https://doi.org/10.48417/technolang.2022.02.09
Research article

The Grammars of AI: Towards a Structuralist and Transcendental Hermeneutics of Digital Technologies

Mark Coeckelbergh (✉)
University of Vienna, Universitätsring 1, 1010 Vienna, Austria
mark.coeckelbergh@univie.ac.at

Abstract

After its rejection of the linguistic turn, influential strands in empirically-oriented philosophy of technology tend to neglect or are even hostile towards structuralist and transcendental approaches to technology. Drawing on Cassirer, Bourdieu, Wittgenstein, and Ricoeur, this article offers an account of the meaning of technologies that theorizes precisely those aspects of technology and shows what this hermeneutics means for understanding digital technologies such as AI and algorithmic data processing. It argues that a transcendental and structuralist approach helps us to reveal and evaluate the linguistic, social-political, bodily, and material preconditions for AI and, more generally, of digital technologies. Considering some issues raised by AI and robotics, the article shows that these transcendental structures or "grammars" make possible the meaning and use of AI, but at the same time constrain it. The proposed framework and research program therefore enables not only a better understanding of digital and other technologies but also their critique, leading to nothing less than the philosophical task of questioning our ways of being in the world.

Keywords: Philosophy of technology; Hermeneutics; Structuralism; Transcendental; Wittgenstein; Ricoeur; Boudieu, Cassirer

Citation: Coeckelbergh, M. (2022). The Grammars of AI: Towards a Structuralist and Transcendental Hermeneutics of Digital Technologies. *Technology and Language*, *3*(2), 148-161. https://doi.org/10.48417/technolang.2022.02.09

УДК 008: 62-529
https://doi.org/10.48417/technolang.2022.02.09
Научная статья

Грамматика ИИ: к структуралистской и трансцендентальной герменевтике цифровых технологий

Марк Кекельберг (✉)
Венский университет, Университет-ринг 1, 1010 Вена, Австрия
mark.coeckelbergh@univie.ac.at

Аннотация
После отказа от лингвистического поворота влиятельные направления эмпирически ориентированной философии технологии склонны пренебрегать или даже враждебно относиться к структуралистским и трансцендентальным подходам к технологии. Опираясь на Кассирера, Бурдье, Витгенштейна и Рикёра, в данной статье предлагается описание значения технологий, которое теоретизирует именно эти аспекты, и показывается, что герменевтика означает для понимания цифровых технологий, таких как ИИ и алгоритмическая обработка данных. В ней утверждается, что трансцендентальный и структуралистский подход помогает нам выявить и оценить лингвистические, социально-политические, телесные и материальные предпосылки ИИ и, в более широком смысле, цифровых технологий. Рассматривая некоторые вопросы, поднятые ИИ и робототехникой, статья показывает, что эти трансцендентальные структуры или “грамматики” делают возможным значение и использование ИИ, но в то же время ограничивают его. Таким образом, предлагаемая система позволяет не только лучше понять цифровые технологии, но и критиковать их, что ведет не к чему иному, как к философской задаче поставить под сомнение наши способы существования в мире.

Ключевые слова: Философия Техники; Герменевтика; Структурализм; Трансцендентализм; Витгенштейн; Рикёр; Будье, Кассирер

Для цитирования: Coeckelbergh M. The Grammars of AI: Towards a Structuralist and Transcendental Hermeneutics of Digital Technologies. // Technology and Language. 2022. № 3(1). P. 148-161. https://doi.org/10.48417/technolang.2022.02.09

INTRODUCTION

Empirically oriented philosophy of technology conceptualizes technologies as material artefacts that have more-than-instrumental effects: they shape our experience and action. For example, postphenomenology and posthermeneutics see technological artefacts as mediators that constitute subjects and help to shape human interpretations of the world (Ihde, 1990; Verbeek, 2005; Kudina, 2021). In order to conceptualize what we do with digital technologies such as artificial intelligence (AI) that are not easily described in terms of "things" and to move beyond the hermeneutics of individual human-technology relations, however, we need an account of the meaning of technologies that is holistic and relates to the social context of technologies in a more internal and systematic way. Furthermore, we need a framework that accounts for the many ways in which language and technology are interwoven: we need to analyse what things do but also what words do (Coeckelbergh, 2017). This is especially important in the case of AI and data science, which through machine learning gain impressive linguistic capacities.

