Regimes of information and the paradox of embeddedness: an introduction

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Regimes of Information and the Paradox of Embeddedness: An Introduction[1]

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The introduction outlines the problematic that has served as the basis for this special issue. Interaction weaves the fabric of social life in the form of events that are usually embedded in a series of particulars, variously referred to as contexts or situations. At the same time, actors, and the contexts in which they are embedded, are constituted by social rules, role systems and normative frameworks that transcend situated encounters. Furthermore, most interactive events involve a range of resources and technological capabilities that recur across contexts and situations. The special issue deals with how the multivalent involvement of information and communication technologies in social practice alters this basic problematic. It entails six research papers that investigate particular social practices and the ways each of these practices are refigured by the deepening involvement of information and communication technologies. The special issue also features an invited, perspectives paper by distinguished philosopher Albert Borgmann.

Key words: *Embeddedness, interaction, practice, information and communication technologies, structure, technological capabilities.*

Information technologies and the socio-cultural artifacts they produce and disseminate are by now pervasive components of contemporary life. They partake in the making of markets and organizations and the institutional worlds in which these are embedded. But they also reach beyond institutions, spinning the very fabric of everyday living. In either case, complex and ramified datawork goes on underneath through which devices and systems stay connected, information is processed and exchanged *en masse*, cultural artifacts are made and consumed, and online participation is structured and mediated (Arthur 2009; Kallinikos 2011; Van Dijck 2013).

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How are we to think about these shifts and the broader involvement of technology in human affairs? There is no doubt that placed in a larger time frame, technological developments emerge as part and parcel of wider social and institutional changes (Heller 1999; Hughes 1987). However, for a variety of reasons (some of which tell a sad narrative about modern social science and the direction it takes), these broader institutional and historical perspectives on technology have lately been discouraged. There are admittedly good reasons to be suspicious of effort to explain social life by reference to forces that feel not simply abstract and impersonal, but also skewed, and often fabricated by the predilections of grand theoretical schemes. Most of us know that (infra)structures and past solutions matter, but so do people and their pursuits. Yet, how do people deal with technologies embedded in a social world whose scale, scope, and heterogeneity transcend local dealings and situated encounters? The dominant and often inarticulate assumption that technology is just a means to pre-established ends (widespread in economics and, surprisingly, a great deal of sociology) is woefully inadequate. It may serve the predilections of some social science fields but it does not serve the project of knowing the world and acting on the basis of such knowledge. Here is therefore the crux of this special issue: the contrast and mutual implication of the *structural* with the *interactive* order, *history* with *practice*, *established solutions* with *innovative pursuits*.

In the original call of the special issue we outlined the barebones of this fundamental condition. Most things in life occur in 'a here and now,' yet such occurrences contain elements (e.g., statements, gestures, initiatives, objects and resources, outcomes) that participants recognize from prior experiences. They make sense, relate, compare or assess these elements by taking cues from their immediate environment, and then act accordingly. Crucially, what occurs *in situ* relies, most of the time, on social or cultural rules that survive situated encounters. The world is certainly one of events, as G. H. Mead has felicitously claimed (see Abbott 2001), but neither the events nor the participants and the cultural and material resources they draw on are each time made *ex nihilo*. Goffman opens his "Frame Analysis" by questioning the usefulness of W. I. Thomas's fa-

mous dictum: "If men define situations as real, they are real in their consequences." Thus he comments (Goffman 1974: 1):

> The statement is true as it reads but false as it is taken. Defining situations as real certainly has consequences, but these may contribute very marginally to events in progress; in some cases only a slight embarrassment flits across the scene in mild concern for those that tried to define the situation wrongly. All the world is not a stage — certainly the theatre isn't entirely.

