen as enabling social participation, but also can be understood as techniques by which social actors try to “smooth out” social life, in order to mitigate conflicts which arise from socio-economic inequalities, or other such issues which threaten the “ontological security” of social actors. Alfreda Chatman’s Small-World approach to everyday life is a case in point, where she examines the particular information strategies of marginalized groups, or those with low access to social, political, or economic capital. Chatman sees information strategies as tightly bound within the social and political constructions of geographic communities, where basic beliefs and institutions of identity are closely enmeshed within the fabric of work and leisure, thus the repertoire of information sources of such groups tends to be relatively narrow and homogenous in constitution. Typical matters of concern also tend to be restricted to the most familiar social milieu (Savolainen, 2010: 1783). Chatman’s (1996) analysis of the life-world of impoverished groups, or social outsiders as she might suggest, describes how “anomalies” in her research forced her to redevelop her conceptual framework to include deception, risk taking, secrecy, and situational relevance; concepts in other words, which imply that social actors employ strategies to re-inscribe the normative elements of routine everyday living. Thus, particular groups might choose to withhold information or deceive others in order to circumvent social conflict and smooth out the mundane aspects of everyday life. Actors will, as Savolainen (2010: 1783) interprets it, enact a “false social reality” in order to foster the impression that everyday life is better than it appears. Chatman’s analysis deliberately employs the concept of life-world, which she qualifies as “poverty life-world” in order to draw out a discussion of the ways in which social norms intersect with frameworks of social inclusion and exclusion. As Chatman explains, the value of such an approach is to:

According to Savolainen (2010: 1783), Dervin’s approach is significant precisely because it represents an early example of emphasizing the “human” aspect of information users; a shift away from information systems to the contextualized study of humans within social environments. Moreover, the sense-making approach has been a particularly popular model employed in constructing information narratives for social groups who might be defined as “in transition” from one life-world to the next. For example, Meyers et al., (2009) employ the sense-making model in their analysis of youth information seeking, including “Tweens” and other members belonging to the “Millennial Generation.” The study is informed by the assumption that this particular population is ontologically different from other populations of information seekers, in that they are undergoing “significant physical, emotional, and cognitive development during an era of unprecedented social change and technological advancement” (2009: 302).

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“lend legitimacy by insiders that the search for information is an appropriate one. Otherwise, one might indeed search for information but this information might be in response to an illusionary need — or a need not recognized by others as relevant or normal. So, even though each person will approach things from a slightly different set of lenses, what holds a social reality together, and ultimately, establishes proper bounds for information seeking is the recognition by others that those behaviours are customary ones to pursue” (Chatman, 1996: 203).

It is therefore an matter of understanding the intersection between problems of social milieu and everyday life, and seeing how information seeking emerges from such tensions in order to facilitate social inclusion, or a particular ‘way of life.’ This can be done through a manifold of ways, including integrating social actors into communities of practice; allowing social actors to overcome idiosyncratic problems or dilemmas where accessing information is the key to overcoming a particular obstacle; or, as Chatman points out, in smoothing out social conflict by enabling the performance of self in everyday life (cf. Goffman 1959). This analysis, which for all intents and purposes represents only a modest attempt to penetrate the field of ELIS, attempted to examine the various ways in which ELIS follows a normative model which reinforces the belief that information is imbricated within discourses of participation or social inclusion. Proceeding from relatively broad generalities concerning the ways in which metatheoretical assumptions shape the epistemological and methodological choices researchers made in defining everyday life information seeking, then continuing to enhance the resolution of the analysis to include specific case studies of ELIS research, it appears that there are very strong and relatively tacit discourses which equate information seeking with social participation in everyday life. From professional or work contexts to benign spaces of leisure and consumption, information seeking emerges as a powerful conduit for constituting everyday life routines, and in enabling social actors to pursue semantically meaningful relationships in their life-world. This, in other words, posits a normative framework in which information seeking necessarily contributes to reinforcing the ontological security of actors, and in some respects acknowledges that despite the presupposition of routine, everyday life is necessarily always in the process of becoming.

