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Print theories of computer societies. Introduction to the digital transformation of social theory

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ABSTRACT

ICT and the increasing availability of digital data are dramatically changing the processes of research and knowledge production in the social sciences and humanities (SSH). Whereas the methodological momentum in digital humanities and computational social sciences is already immense, theory development in the SSH is much less dynamic and consists mainly of digital resurrections of the classics of our fields. The contributions to this virtual special issue of *Technological Forecasting and Social Change* do, therefore, *not* constitute efforts at presenting new social theories of the digital transformation, but rather, efforts at digitally transforming social theory. This introduction presents an overview of the topic and the contributions and outlines key elements of a research agenda on the digital transformation of social theory.

1. Introduction

There once was a time when leaders, such as Charlemagne, governed empires without knowing how to read and write (Dutton, 2016; Pascal, 1970). Contemporary "thought leaders" are in a very similar situation. Though hardly ever *away from keyboard*, we scholars in general and social theorists in particular relate to the dominant media of the 21st century as if we are still living in the Gutenberg Galaxy (McLuhan, 1962). This anachronism is exemplified in our prevailing reliance on computers and the Internet mainly to write books and articles to store and search for in online libraries; and the situation is even more remarkable in that we not only continue to treat new media like traditional media, but that we also produce more and more traditional media in the effort to illuminate the new media. Meanwhile, there are analogue texts on the digital transformation of almost everything. Work (Stone, 2004), production (Potstada et al., 2016), or healthcare (Agarwal et al., 2010) are being transformed digitally along with human identity (Nagy and Koles, 2014), time and space (Berthon et al., 2000), and, eventually the entire globe (Heylighen and Lenartowicz, 2017) and, thus, the totality of our everyday life (Wajcman, 2008). In the course of this process, not even the most traditional forms of media and mediation can escape the digital transformation (Coyle, 2006; Dahms, 2014; Roth et al., 2017).

In such a context of inescapable transformation, our professional insistence on oral and written language remains consistent as long as we have reason to believe that these traditional media remain dominant, or at least relevant, in the age of new media (Turkle, 2016). The less justified we are in holding on to this belief, however, the clearer it becomes that books and articles on the digital transformation consistently systematically fail to "walk their own talk". Digital copies of printed theories do not turn these theories into digital theories, just as literature is much more than a mere transliteration of oral speech.

While smart attempts to tie programming languages back to the traditional text occasionally result in the discovery of new genres such as *code poetry* (for an example, see Bertran, 2012), to most of us even these literalised forms of computer language remain as inaccessible as the Bible once was to the majority of the medieval populations. Thus, of all people, and figuratively speaking, we scholars also belong to the illiterate farmers of the information age today, as we harvest our research fields at computer-mediated conferences and virtually augment our stocks of books and papers. The heirs of the medieval monks, our profession of bookworms and elaborate natural language processors itself grew dependent on trust in and reliant on spiritual guidance from a community of cybermonks who shape and administer the increasingly omni*present* knowledge architectures of the future.

Early attempts to remedy this situation and to develop at least

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prototypes of digitally transformed social theory include social systems theory. As is well known, Niklas Luhmann (1995, 2012, 2013) built his social theory – as much as his theory of society – on the formal language of George Spencer-Brown (1979); and a recently discovered 1961 prototype of the *Laws of Forms* leaves no doubt that Spencer-Brown developed his laws as elegant solutions to problems in *electronic engineering* (Roth, 2017). Thus, Luhmann's social systems theory does not only theorise the digital transformation of society, but also presents an example of a theory whose architecture at least in parts is coded in a digital language. Yet, while Luhmann's early effort at the digital transformation of theory was somewhat superficial, it still has remained without parallel in the wider social theory community

In this context, the contributions to this virtual special issue of *Technological Forecasting and Social Change* do not constitute efforts at presenting new social theories of the digital transformation, but rather, efforts at digitally transforming social theory.

2. Contributions to the virtual special issue of the digital transformation of society

As a topic of a *virtual* special issue of *Technological Forecasting and Social Change*, the digital transformation of social theory could hardly be more appropriate. In line with the procedures required by this new format, contributions that were accepted were moved forward to production on a rolling basis and almost instantly allocated to one of the regular volumes, before now being united in this virtual special issue. As a consequence, this virtual special issue comprises articles published in volumes 145–147 of *Technological Forecasting and Social Change*.

