MOBILIZING POST-INDUSTRIAL SUBJECTS: HUMAN-COMPUTER INTERACTION AS AESTHETIC PRACTICE

By Timo Kaerlein

"Often against their own intentions, the pioneers of human-computer interaction find themselves at the forefront of the development of entirely new ways to control and programme the productivity of an increasingly mobile and flexible workforce."

Sociologists such as Alain Touraine in France and Daniel Bell in the USA diagnosed the emergence of post-industrial societies at the end of the 1960s and beginning of the 1970s, precisely at the time when Human-Computer Interaction (HCI) was being established as a field of inquiry and the design of user interfaces was beginning to play a central role in computer science.[1] In this short essay I would like to put forth the argument that there exists an intrinsic relationship between what has been diagnosed as post-industrial modes of production and social organization on the one hand and the emergence of an explicit focus on designing user interfaces for connected computers on the other hand.

My argument is that the design of user interfaces acts as a technique of motivation and mobilization for post-industrial subjects and ties them to diverse value-generating mechanisms. Taking this argument one step further, interfaces can be analytically situated as the central nodes of contemporary regimes of productivity which are being described in terms of immaterial labour, data colonialism and heteromation, as I will argue in the concluding remarks.

Bell gives a succinct summary of what he understands as the main features of post-industrial society:

Broadly speaking, if industrial society is based on machine technology, post-industrial society is shaped by an intellectual technology. And if capital and labor are the major structural features of industrial society, information and knowledge are those of the post-industrial society.[2]

In addition to the growing importance of the service sector for value creation, a new significance of knowledge processes for the production of economic added value can also be observed in post-industrial societies. Economic and social policy is thus faced with the historically new challenge of constructing infrastructures, which in addition to the classical transport and distribution of energy must now also ensure the circulation of information.

Touraine's earlier neo-Marxist argumentation, which asks for the future of the working class under post-industrial conditions, is only worth a side note to Bell,[3] while this question in particular could prove to be one of the most politically explosive today. Touraine, first in 1969, already very clearly described the phenomenon of a diffusion of the economic into all social areas, due to a decentralization and diffusion of value-creating processes from the factory floor or office building into the capillaries of society: "Growth results from a whole complex of social factors, not just from

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1   Cf. Alain Touraine, *The Post-Industrial Society. Tomorrow's Social History: Classes, Conflicts and Culture in the Programmed Society* (London 1974); Daniel Bell, *The Coming of Post-Industrial Society. A Venture in Social Forecasting* (New York 1999); Alan Kay, User Interface: A Personal View, in: *Multimedia. From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York 2001), pp. 121–131; Jonathan Grudin, A Moving Target: The Evolution of Human-Computer Interaction, in: *Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications*, ed. Julie A. Jacko (Boca Raton 2012), pp. xxvii–lxi; Brad A. Myers, A Brief History of Human Computer Interaction Technology. *ACM Interactions* 5/2 (1998), pp. 44–54.

2   Bell, *Coming of Post-Industrial Society*, p. xci.

3   Cf. ibid., p. 39f.

the accumulation of capital. Nowadays, it depends much more directly than ever before on knowledge, and hence on the capacity of society to call forth creativity. All the domains of social life – education, consumption, information, etc. – are being more and more integrated into what used to be called production factors."[4]

For post-industrial society, or as Touraine also calls it: *technocratic* or *programmed society*, the core problem is how to ensure participation in the social production process of knowledge and information. And it is precisely here, according to my thesis in all due brevity, that interfaces come into play: they operate as the equivalent of the assembly line or office workstation of the old type of industrial societies by connecting the mobile and flexible knowledge workers to the post-industrial production process, which is increasingly shifting towards the immaterial.[5] As Jan Distelmeyer has repeatedly argued, the "scope of the interface complex"[6] is decidedly not limited to the symbolic layer of user interfaces, but includes a diversity of connections in computerized environments. For instance, application programming interfaces (APIs) regulate the programmability and interoperability of platforms and third-party applications, thus translating the logics of post-industrial production into code.

At the user side of the interface complex, one can observe a characteristic blurring of the boundaries between work and leisure, because it is sometimes the same operating systems and end devices, possibly the same software, that are used to carry out everyday practices such as flexible work organization or time management. The designers of user interfaces are well aware of the historical threshold situation in which they find themselves: their idea of a post-Fordist work culture, expressed, for example, in Douglas Engelbart's vision of an augmentation of human intellect,[7] is, however, only partially consistent with the dream of capital stressed by Franco Berardi in all sharpness, of being able to mobilize the labour potential of a distributed workforce at any time and from any location.[8] Often against their own intentions, the pioneers of human-computer interaction find themselves at the

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4   Touraine, *Post-Industrial Society*, p. 5.

5   This is not to say that physical labour and material infrastructures would not play a decisive role in post-Fordist regimes of production. Rather, the creation of added value involving digital media has to be situated in a complex relationship of dependence on more traditional forms of capitalist production, decidedly involving capital and labour. The diagnoses of post-industrial society tend to overlook this point. Cf. Yann Moulier-Boutang, Marx in Kalifornien. Der dritte Kapitalismus und die alte politische Ökonomie. *Aus Politik und Zeitgeschichte* 52–53 (2001), pp. 29–37; Enda Brophy and Greig de Peuter, Labors of Mobility. Communicative Capitalism and the Smartphone Cybertariat, in: *Theories of the Mobile Internet. Materialities and Imaginaries*, eds. Andrew Herman, Jan Hadlaw and Thom Swiss (New York 2015), pp. 60–84.