PART 2: SOFTWARE SORTED GEOGRAPHIES, AND THE SURPLUS OF EXCLUSION

The nascent shift towards sociological approaches have thus far tended towards a structuralist or phenomenological approach; a major concern here is the substantial lack in key theoretical approaches such as the sociology of everyday life, urban geography, or actor-network theories of relational materialism. Day (2011) for example, has advanced a similar critique of LIS models using postmodern psychoanalytic philosophers such as Lacan and Deleuze, noting that lack and desire are inherent in the affective, social, and psychological foundations of the self. Contrary to the normative model of LIS, desire therefore cannot be simply ‘filled’ by information seeking. Information users and seekers are therefore problematized as products of larger institutionally constructed cultural forms and regimes of knowledge which rely upon a linear causal model. By introducing concepts such as ‘quasi-objects’ and affect, Day posits a radical critique in order to open up the pandoras box of information users.

This critique shares Day’s concerns for a need to further develop the theoretical foundations of information seeking, but argues that the production of space, and more specifically the layering of informational software onto space, has become a key variable in mediating the relationship between everyday life and the practice of information seeking. As such, this critique attempts to move beyond a social phenomenological approach of studying information practices, towards a consideration of the power dynamics which structure everyday life spaces. Software presents a number of important insights, as well as ontological challenges, which help us understand not only the normative assumptions held by ELIS, but also in conceptualizing the ways in which space and processes of social inclusion and exclusion are becoming increasingly intertwined within the informational flows of digital culture and economy. Therefore, it is the political and economic foundations of everyday life spaces which can offer a more nuanced understanding of the ontology and theoretical foundations of everyday information seeking.

Software is increasingly playing an instrumental role in shaping the routine aspects of everyday life, posing a number of questions for understanding the relationship between space and digitization. This is important in that it complicates some of the dominant discourses (and myths) of contemporary capitalism, which posit that software, and more generally information technology, have led to the “death of distance,” the triviality of time and space; or simply that the invention of the computer will launch our civilization into a new era of ubiquitous information access and interactivity, as posited by a social class of “cyber gurus” unique to our time, such as Nicholas Negroponte or Bill Gates. We see a long standing ontological politics which claims that information technologies have the capacity to transcend the temporal and spatial elements of everyday social life; more than ever it is becoming easier for more people to access global communication networks, putting us closer together into networks of association, and in turn, putting everyone within closer proximity to the flows of global economy and culture. This has effectively created a sublime understanding of digital culture: that the constitution of everyday life by information technology and software will necessarily redefine and uplift the overall human condition (For summaries and critiques of the myth of the sublime, see Mosco, 2004; Giblett, 2008; Nye, 1994). Not surprisingly, social science approaches to everyday life and digital culture have begun to problematize these
assumptions, creating a substantial need to re-examine and critically formulate how space intersects with the material constitution of social life.

From this premise, it is possible to suggest that one of the reasons why ELIS is so preoccupied with discourses of social participation is because from a global political and economic perspective, mobility has become a salient element of digital cultural and economic flows, and have created new social obligations for the individual. The intensification of networked flows of information have shared a deep history with the increasing mobility of capital and labour (Graham and Marvin, 1997; Hardt and Negri, 2000; Mosco, 2009). For some, this has resulted in the the rise of transnational identities as well as new conceptual frameworks for understanding the relationship between individuals and social structures and conflicts (Bauman, 2001), including calls for producing a new disciplinary framework on mobilities paradigms (Sheller and Urry, 2006; Urry, 2000; Sheller 2004). With this a host of metaphors and theoretical concepts have come to populate the landscape of mobility, in order to properly understand the increasing complexity and inter-connection of realms once previously considered discrete, such as the public and private, the human and non-human, or consumption and production. As Urry (2005: 245) explains:

"Overall, then, there is not so much a reductionist but a complex relationality (or global complexity). This involves a wide array of systems of networked or circulating relationships implicated within different overlapping and increasingly convergent mobile, material worlds or hybrids. The global, then, is comprised of various systems, operating at various levels or scales, and each constitutes the environment for each other. Thus, criss-crossing 'societies' are many other mobile, material systems in complex interconnection with their environments."