Taking inspiration from Wittgenstein, Ricoeur, Bourdieu, and Cassirer, this article proposes a structuralist and transcendental approach to the meaning of what we do with technology, according to which (1) language, (2) social relations, norms, and institutions, (3) human bodies, and (4) material (infra)structures pre-structure, shape, and render possible, our technological experience, meaning-making, and action. As such it uses and helps to further develop and systematize work on Wittgenstein and technology (Coeckelbergh, 2018; Coeckelbergh & Funk, 2018), ongoing work on a Ricoeurian hermeneutics of technology (Reijers and Coeckelbergh, 2020; Reijers, Romele, and Coeckelbergh, 2021; Romele, 2020a; Wolff, 2021; Gransche, 2021), and Smith's (2015) critique of postphenomenology and his argument for transcendental empiricism. It also uses Bourdieu and Cassirer. It thus connects to other traditions in philosophy (transcendental epistemology) and the humanities and social sciences (structuralism) that are not often used in contemporary philosophy of technology, and also responds to postphenomenology and to work by Floridi (2011) in order to distinguish itself from non-critical and non-transcendental approaches to technology that also could be developed in a structuralist direction. The paper then distinguishes between, and describes, four conditions of possibility of technology, and shows what the proposed transcendental and structuralist hermeneutics means for understanding and evaluating AI/data science and other digital technologies. In particular, it argues that such an approach helps us to reveal and evaluate the linguistic, social-political, and material preconditions for AI and algorithmic data processing – with implications for understanding and evaluating digital technologies and technologies in general.

First, I will explain how transcendental and structuralist approaches differ from some influential ways in which contemporary philosophy of technology conceptualizes what technology is and does. I will refer to Cassirer and Bourdieu and also mention process philosophy. Second, I will invite the reader to consider a set of structures or conditions of possibility that make technological experience and action possible and pre-shape (that is, before the actual (inter)action with the technology) what we say about

technology and what we do with technology: language, social relations, human bodies, and material infrastructures. On the way, I will show what recognizing and revealing this "grammar of technology" means for understanding and evaluating AI and other digital technologies.

THE GRAMMAR OF TECHNOLOGY: ASKING THE QUESTION CONCERNING TECHNOLOGY IN A STRUCTURALIST AND TRANSCENDENTAL WAY

In contemporary empirically-oriented philosophy of technology, questions regarding AI and other digital technologies are asked in a way that focuses on the object and its relation to the subject, without considering the wider structures in which the technology is embedded. For example, postphenomenology (Ihde, 1990; Verbeek, 2005) theorizes human-technology relations in a way that concerns how technologies mediate between the "I" and the world. While this approach has delivered valuable insights into the phenomenology and hermeneutics of technology use, it misses out on the structural aspects of technology and on the conditions that must be presupposed for these human-technology relations to form in that way. For example, it does not conceptualize how language shapes how we relate to technologies and how technologies are part of larger social institutions. Similarly, Floridi's metaphysics of technology in terms of information remains on the 'ontic' level and misses the structural, 'ontological' dimension. It is "flat", so to speak. It is a description of the world in terms of information but it misses an account of *formation* processes and of the transcendental conditions that make possible our use, experience, and knowledge of information. Furthermore, both types of theories do not offer a substantial account of the social and cultural dimension of technology use: Ihde because he focuses on individual human-technology relations, and Floridi because his metaphysics of information does mainly consider human beings as what he calls conscious 'inforgs' (informational organisms (Floridi, 2011, xiii)) and not as social beings.

In order to conceptualize the ontological and social dimension of technology use, we need what Smith (2015) and I (Coeckelbergh, 2012) have called a 'transcendental' approach. One could also call it a structural or grammatical (Coeckelbergh, 2018) approach. The point is not that technology is somehow transcendent and abstract (this would be Technology with the big 'T' Ihde and Verbeek argue against) but that there are *transcendental* conditions involved: the use and meaning of technology are *made possible* by, and structured by, some other elements that are not themselves necessarily technological and material. These structures or conditions pre-shape the meaning of, and our performances with, technology. For example, as I will argue below, language pre-structures and pre-conditions how we deal with machines. The semantics of technology is made possible by what I will call the "grammars" of technology. Let me unpack this approach and to show what it means with regard to digital technologies such as AI.