Submissions have been invited through multiple channels and in cooperation with institutional partners such as the *European Academy of Management* conferences standing track on *Management and Organisation Theory (ST 12.02)*, the *International Social Theory Consortium*, the *European Sociological Association*, the *International Sociological Association*, and a number of national sociological associations.

Not counting one contribution that was kindly handled by the editor-in-chief and an associate editor, the guest editors received and handled 37 manuscripts. As the result of an intensive peer-review process, six manuscripts were selected for inclusion in the virtual special issue, whereas a small number of high quality (yet, less suitable) manuscripts were recommended for inclusion and have already been published in one of the regular volumes of *Technological Forecasting and Social Change*.

Unexpectedly, to some, the invitation of submissions was a cause of irritation. *Mark Carrigan*, for instance, a digital sociologist at the University of Cambridge – probably best known for his *vade mecum, Social media for academics* (Carrigan, 2016), and his blog (markcarrigan.net), on reading our call for papers, commented on Twitter in December 2017 (see Fig. 1):

Effie Le Moignan, a Northumbria University computer scientist, soon followed up with a reply to Carrigan's tweet that concluded that "[i]t sounds like if the Mafia did academia."

We are pointing to these snippets of digitally mediated communication, first, because they are indicative of the issues and reservations we address in the conclusion section of this article and, second, because they early on drew our attention to the fact that an ostensibly affirmative view of the digital transformation expressed in an Elsevier journal might deter a considerable number of potential contributors. We therefore decided to include the above Twitter messages as evidence of our critical distance to our supposedly uncritical attitude towards the digital transformation of society, and are grateful to Dr. Carrigan and Dr. Le Moignan for their very helpful tweets.

In view of these early warning signals, we are therefore all the more pleased to introduce, in the paragraphs that follow, a selection of thought-provoking articles on the digital transformation of social theory authored by digital sociologists, historians, economists, and management researchers with diverse theoretical and paradigmatic backgrounds. Whereas the first set of articles (Ossewarde, 2019; Karakilic, 2019; Palmås, 2019) convey a more pessimistic, critical, or sceptical concern regarding the digital transformation of society and the prospects of digitally transformed theorising, the second set of articles (Blanco Rivero, 2019; Roth, 2019; Guy, 2019; Wenzel and Will, 2019) considers such transformations less as a threat and more as an opportunity, if not as an imperative.

As part of the first set, *Marinus Ossewaarde*'s "Digital transformation and the renewal of social theory: Unpacking the new fraudulent myths and misplaced metaphors" is deeply concerned with the potentially dangerous impact the digital transformation particularly may have on hermeneutic schools of social theory. Ossewaarde (2019) starts from the idea that classical social theory, such as the hermeneutic tradition, emerged in the age of industrialisation and, therefore, needs to be renewed in order to adequately reflect the transformation from an analogue industrial to a digital information society. The great risk involved in such a corresponding self-transformation of social theory, however, is that the latter could get gripped by the very transformation it tries to grasp. This concern arises as Ossewaarde introduces the digital transformation as an essentially Silicon Valley-driven proliferation of digital technologies and the political-economic rationalities behind them, which he places in sharp contrast with the aesthetic aspirations and the intellectual and scholarly impetus for theorising. By implication, social theory must not be associated uncritically with the digital transformation, lest it fall victim to the techno-economic domination of its own sphere. Ossewaarde elaborated the idea of the commodifying power of digital transformation in his earlier works and debates on the illusory nature of the digital commons (Ossewaarde and Reijers, 2017; Reijers and Ossewaarde, 2018). Along such lines, Ossewaarde (2019: 25) contends that resistance to the threat resulting from the nexus of digital knowledge-economic imperialism is imperative, and remains possible as long as social theorists defend or regain their privileged access to "the poet's toolbox (aesthetic style, myth and metaphor)", which continues to unites the prime means for challenging fraudulent digital myths and for replacing them with genuine ones that help to sustain or increase the creativity and critical facility of social theories in the age of digital transformation.