Not only has information technology and software enabled new forms of class conflict in which capital and labour have become highly mobile and dis-embedded from space, at the same time, institutions of everyday consumption have also been impacted by the injection of mobility, sometimes known as the service sector economy or flexible production. With this has come new institutions of consumer culture; one needs only to look towards the rise of global brands, the rise of global tourism, and the blurring of local, national and global identities throughout the conduits of contemporary consumption and leisure (Lury, 2011). For Lash and Lury (2007), the globalization of brands and branded identities have become instrumental forces in the constitution and mediation of everyday social life, and have in turn a profound capacity for mediating everyday information seeking practices in service sector economies. Lash and Lury note a theoretical shift towards the convergence and entanglement of socio-economic market relations, such that brands and audiences are becoming increasingly enmeshed into hybrid relations of production and consumption.

An entanglement between subjects and objects has become the defining feature of digital culture, and demonstrate how the production of such things necessarily revolves around the mobility and mediation of things. This has in turn reinforced theoretical shifts in the economic constitution of everyday life, which demonstrate a distinct shift in accent towards service-sector markets, and the rise of new market practices which concentrate upon the capacity for markets to perform in highly flexible ways, responding to the ever intensifying speed and modularity of global flows. Markets, in other words, are caught up in a reflexive activity with new forms of production, competition, and consumption, resulting in an emphasis on the construction of markets as services: an “economy of qualities” which centers upon the role of global informational flows, and reflexive instruments for calculating markets into frameworks of social inclusion and exclusion (Callon et al., 2001; Callon, 1998; Callon and Muniesa, 2005).

In the so-called move towards “post-industrial” market societies, the ability for a society to organize, mobilize and mediate the flows of production and consumption follows a logic of increasing automation. As Touraine (1988) explains, the shift towards post-industrial society is highly difficult to conceptualize for its many meanings, nonetheless Touraine argues we are seeing the rise of “programmed societies” in which new models of management, production, consumption, organization and distribution are becoming increasingly mobile. Society is increasingly capable of mobilizing itself in such a way as to permit a reflexive ontological politic where social movements become the defining feature of post-industrial relations, identities, and political conflict (1988: 105). Gilles Deleuze (1995) has echoed a similar concern in his thesis of control societies. The distribution of power has shifted beyond a paradigm of Foucauldian institutional discipline and confinement (Foucault, 1977), towards an ontology of power which has become highly modular and de-differentiated across disciplinary institutions, producing new political and economic configurations of power in everyday life. Thus, everyday life is characterized less by routines of differentiation, such as work and play, but a series of continuous flows of power distributed across spatio-temporal contexts.

Far from the death of distance or the irrelevance of space, geography has in many ways shifted to the foreground in critical sociological approaches to understanding post-industrial theories of everyday life. The importance of software is therefore one of understanding the relationship between informational networked, flows and the social production (and consumption) of space. Thrift and French (2002) have noted that the production of space has become increasingly automated within everyday life, and focus on
how software is enabling new kinds of social relations between humans and machines (2002: 310). Thrift and French focus on three primary developments of these new geographies of software: the production of software itself; the rise of new informational standards and other such invisible techniques of information control; finally, of the new forms of creativity and play which might emerge. Thrift and French argue that software can be understood as a sort of invisible background occupying micro-spaces, expressing a co-presence of different times, and as constantly in-between actants. Software has an ontological status and importance of “background” which we are conditioned to ignore. "best thought of as a kind of absorption, an expectation of what will turn up in the everyday world" (2002: 311-2).