If events are not made exclusively *in situ*, how should we then think of them? Where do the elements that contribute to their making come from? And how do we selectively, but often effectively, sift through them, finding the ones that are most relevant to the situation at hand? Common discourse, in academia and beyond, normally characterizes these elements as part of the social context in which events are embedded — an interesting but rather inadequate conceptualization that explains away questions such as the above. For, contexts are often parts of other contexts, and the meaningful demarcation line is often shifting and hard to draw. By which means do these elements arrive *in situ* and become visible or instantiated, and where do they go once events are concluded? Should we perhaps think of these entities and processes in terms other than spatial or, as the jargon goes, non-essentialist? These are no doubt puzzling and, to some degree, recurring questions that underlie what we referred to in the special issue call as the paradox of embeddedness. These are questions that we feel are made relevant and urgent by the vital role information acquires in the contemporary world and the complex technological nexus (software, hardware, databases, social media platforms, the Web) in which information processes are embedded.

What difference do information and the technologies by which it is currently associated make to this fundamental social problematic we identify with the paradox of embeddedness? The capacity to generate, share and store data and information and enact procedures and routines by technological means certainly introduces into local practices stocks of such things as knowledge, measurement systems, outcomes, frames of reference, and technological resources that have

been produced, as it were, elsewhere, in a different setting or time, under different conditions or relevancies (Leonardi et al. 2012; Zuboff 1988). The point we make here is that current technologies of computing and communication hugely amplify and augment the capacity of individuals and groups to draw on information and technological capabilities to accomplish goals that would have otherwise been difficult or impossible. The current and heated debate on big data reminds us of how far these data sources and capabilities can be extended, and how far-reaching the implications are in all aspects of contemporary life, from science to policy and from economy to politics (Constantiou and Kallinikos 2014; Ekbia et al. 2014). The critical issues of surveillance and privacy, and the anxieties to which they give rise, provide another poignant reminder of the power of technological resources and capabilities to interfere and shape particular aspects of social life (Hildebrandt and Rouvroy 2011; Lyon 2013; Mayer-Schönberger 2009). Rather than simply perturbing institutional orders, these issues cut deep into the fabric of daily activities; they even touch upon and remake one of the most primordial and emblematic human activities, namely that of conversing— a topic that the philosopher Albert Borgmann picks up with elegance and eloquence in his contemplative contribution to this special issue.

Something similar yet less dramatic and visible goes on daily in organizations and other contexts of social practice in which technological capabilities are variously involved in shaping social action and controlling social outcomes. Most contemporary forms of work and expertise intermingle with complex technological capabilities and resources and become shaped by them in various and often-unobtrusive ways (Bowker 2005; Bowker and Star 1999; Ekbia and Evans 2009). We feel that the subtle character of the processes through which the standardized resources and capacities of technologies of computing and communication are involved in the constitution of social action and practice have often been glossed over. These processes have often been misperceived or overlooked by dominant research frameworks that have been based on widespread and non-productive simplifications of the nature of these processes. The problematic is identified and traced out in those contributions to this special issue that take organizations as their focus of study. Attila Marton and Jose-Carlos

Mariategui (this volume), for instance, illustrate how metadata and context-independent standards, brought about the deepening digitization of video editing, have transformed video editing practices at news agencies such as the BBC. Their study depicts how the sociality and materiality of traditional craft editing have been recast in to a set of information practices that both erode and refigure the contextual boundaries of the practice of video making and editing. Isto Huvila (this volume) similarly demonstrates the interplay between local practices of archiving and the institutional orders of archival work, highlighting the shift that is taking place in archiving from a deeply institutionalized regime of information to one where competing practices and arrangements come into clash. Emad Khazraee and Susan Gasson (this volume) also explore the performative role of information structures in revealing the meaning of collective practices in vast networks of archaeological research. They show how epistemic objects embed information about emerging knowledge in material form, such as a new device, categorization scheme, or model representation, allowing novel ontological dimensions of disciplinary problematics to evolve through successive interactions with the information, eventually underwriting theoretical change.

