Session Proposal for the Conference "Philosophy of Human-Technology Relations" @DesignLab, University of Twente

How much "human" remains in technology?
Perspectives of Human-machine-interaction on usability and design

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Chair: Kevin Liggieri

Kevin Liggieri: *Anthropocentrism in man-machine-interaction*

Olivier Del Fabbro: *1's or 0's - current or no current: Human-machine-interaction in between the analog-digital and software-hardware.*

Suzana Alpsancar: *From "Fahr-Zeug [driving-stuff]" to "Fahr-Ding [driving-thing]"*

Commentator: *Abigail Nieves Delgado*

Session Description

The panel aims to examine how and to what extent anthropological aspects become part of the digital world. How are qualities of humans transferred into machine-readable data and what epistemological and ethical problems arise from this quantitative formalization?

In today's hyperconnected era, we move permanently "in between" technical artifacts. This relationship between man and technology is strongly dependent on the interdependence between usability and anthropological paradigms. But how do scientists and engineers relate to anthropological concepts and translate them into usability models? Furthermore, how does the "human" become the "user" and technical artifacts (cars, computers, smart devices) "intuitively" operable? Why can humans and machines interact so easily? Is it because of the hardware or the software that makes the interaction so "natural" (e.g. through the use of the technical compiler)?

In this panel the ontological status of humans will be analyzed by looking at their relation to machines. The analysis thereby follows the construction process of machines by especially focusing on usability and technical affordance (e.g. interface design). In other words: human-machine-interaction must be investigated by looking at its concrete, situational and epistemic contexts. For this purpose, different aspects of the construction of technology will be worked out (digital/analog, learning ability, creativity, embodiment, intuition, elasticity, unpredictability).

Anthropocentrism in human-machine-interaction

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keywords: anthropocentrism, usability, interface design

Due to the fact of technical devices becoming more and more "humanised", the talk will ask the question of the "humanum" lying behind digital smart devices such as smart homes, smart factories or smart phones.[1]

Today, humans have become attached to their technical devices on several levels: bodily, psychologically, socially and also ideologically. Technologies ensnare us physically and mentally – they even complement us. But how exactly does that work? Are humans and machines not supposed to be fundamentally different? How do you design interfaces that realize such a problem-free interaction? Furthermore, anthropocentrism of modern technology contains both: on the one hand epistemological and ethical problems and on the other also possibilities for positive change. If technology is adaptively adjusted to human beings and thus becomes both manageable and invisible to us in the designed interface, the criticism of anthropological data must take on a new level of reflection. Alongside the critique of a symmetrical anthropology, the focus must move to technical artifacts and arguments that consider the anthropological level. The problem of how the technical shapes the human (measurement, quantification, control and discipline) must be expanded to include the question of how normative anthropological data shapes technical implementation.[2]

The talk wants to point out that the "problem" of technology is therefore no longer an anthropocentric fear, but the intuitive use of technology.[3] Modern technology has become too user friendly. Anthropocentrism nests in our devices.

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[1] Ciano Aydin / Margoth González Woge, / Peter-Paul Verbeek, Technological Environmentality: Conceptualizing Technology as a Mediating Milieu, *Philosophy & Technology* 32, 2019, p. 321–338.

[2] Manjari Chakrabarty, How Stone Tools Shaped Us: Post-Phenomenology and Material Engagement Theory, *Philosophy of Technology* (2019) 32, 243–264; Peter-Paul Verbeek, *What Things Do. Philosophical Reflections on Technology, Agency*, and Design, Pennsylvania 2005.

[3] Martina Heßler et al. (Ed.), *Tech-Fear. Histories of Multifaceted Relationship. Special issue Technikgeschichte*, (2019) 3; Luciano Floridi, Should we be afraid of AI. *Aeon Essays* (2016), https://aeon.co/essays/true-ai-is-both-logicallypossible-and-utterly-implausible.

Chair and Organizer: CV Dr. Kevin Liggieri (Chair of history of technology, TU Darmstadt)

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Kevin Liggieri studied philosophy at Ruhr University Bochum. In summer 2017, he received his PhD (summa cum laude). His PhD-project („Human and Technè. On the Genesis and Modification of Anthropotechnics in the transfer of knowledge between cultural, bio- and technical sciences in the 20th century") looks into the history of technical, biological and philosophical visions of optimizing the human on the basis of the term „Anthropotechnics". The analysis focuses on the discourses of biology, philosophy, literature and technics as well as their medial, apparative and literal practices in the period from about 1900 to 1970. His research interests are History of technology (especially man-machine-interaction), philosophical anthropology, philosophy of technology, epistemology. Currently, Kevin Liggieri is an assistant at the chair of history of technology, TU Darmstadt.

1's or 0's – current or no current: Human-machine-interaction in between the analog-digital and software-hardware

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keywords: digital/analog, compiler, software/hardware

In this talk I show that the conceptual distinctions between analog-digital and software-hardware cannot be dualistically separated in regard to modern electronic devices such as computers or tablets. Rather an intricate and entangled relation between these concepts has to be emphasized.

The reason for this starts in the 1930's, when Claude Shannon laid the fundamental ground for the binary and thus digital design of electrical circuits: 1 or 0, current or no current.[4] Nevertheless, seen from an electro-physical perspective, signals within a computer for example are measured in *continuous* electromagnetic waves and then transformed into *discrete* 1's and 0's.[5] Every so-called modern digital device thus operates also on an analog level.