Elsewhere, Thrift (2002) argues that everyday life spaces are anticipated to exist in a particular way, that is, that we gradually come to accept particular spaces as the only way to be because they appear to us as such on a regular basis, effectively depending upon the gradual construction of "complex ethologies of bodies and objects, which are repositories of the 'correct' positionings and juxtapositionings that allow things to arrive and become known" (2002: 175). Thrift is interested in a highly ubiquitous but invisible complex of entanglements between humans and socio-technical life which act as a powerful agent in structuring urban environments, an agent which must be constantly repeated and re-articulated to create an "infrastructural logic which allows the world to show up as confident and in charge" (2002: 176). As a theory of the “technological unconsciousness” of geography, Thrift is explicitly pointing out the general assumption of a cosmological order in everyday life; that the production of the world is not in 'smooth,' and how the design of socio-technical life is far more complex than it might otherwise appear from a retrospective position. Thrift's central argument is that, like the standardization of time witnessed in the nineteenth century, we are currently seeing a move towards the standardization of space. This standardization can be understood as the result of infrastructural development, such as the development of sophisticated addressing systems including the post and other such delivery systems. Now, Thrift argues we are seeing a new development, that of 'track-and-trace' models for the standardization of space, made possible by (1) the development and penetration of geo-surveillance technology; (2) the formalized and integrative knowledges of logistical models (i.e. the formal development of logistics as a disciplinary mode of industry); and (3) new techniques for counting and calculation, such as spreadsheets (Thrift, 2002: 182). This automatization of spaces, marked by the ubiquity of addressing systems for ease of surveillance and tracking, exists in close proximity with the political and economic imperatives of informational flows — in effect constituting an economic “mode of information” for the routine configuration of everyday spaces (cf. Poster, 1990).

Dodge and Kitchin (2005; 2011) have provided perhaps the most succinct account of the layering of code and software onto everyday life. They see everyday life as becoming increasingly subject to “technicity” and “transduction.” For Dodge and Kitchin, software, and more generally code, produces, monitors, surveys and controls many aspects of daily living, including virtually every infrastructural network. It has become almost impossible to live without experiencing the effects of code. As such the authors see information as creating a performative difference “…to the constitution and material and discursive practices of everyday life. It is now almost impossible not to live within the orbit of code, anywhere on the planet… In short, code, to varying degrees, conditions existence” Dodge and Kitchin, 2005: 164). Their thesis of transduction therefore seeks to understand the way in which things become what they are, and Dodge and Kitchin see this becoming of everyday life as increasingly contingent upon the relationship and hybridization between code and space. For example, urban supermarkets now rely on computerized cash registers and databases to manage the flow of purchases and goods. If the cash register or database crashes, the space as a supermarket effectively ceases, and one is left with a temporary food warehouse until the code becomes reactivated. Manual processing of payments has been discontinued, both in the sense that staff are no longer trained to handle such transactions, and that the necessary information (prices, for example) are no longer printed on food products, but embedded within coded artifacts such as barcodes. The socio-spatial production of the supermarket, in other words, is functionally dependent upon code (Dodge and Kitchin, 2011: 17).