It has been quite common over the last two or three decades to limit the social inquiry of these processes to the technology front-end or interface, where social agents interact with artifacts. When this has not been dictated by convenience, the assumption has often been that technologies and their influence on human affairs can only be understood in use, in the contexts in which social agents confront and deploy technologies. Such an assumption "is true as it reads but false as it is taken." It has often been implied that technology as an object of social inquiry has, by design or ignorance, been eclipsed. Critical social theory has wittingly or unwittingly given way to a flat social ontology (often erroneously referred to as constructivism) (see Hacking 1999; Sismondo 1993) in which the human-technology interaction has been basically understood as taking place on a level playing field (DeLanda 2006; Faulkner and Runde 2013). Studies of technologies-in-use may successfully map what agents do with technologies but are not well equipped to disclose the deeper and long-lasting effects that technologies may have upon social life and practice (Kallinikos et al. 2013). City life, to

give an example, has irretrievably changed by the use of private cars no matter how different groups may relate to driving and use of such cars. In an analogous way, the web, tablet computers, and smart phones are currently redefining communication habits and practices, irrespective of the differences in patterns of use between individuals or groups.

These themes are picked up in this special issue by Karen Levy's paper that demonstrates how the deployment of fleet management systems in the trucking industry in the US results in a changing occupational culture. The constant monitoring of truckers' driving habits and the aggregated information produced by fleet management systems tend to devalue biophysical knowledge, and, in this process, refigure the object of work and recast truckers' relationships with others (families, coworkers, managers) in a context of continuous visibility and evaluation. The ultimate outcome of these processes substantially shifts the power dynamics of the industry in the direction of stricter control. In a different tenor, some of these issues are the subject of Anne Rawls and David Mann's paper that analyzes the design of an interoperable information system under circumstances that require the flow of data objects across work and organizational boundaries. Their study reveals the constant friction occasioned by the formalizations and abstractions of the design profession with the concerns of those that stand closer to the realities of people on which the system is supposed to bear upon.

The interaction of social agents with technologies is never innocent. At the very least, it is not constituted *ex nihilo* each time social agents encounter artifacts. By the same token, the concept of the technological artifact itself is inadequate, if this is taken to refer to standalone devices. Loosely coupled as they often are, technologies nonetheless embody layers of sedimented solutions and architectures that have evolved over a considerable period of time. Such solutions and architectures are made of deep or back-staged processes, whereby technological devices and operations are tied to one another in complex, remote and unobtrusive ways (Arthur 2009, 2011; Faulkner and Runde 2013; Kallinikos et al. 2013). Such layering and the links it occasions significantly condition interaction at the

interface by sampling events, framing attention, offering ready-made and non-negotiable solutions and resources, automating operations and enabling certain things while inevitably excluding others (Kallinikos 2011). The skills, capacities and preferences of social agents may thus contribute less to the final and observable outcomes than what the technologies-in-use framework often implies. Commenting on the far-reaching implications social media platforms may have for the ways humans interact and relate to one another, Dutch media sociologist Van Dijck (2013:12) poignantly noted that " 'making the web social' in reality means 'making sociality technical'." This is roughly the theme that Niccolò Tempini (this volume) pursues in his study of patient interaction on the popular social media platform *PatientsLikeMe*. Through a close examination of organizational, commercial, and research practices of this platform, Tempini demonstrates the processes through which patients' social and health data are transformed into the raw material of organizational work.

Taking humans and their pursuits seriously makes imperative to look beyond the simplifications of big labels (e.g. determinism, interpretivism) at the complex web of practices, entanglements and resources through which social agents, social structures and technologies bear upon one another. It is important to unravel how social outcomes come to pass under the widespread condition in which humans do not command all the circumstances that surround them (DeLanda 2006). It is also important in this regard to transcend simplified versions of social agency and understand that technologies and social structures historically partake in the construction of many of the capabilities we identify as part of social agency (Hacking 1986, 1999; Leonardi et al. 2012), such as being one kind of person rather than another (see Borgmann in this issue), doing things that would have been otherwise impossible to do, examining and reflecting on courses of action through access to computational resources, and the like.

As is common in similar circumstances, the papers included in this special issue are not part of a single epistemological framework or research community. Each paper takes up some aspect of the problematic we identify with the paradox of embeddedness and pursues it empirically, in the context it investigates. Unsur-

prisingly, then, the papers are examples of different research traditions. And yet the mindful reader will discover that the paths along which the papers crisscross one another are many and intriguing.

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