Emrah Karakilic's considerations also are concerned with what he identifies as the transition from industrial to cognitive capitalism. In his contribution, "Rethinking intellectual property rights in the cognitive and digital age of capitalism: An autonomist Marxist reading", he argues that the proliferation of immaterial digital or digitalized products threatens the traditional social order of industrial capitalism, and that this threat can no longer be adequately addressed by traditional capitalist institutions. Whereas the extension of traditional intellectual property rights legislation to the digital sphere is often taken to be a socio-economic necessity, Karakilic (2019: 7) argues that this "enclosure through IPR hinders the opportunities for innovation, profit-making, and growth" and creates structural tensions which provide a basis for a severe social crisis. As capitalism mutates from a "vampiric" to a "parasitic" mode of production (Karakilic, 2016), the author concludes that capitalism will ultimately be bound to abolish the institution of enclosed intellectual monopolies, and classical Marxist social theory will require a set of critical updates for an age when cognitive capitalists extract value not from individual workers, but instead from the public domains and new digital commons of a digitally transformed society.

In "From hacking to simulation: Periodizing digitally-inspired social theory", Karl Palmås (2019: 105) pursues the question, "What impact, if any, has the computer-inspired notion of hacking had on social theoretical conceptions of critique?" The starting point of his historicizing approach to the concept of digital transformation is the observation of a convergence between the positions of social theorists B. Latour, M. Wark, A. Galloway, and N. Bourriaud who sought to overcome the limits of traditional hermeneutic forms of critique by recourse to

Fig. 1. An irritated Twitter comment in reaction to the call for papers to the virtual special issue.

computer- and hacking-inspired concepts. Palmås (2019: 107) demonstrates that this "shift from critique as debunking to critique as assembling, from deconstruction to construction" represented great potential for revamping critical social theory in the first decade of the 21st century (see also von Busch and Palmås, 2006), before the authors abandoned their attempts at digital critical theories in favour of a focus on environmental issues and a return to more orthodox forms of criticism. This "shift from the digital to the environmental" (109) corresponds with the eponymous shift from hacking to simulation, and thus with a world in which computer simulations of social or natural systems are said to create hyper-realities, and thus distorted views – or even dangerous misconceptions – of whatever is taken to be real realities. Palmås concludes that this environmental turn has considerably restricted, from a computer-sceptic vantage point, the post-millennial computer-enthusiasm, thus leaving the short "golden age" of digital social theorising behind us.

José Javier Blanco Rivero, however, is positive that the digital transformation may still have the yet-untapped potential to enhanced and reinvented social theories. In his article, "The fractal geometry of Luhmann's sociological theory for debugging systems theory", he starts from the well-established assumption that the proliferation of IT and digital data has dramatically changed the process of research and knowledge production. Blanco Rivero therefore suggests that social theorists draw inspiration from computer science and rethink their theories as programmes. The performance of the social theory programmes could then be evaluated "by examining their structure, code and even running some sort of 'theory-debugger' in order to check for errors (namely, inner contradictions, insufficiencies, logical incoherence, and so on)" (Blanco Rivero, 2019: 32). As an example of how one programme might debug another, he shows how Niklas Luhmann's social systems theory may be checked and enhanced by Mandelbrotian fractal geometry. He concludes that a more programme-oriented and less anthropocentric approach contributes to the development of more adequate and robust social theories.

Steffen Roth, too, decodes theories as programmes, in his article, "Digital transformation of social theory. A research update", Roth (2019) draws on F. Bacon, G. W. Leibniz, and G. Spencer Brown to show that any (digital) world is made of (binary) distinctions. The suggested update installs a social-theory programme that scans social theories for their guiding distinctions, and which translates analogue into digital distinctions. The programme is compatible with every paradigm and runs with minimum systems theory requirements. When executed, this "universal social theory machine" emulates any traditional – or creates new digital – social theories required to critically reflect or complement big data-driven approaches to the digital transformation of society (Roth et al., 2017, 2019).

Jean-Sébastien Guy similarly is concerned with the identification and combination of guiding distinctions. In his article, "Digital technology, digital culture and the metric/nonmetric distinction", he seeks to understand the digital transformation of society not in its own terms, but to observe it from a critical distance. To this end, he draws on the works of M. DeLanda and N. Luhmann to deploy a set of two combined distinctions: metric versus nonmetric and medium versus form. This set of binary distinctions is then used as a conceptual window for the observation of digital cultures. A systematic look through this window reveals that "the individual cannot be adopted as the starting point of sociological analysis" (Guy, 2019: 61) of digital cultures anymore (see also Guy, 2018).