6   Jan Distelmeyer, Drawing Connections – How Interfaces Matter. *Interface Critique* 1 (2018), pp. 22–33, here p. 23.

7   Cf. Douglas C. Engelbart, Augmenting Human Intellect. A Conceptual Framework. SRI Project 3578 for Air Force Office of Scientific Research (Menlo Park 1962).

8   "In a certain sense, cellular phones realize the dream of capital: that of absorbing every possible atom of time at the exact moment the productive cycle needs it. In this way, workers offer their entire day to capital and are paid only for the moments when their time is made cellular." Franco Berardi, *The Soul at Work: From Alienation to Autonomy* (New York 2009), p. 90.

forefront of the development of entirely new ways to control and programme the productivity of an increasingly mobile and flexible workforce.

Contemporary diagnoses of the digital cultural economy, largely influenced by Italian autonomists such as in the debate around immaterial or free labour[9] and the emergence of a cognitariat[10], can be fruitfully connected to Touraine's problematization of the social struggles accompanying the fleshing out of post-industrial modes of production. Vis à vis a process of extensive rationalization and diffusion of value-creating activities into everyday life, one could expect knowledge workers to resist these developments as unreasonable demands and border transgressions between work and leisure time.

Thus, it seems necessary to aestheticize the regime of production in order to connect and affectively tie subjects to the post-industrial production apparatus. The user interface pioneers at Xerox PARC and elsewhere, despite being inspired to a large extent by countercultural imaginaries,[11] are dedicating themselves to this task with great ambition and lasting success. Their imagination and design of user interfaces can be described as an aesthetic practice in the sense of Andreas Reckwitz ("ästhetisch-imprägnierte Praxis"), i.e. as a convergence of processes of rationalization and aestheticization characteristic of late modern societies.[12] In Reckwitz' account, in particular, the creative apparatus firmly anchored in Western culture since the 1980s responds to the lack of affect and motivation of organized modernity and its employee culture oriented towards bureaucratic points of view. Contemporary user experience design answers to this challenge by giving aesthetic form to a regime of productivity that is thoroughly extended in time and space to encompass large domains of everyday life.[13]

The "factories of the mind"[14] hardly resemble the factories of industrial societies on the outside, yet they represent the central instance of value creation in post-industrial societies. Interfaces are the distributed terminals of their socio-

9   Cf. Maurizio Lazzarato, Immaterial Labor, in: *Radical Thought in Italy. A Potential Politics*, eds. Paolo Virno and Michael Hardt (Minneapolis 1996), pp. 133–146; Tiziana Terranova, Free Labor: Producing Culture for the Digital Economy. *Social Text* 63 (2000), pp. 33–58.

10   Cf. Franco Berardi, What does Cognitariat Mean? Work, Desire and Depression. *Cultural Studies Review* 11/2 (2005), pp. 57–63; as well as Moulier-Boutang, Marx in Kalifornien, on the premises and implications of cognitive capitalism as a system of accumulation that is mainly based on knowledge processes.

11   Cf. Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago 2006).

12   Cf. Andreas Reckwitz, Ästhetik und Gesellschaft – ein analytischer Bezugsrahmen, in: *Ästhetik und Gesellschaft. Grundlagentexte aus Soziologie und Kulturwissenschaften*, eds. Andreas Reckwitz, Sophia Prinz, and Hilmar Schäfer (Berlin 2015), pp. 13–54.

13   Cf. Timo Kaerlein, 'I can't remember ever being so in love with a color'. Smartphones und die Rhetorik des Intimate Computing, in: *Smartphone-Ästhetik. Zur Philosophie und Gestaltung mobiler Medien*, ed. Oliver Ruf (Bielefeld 2018), pp. 179–203. On the role of digital media in the ongoing expansion of data work in what he terms "capture" capitalism cf. Till A. Heilmann, Datenarbeit im "Capture"-Kapitalismus. Zur Ausweitung der Verwertungszone im Zeitalter informatischer Überwachung. *Zeitschrift für Medienwissenschaft* 13/2 (2015), pp. 35–47.

14   John Perry Barlow, A Declaration of the Independence of Cyberspace (1996); https://www.eff.org/cyberspace-independence, access: April 18, 2019, 18:30.

technical infrastructure and the core technology of participation in networked value creation processes, whether paid or unpaid. By linking economic, cultural and aesthetic logics with concrete subject designs and affect-constellations, they therefore represent a preferred object of criticism from a media studies perspective. It is at the site of the user interface where everyday practices of socializing, searching and navigating are captured and made economically productive.[15]

Sensorial interfaces with the world outside computers are extracting data from the environment that are then transformed into resources for value-creation processes.[16] Many of the transactions initiated and transferred via interfaces in fact do not initiate automated processes so much as to connect customers to legions of clickworkers or physical labourers via platforms that act as central registers for value exchange.[17] In all these instances, the role of interfaces – ranging from user interfaces via application programming interfaces on the software level to the hardware interfaces physically connecting network nodes with each other – requires more scrutiny on the part of media scholars interested in the ways value is created and distributed in post-industrial societies.

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15   Cf. Terranova, Free Labor; Mark Andrejevic, Facebook als neue Produktionsweise, in: *Generation Facebook. Über das Leben im Social Net*, eds. Oliver Leistert and Theo Röhle (Bielefeld 2011), pp. 31–49.

16   Cf. Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York 2019); Mark Andrejevic, Theorizing Drones and Droning Theory, in: *Drones and Unmanned Aerial Systems*, ed. Aleš Završnik (Cham 2016), pp. 21–43; Nick Couldry and Ulises A. Mejias, Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject. *Television & New Media* 20/4 (2018), pp. 336–349.

17   Cf. Hamid R. Ekbia and Bonnie A. Nardi, *Heteromation, and Other Stories of Computing and Capitalism* (Cambridge, MA 2017).

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