What was once exclusively the domain of hardware is now increasingly becoming “everyware” marked by the proliferation of ubiquitous, ambient, or pervasive computing infrastructures to manage the flows and mobility of everyday life (Greenfield, 2006; Andrejevic, 2005). This shift towards ubiquitous computing is accompanied with the rise of digital surveillance ‘topologies’ of surveillance and control for managing the global flows of social resources and information (Murakami Wood, 2008). The increasing dependence upon code/spaces in everyday urban infrastructures must be contextualized within the political and economic institutions of neo-liberalization, where we see a paradigmatic “post-Westphalian” shift of urban infrastructural access. Where infrastructure was once seen as a public good, the shift now emphasizes a new set of norms which effectively privatizes access to, and interaction with, urban networks into markets and quasi-markets of consumption. Socio-economic status becomes more generally code, and more generally code, software, and more generally code, produces, monitors, surveys and controls many aspects of daily living, including virtually every infrastructural network. It has become almost impossible to live without experiencing the effects of code. As such the authors see information as creating a performative difference “…to the constitution and material and discursive practices of everyday life. It is now almost impossible not to live within the orbit of code, anywhere on the planet… In short, code, to varying degrees, conditions existence” Dodge and Kitchin, 2005: 164). Their thesis of transduction therefore seeks to understand the way in which things become what they are, and Dodge and Kitchin see this becoming of everyday life as increasingly contingent upon the relationship and hybridization between code and space. For example, urban supermarkets now rely on computerized cash registers and databases to manage the flow of purchases and goods. If the cash register or database crashes, the space as a supermarket effectively ceases, and one is left with a temporary food warehouse until the code becomes reactivated. Manual processing of payments have been discontinued, both in the sense that staff are no longer trained to handle such transactions, and that the necessary information (prices, for example) are no longer printed on food products, but embedded within coded artifacts such as barcodes. The socio-spatial production of the supermarket, in other words, is functionally dependent upon code (Dodge and Kitchin, 2011: 17).
Networks of digital surveillance have effectively enabled the geographies to be “sorted” by software. For Graham and Wood (2003), software sorted geographies have resulted in new forms of class conflict over access to resources such as information, and access to institutions of mobility; conflicts embedded within the code/space of infrastructure which effectively privilege socio-economically affluent groups and separate them from marginalized groups. Hence we find at airports, for example, self-service customs kiosks accessible only by those deemed to be “low-risk” by the state. Such individuals, who are almost always of upper-middle class standing, enjoy rapid movement across borders, by participating in a surveillance infrastructure which verifies their identity through a combination of biometric surveillance and sophisticated risk-assessment software, allowing an unprecedented amount of scrutiny about the authenticity of one’s identity, placing an emphasis on the relationship between mobility on the one hand, and de-centralized protocols of risk assessment and control which have hitherto never been possible (Graham and Wood, 2003; Bogard, 2006; Beck, 1999; Galloway, 2004). This transduction of space therefore extends far beyond the benign world of supermarkets. While airports could not operate without code, now social divisions of economic class are also being inscribed into the technical architectures and software of everyday life, placing use, technical design and constructed environments into proximal relations of co-determinacy (Hand, 2008: 69). This emphasis on co-determination and de-centralized protocols suggests that a degree of information modularity is increasingly characterizing everyday information practices. Currently it has become all too commonplace for surveillance and preferential databases to sort users into particular categories of geo-demographic ideal types in order to organize and maximize the institutions of consumption inherent in everyday life (Burrows and Gane, 2006; Graham 2005). For Burrows and Gane, the increasing modularity of digital culture is centered upon created a smooth flow of information and goods (of capital) rather than arbitrary practices of oppression found in traditional modern societies. However, this smooth flow and automation of everyday life is contingent upon the political and economic construction and prioritization of identity and social class; whereas some groups enjoy unrestricted access to social resources, the same infrastructures can be experienced differently by other groups deemed ineligible.