In their article, "The communicative constitution of academic fields in the digital age: The case of CSR", *Matthias Wenzel and Matthias Will* also challenge actor-centric views of social phenomena. With a specific focus on the field of research on corporate social responsibility, they point at a fundamental contradiction of contemporary research on academic field formation. Whereas the digital transformation suggests a shift of focus to information and communication, the majority of researchers use actor-centred methodologies and pursue actor-centred

research agendas. To alleviate this tension, Wenzel and Will (2019) draw on communication-centred organisation theory, in order to advance the digital transformation of academic field research. The results of their longitudinal linguistic discourse analysis show how academic fields are communicated into existence and how the emergent properties of communication lead to the formation of theoretical filter bubbles similar to those on social media platforms.

3. Towards a research agenda on digitally transformed social theories

Whereas the contributions to this virtual special issue have made commendable and maybe ground-breaking efforts to kick-off or advance the digital transformation of social theory, they constitute hardly more than a prelude of a movement that will change the motive and leitmotifs of classical and 20th century social theorising.

In his play, "Biography: A game", Swiss novelist and dramatist Max Frisch gives a middle-aged researcher the opportunity to restart his life at any point of his biography and change his decisions and actions. The current digital transformation of society is acting as director of a similar play. Since this epochal transformation does not stop at randomly producing digital copies of analogue content, it involves an option to challenge, re-evaluate, or even jettison some of the obsolete among the analogue concepts, which again opens a historic window of opportunity through which we can review and redesign our collective biography as social theorists.

Needless to say, Frisch stage-manages his "Biography" as an accumulation of mistakes and failures. Hence, his game is designed to end badly: the researcher keenly avoids momentous surprises, and after a small series of half-hearted modifications, his situation is even slightly worse than in his cheerless original biography. The key message received is that a unique opportunity deserves to be met by more than incremental change. The digital transformation of social theory thus is a veritable call to large-scale redesigns of both forms and contents of research and theorising in the social sciences and humanities, while the second message presented by "Biography" is that such games end badly if researchers remain just actors in a play rather than also acting playfully, thus redirecting the game. In fact, play necessarily comes into play whenever transformations create situations similar to open spaces and first contacts, in which the contingent nature of the social world is particularly perceptible, as is the corresponding unsettling assurance that this world can and always must be re-/invented.

The pending reinvention of classical social theory is likely to evolve along a number of non-exclusive and no less interwoven lines of research.

With a focus on the role and further development of language in a digital age, for example, we may ask what programming languages are suitable for the purpose of digitally transforming social theory. Should social theorists use or adapt existing general-purpose languages, or rather adapt or develop a domain-specific language? Are any of the existing programming languages sufficiently intuitive and therefore low-threshold interfaces of natural and formal language games?

As outlined by Blanco Rivero (2019) and Roth (2017; 2019), the digital transformation of social theory may lead to implementation of new theory-debugging routines and programmes that test and fix errors in existing, or even facilitate the development of new social theory programmes. Yet, the design of these tools is still pending, and it might indeed be too huge A challenge to code an operational digital version of a universal, paradigm-independent social theory debugger. Even if this goal might be achieved, would these debuggers actually be among the most critical updates to be installed on the social theory platforms of the 21st century? And if not, then what other tools would come into consideration? Would we need to develop new forms of, *inter alia*, digital hermeneutics (Schaal et al., 2016), or would any attempt at digital implementation of "the poet's toolbox" Ossewaarde (2019: 25) inevitably thwart whatever original purpose had been associated with hermeneutic research programmes? Would any digital implementation of (neo) Marxist research programmes necessarily be absorbed by what these programmes detect as reductionist techno-economic rationality, behind all forms of digital transformation (Karakilic, 2019; Ossewaarde, 2019)? Would we need an app made of the two binary distinctions proposed by Guy (2019), medium/form and metric/non-metric? But then, why these two distinctions, and not the two TalcottParsons proposed (1978; see Roth, 2019: 89)?

Since most would agree that the digital transformation is not about random digital copies of analogue content, the transformation necessarily implies questions of selectivity. Which concepts should remain confined to literature or speech, or even better, fall completely into oblivion? Would we need, for example, Social Darwinism apps in the 21st century? As tools? As digital memorials? Or would codes of ethics in digital theorising, by default, prevent the design of platforms that can execute such programmes? Or vice versa, are there any ideas or concepts that systematically resist their digital transformation? And then again: What ideas and concepts are indispensable for digital theorising?