In regard to the invention of the computer for example further tools such as compilers and assemblers were needed in order to make these devices more user friendly.[6] Hence, next to the digital-analog, another well-known distinction emerged: software-hardware. But the more software was developed over time the more it seemed to distance itself from its necessary hardware component. Has hardware become the mere passive and materialistic substratum of its active counterpart software? Is it legitimate to ask if today's human readable software allows to grasp the analog-digital operations of electro-technical devices? Has the hardware of computers become a mere black box? I will conclude that a man-machine-interaction is needed that epistemologically comprises both, analog-digital and software-hardware understanding and that only an intermediate path between these concepts allows to ontologically fully grasp the mode of existence of today's electronic devices.[7]

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[4] See Claude E. Shannon, A Symbolic Analysis of Relay and Switching Circuits, *Transactions of the American Institute of Electrical Engineers*, vol. 57 (1938), no. 12, p. 713–724. DOI: 10.1109/T-AIEE.1938.5057767; see Radomir S. Stankovic; Jaakko T. Astola; Mark G. Karposvsky (2007), *Some Historical Remarks on Switching Theory*. DOI: 10.1.1.66.1248

[5] see Paul J. Nahin, *The Logician and the Engineer: How George Boole and Claude Shannon created the Information Age*, Princeton 2012.

[6] Alex Müller, Kompilieren, *Mensch-Maschine-Interaktion, Handbuch zu Geschichte-Kultur-Ethik*, eds. K. Liggieri and O. Müller, Stuttgart 2019, p. 275–276.

[7] see Gilbert Simondon, *On the Mode of Existence of Technical Objects*, transl. C. Malaspina and J. Rogove, Minneapolis/London 2017.

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Olivier Del Fabbro is a postdoctoral researcher at the Chair for Philosophy at ETH Zurich. He studied Philosophy, Italian and Media Studies in Freiburg i.Br. and Basel. In 2014 he finished his master thesis on Freud and Derrida. From 2015 until 2019 he conducted his PhD at ETH Zurich on the philosophy of individuation of Gilbert Simondon. The project was supported by the FNR Luxembourg.

Currently, he is working on two projects: 1) Together with Patrik Christen he developed a meta-algorithm based on generic programming capable of creating diverse types of computer models such as artificial neural networks and cellular automata. This method is used in the context of Explainable AI, i.e. it allows to translate parameters from one type of computer model to another, thereby allowing to better understand artificial neural networks for example. 2) He is interested in the question how recent techno-scientific innovations from the digitized realm such as artificial intelligence, learning robots, virtual and augmented reality and the simulation of complex systems can be integrated into social life in a more democratic way. On a theoretical basis he thereby follows concepts and methodologies borrowed from Gilbert Simondon, Bruno Latour and John Dewey.

Embodiment Relation. From "Fahr-Zeug [driving-stuff]" to "Fahr-Ding [driving-thing]"

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keywords: postphenomenology, embodiment, Heidegger

The automobile has been a regular example in the phenomenology of technology to display an embodiment relation between whoever is driving and the vehicle. For Maurice Merleau-Ponty the automobile just like the feathered hat and the blind men's cane illustrates the integration of whatever we deal with in our "body scheme" and his "being-towards-the-world".[8] Don Ihde somehow echoes this insight in his postphenomenological adaption, stating that the driver "'feels' the very extension of himself through the car as the car becomes a symbiotic extension of his own embodiedness."[9] Even Martin Heidegger refers to automobiles. Yet, he usually names them among other stuff [Zeugs].[10]

Against Peter-Paul Verbeek's assumption[11] that the early Heidegger is in line with his attempt to study the role of artifacts in human-technology relations I will present a more Heideggerian way of using his distinction between "Zeugs [stuff]" and "Dinge [things]". Here, it becomes crucial considering why and how Heidegger explores a pre-theoretical sphere of thinking. I will argue that Heidegger's analysis of daily coping with stuff [Zeugs] provides a fresh view on the vision of self-driving-cars. While, of course, whoever uses a self- driving-car will be in an embodiment relation with the vehicle (as well as in a hermeneutic relation or an alterity relation), the car will no longer be a "Fahr-Zeug [driving-stuff]" but stays a "Fahr-Ding [driving-thing]".

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[8] Maurice Merleau-Ponty, *Phenomenology of Perception*, London 2012, p. 102.
[9] Don Ihde, The Experience of Technology: Human-Machine Relations, *Cultural Hermeneutics* 2.3 (1975), pp. 267–279. doi: 10.1177/019145377500200304. p. 272.
[10] Martin Heidegger, *Being and Time*, Oxford 2001, p. 97.
[11] Peter-Paul Verbeek, *What Things Do: Philosophical Reflections on Technology, Agency, and Design*, Pennsylvania 2005.

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Suzana Alpsancar studied Philosophy, Linguistics and History in Chemnitz and Alicante. From 2007 to 2010, she served as a member of the DFG-funded interdisciplinary Research Training Group 'Topology of Technology' on a doctoral-stipend at TU Darmstadt. In 2010, she completed her PhD there. Alpsancar's dissertation critically reconstructed the technical visions of Vilém Flusser and Mark Weiser (Ubicomp). From October 2016 to September 2018, Alpsancar led courses as a Visiting Professor for 'Philosophy of Technology' at BTU Cottbus-Senftenberg. In October 2018, Alpsancar joined the Team of Technoscience Studies as an Assistant Professor.

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Abigail Nieves Delgado is a researcher at the Department of Philosophy I and at the Centre for Anthropological Knowledge in Scientific and Technological Cultures (CAST), Ruhr University Bochum. Her research interests include the history and philosophy of the life sciences, and the history of physical anthropology. She received her PhD in 2016 (thesis entitled 'The dominion of the face: A critical and historical analysis of the study of the human face', Spanish title) from the National Autonomous University of Mexico (UNAM). Currently, she works on the project "Collecting and categorizing faces for security: Facial recognition in the era of Big Data" (funded by the Gerda Henkel Foundation).