Digital divides are not just about created asymmetric institutions of information access, although no doubt such protocols exist. It is also about creating powerful and invisible processes of marginalization, as software is used to judge people’s worth, eligibility and interactivity with entire ranges of services and information (Burrows and Gane, 2006: 802; Graham, 2004: 324). Such practices of software mediated spaces can take on multiple forms, such as granting easier access to mobility across borders, or increasingly the more subtle forms of information management found in online information seeking, where the very content of websites, particularly content pertaining to advertisements, brands and products, are dependent upon who is accessing the website, and what information is believed to be known about them through a variety of indicators such as monitoring click logs and link trails, or as in the case of Google’s Gmail services, of actually data mining e-mails to ascertain the lifestyles, preferences and tastes of information seekers (cf. Gandy, 1993). This information performs a difference in one’s capacity to access and interact with information, and from a global perspective, has begun to play an instrumental role in shaping the flows of globalized information and services. For Lash (2002), the speed of information has now outpaced that of meta-narrative culture which traditionally embraced epistemological orientations of Newtonian time and Euclidian space, resulting in a profound shift in everyday experiences with social life in which information consumption becomes the primary means for ascertaining the power dynamics of information societies (Lash, 2002: 19). In turn, the profound shift in the metaphysics and meta-narratives of information cultures has firmly entrenched the role of information environments in mediating the cultural construction of meaning. From a global perspective, the result as been a surplus of exclusion through the creation of “information zones” where certain parts of the world are, in many respects, outright excluded from participating in these flows; other areas become informationally rich “hot spots” for economic and cultural innovation. Information, from an everyday perspective, has become far less about perpetuating institutions of participation. For Lash, this marks the creation of a surplus of exclusion: “Power is no longer so much something that takes place between elements in the system, between capitalists and proletarians, but instead has to do with exclusion from the system” (Lash, 2002: 75). These spatialities of everyday life, which are increasingly contingent upon its production by software, have posed new sets institutional practices concerning the role of information technology in neoliberal service societies. Information, far from simply being a resource which contributes to one’s participation in everyday life, can be be equally used for reproducing processes of routine social exclusion, marginalization, or for re-inscribing institutions of socio-economic class within everyday life.

**CONCLUSION**

This analysis has sought to engage a critique of everyday life information seeking, and began by asking what makes ELIS so special in its capacity to understand everyday life, and why it deserves a separate paradigm and conceptual framework, in effect creating an ontological politic from the rest of LIS. It was argued that upon closer examination, ELIS has in fact failed to adequately understand the conceptual meaning of everyday life through its neglect for understanding the role that non-human information seeking
practices (software and code), in the constitution of everyday life. This exploration argued that the social and material constitution of everyday life information practices is contingent upon an understanding of the relationship between software and geography. While the ELIS paradigm has made some steps towards developing a more robust understanding of the sociological frameworks which structure information practices, more needs to be done to critically engage the concept of everyday life, particularly in such a way which does not rest upon a normative framework of information as exclusively concerned with bolstering a discourse of social participation. This analysis has sought to engage such concerns by drawing attention to the imbrication of software on everyday life, and connecting it within larger discussions of the political and economic forces of digital cultures. While information has necessarily played an instrumental part in re-shaping many of the ontological foundations of contemporary society, at the same time, there have also been many myths about the nature of post-industrial society which need to be questioned; myths which might arguably ground the metatheoretical and epistemological orientations of ELIS. In particular, it has been demonstrated that by examining the increasing importance of mobility within code/space, it is possible to see how information practices contribute to processes of social exclusion, prioritization, and marginalization. This suggests that from a cultural discourse, information can operate as a substitute for the types of authentic knowledge required for effective cultural democratization and social empowerment (Hand, 2008: 39).

As preference databases increasingly define and shape the direction of global and local flows, information access and interactivity is increasingly becoming defined by the logic of service sector markets, in effect (re)inscribing socio-economic inequalities of exclusion, and the reification of social types oriented around market practices. Social class becomes evermore distributed in new ways across space as capital becomes increasingly mobile, requiring a theoretical lens which can draw attention to the distribution, mediation and consumption of information across space. This arguably holds immense consequences for the ways in which individuals seek, use and share information in a routine way, and as such it is necessary that ELIS scholars begin to consider the ways in which information practices are contingent upon the political and economic ordering of social class across space. Software, it has been argued, constitutes a key variable for conceptualizing and understanding this process. Therefore, while ELIS has hitherto focused largely on the ways in which humans ‘deal with information,’ now it is time to consider how information deals with us.

REFERENCES