Then again, the digital transformation reconfigures issues of the quality, originality, and rigour of social research and theorising. In fact, the mere existence of websites such as *Communication from elsewhere* leads straight to issues at the interface of grievance sciences (Lindsay et al., 2018), fashionable nonsense (Sokal and Bricmont, 1999), and algorithmic authorship (see, for an example of an AI-generated textbook, Beta Writer, 2019). Note that similar pages have been available for natural science and engineering papers for at least 15 years. Against this backdrop, it is evident that social theorizing can no longer remain in the comfort zones of moderated interactions of preferably small numbers of selected classical or contemporary human writers or speakers. Will there still be a place at all for human-centred, actor-focused social theory and research in the digitally transformed societies of the future? Both Guy (2019) and Wenzel and Will (2019) have their doubts, while Esposito (2017: 249) suggests that an actor-focus might be maintained at the expense of digitally enhanced concepts of actorhood and agency: "Algorithms are social agents. Their presence and role are now central and indispensable in many sectors of society, both as tools to do things (such as machines) and as communicative partners." Some therefore suggest that we will soon be training computers like dogs (Tanz, 2016), whereas others are already turning the tables:

> "We will be unnecessary for the computers' survival, just as our pets are unnecessary for ours. That doesn't mean that we don't care for and love our pets—and it doesn't mean that the computers won't care properly for us. In the same way that our dogs don't speak our language, computers will only understand us when they choose to—most human communication will just be slow chatter. Also, similar to the way we relate to our pets, computers won't tolerate humans who are destructive or dangerous. The small number of people who are incapable of being constructive will be removed." (Simon, 2019: 86)

There is hence every reason not to take the slow chatter of our pet theories for the silver bullet of social theorising in the computer age even if we might have many understandable reasons for defending our habits of mind and heart against the looming digital transformation of society in general and of social theory in particular. There are many equally understandable reasons for intensified interactions between social theory and foresight and futures studies, for example, on the question of what future generations of social theorists might think of our current traditional or transitory forms of pre- or proto-digital theorising. Let the answers be many.

4. Conclusion

Computer technology and the increasing availability of digital data are radically changing the forms of research and knowledge production

in our fields. Whereas pace, scale, and scope of methodological innovation in digital humanities and computational social sciences are impressive, theory development in the social sciences and humanities is much less dynamic and follows mainly traditional paths back to the classics such as Karl Marx, from the digital copies of whose 19th-century books we hope to extract solutions to our 21st-century problems with Internet, AI, or big data (see, e.g., Fuchs, 2017, 2019).

Such resurrections of the giants of our fields are certainly as entertaining and self-affirming as they are convenient. And yet they fail to address the truly critical question of how profoundly the digital transformation of research and knowledge production is changing the epistemic core of our fields. In fact, digital methods do not only provide ever-larger datasets for testing old theories, but also allow and even call for new forms of digital theorizing (Kitchin, 2014; Crombez and Dahms, 2015).

The development of new digital social theories, therefore, remains a worthy goal, the achievement of which, however, is complicated by the fact that most social theorists know of computers and programming languages as little as illiterate medieval farmers knew of the Bible (Roth, 2019). Thus, even the most erudite social theorists belong to the (computer) illiterates today and, therefore, are totally dependent on the small community of IT-literate cybermonks who understand and shape the key medium of the digital age.

As with many states of ignorance and dependence, the present situation is bound to stimulate resistance against the digital transformation, including the digital transformation social theory, particularly among critical social theorists (Ossewaarde, 2019). This issue, however, is critical indeed because it complicates the development of digital social theories that can keep up with and critically reflect upon the digital transformation, instead leading to inadequate theories of an increasingly digitally transformed society.

The digital transformation of punditry (McNair and Flew, 2017), moreover, remains an unresolved issue of social theory, which is even more critical in light of the rapid pace of digital transformation of research methodologies and the corresponding discussions on an *end of theory* (Anderson, 2008; Boyd and Crawford, 2012; Kitchin, 2014). In such a context, the secret hope that traditional print and pencil theories will survive the digital transformation, and at most require occasional rewrites and resubmissions, constitutes a considerable risk which we will not manage just by publishing yet another golden open access online-first version of a moderated interaction of two or more giants or newcomers of our field. Rather, what might be at stake is that we need not only write “just another” book or article that traces and studies footprints of the digital media, but also unfold post-literary social theory programmes within these digital media themselves.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.techfore.2019.119778.

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