Inspired by Gransche (2021), we can find further support for a transcendental approach by drawing on Cassirer – without however borrowing the latter's idealism and while keeping an empirical orientation, broadly understood. Cassirer writes:

> 'If philosophy wants to remain loyal to its mission . . . it must inquire into the 'conditions of the possibility' of technological efficacy and technological formation, just as it enquires into the 'conditions of the possibility' of theoretical knowledge, language and art. . . . However, this clarification cannot succeed so long as one's observations are limited to the circle of technological works, to the region of the effected and created. The world of technology remains mute as long as philosophers look at it and investigate it from this single point of view.' (Cassirer 1930, 18)

To inquire into the conditions of possibility of technology is thus, according to Cassirer, a key task for philosophers. And it is in tune with contemporary phenomenology and hermeneutics that see technology in a more-than-instrumental way. Cassirer (1930/2012) compares this way of seeing technology with what philosophers of language have said about the use of language: language is not just a tool for representation, but a means of making reality (p. 23): the form of the world is 'built' by humans (p. 24) through language, which in turn is related to other elements. Similarly, Cassirer argues, material tools create realities and are not just things with properties but are the expression of 'a particular activity to be performed' (p. 23) and in the end also create the human. Technology participates in 'anthropogeny' (p. 36): we do not only create technology, but technology also creates us. It forms the world. It is part of formation and – to use Cassirer's process philosophy vocabulary – it is part of becoming.

In previous work I have started to conceptualize the transcendental dimension of the use and meaning of technology by using Wittgenstein and Ricoeur. First, what Wittgenstein (1953/2009) says about language in the *Investigations* – that language use is related to activities, games, and a form of life – can also be said about the use and meaning of technology: technologies are embedded in games, which have rules but also require a tacit understanding of them, and all this provides a grammar for technology use and meaning (Coeckelbergh 2018; Coeckelbergh and Funk 2018). The point is not only that language shapes how we deal with technology, but that the transcendental structure of language is similar to the transcendental structure of technology. Both are deeply embedded in the social-cultural world. The meaning of words and the meaning of things is not a matter of word-objects or of things-objects alone; what words and things mean and do depends on larger structures such as games and a form of life, which render use and meaning possible. Just as linguistic grammar provides a structure that renders possible and constrains our use of language, there is language and other transcendental grammars that make possible and govern the use of (other) technologies. Moreover, technology can change the game. It is phenomenologically and hermeneutically "active", so to speak. Culture is not a matter of a kind of (virtual?) things but is performed and enacted. There is no form of life separate from *how we do things*. What culture becomes depends on our uses of language and our uses of

technologies. By changing those uses and performances, we can change the larger cultural whole – albeit slowly.

Second, using Ricoeur's view that human experience has a narrative structure, one can also construct a hermeneutics of technology use that shows how technologies are embedded in narratives and even shape those narratives (Reijers and Coeckelbergh, 2020). In *Time and Narrative*, Ricoeur (1984) argued that, based on a pre-understanding, the plot of a story configures characters, motivations, and events into a meaningful whole; in the end, the narrative as a whole makes sense and leads to a new understanding. Reijes and I argued that technologies have a hermeneutic function that is similar to narrative and text: they also help us make sense of the world and organize characters and events. We do not only tell stories about technologies; technologies also co-write our stories. Again thinking about language – here narrative theory – offers a model for thinking about technology and makes even a direct link between technology and language, this time in the form of narrative. Technologies themselves, or rather, technologies other than text *also* narrate. And again the non-instrumental aspect of technology is stressed. In line with Cassirer (1930/2012), who as we have seen writes about formation (p. 18), I propose to call technology a *formator*. It is not just object and substance, not just a thing. It forms worlds. But it is not the only formator; humans, for example, also form. There is no technological determinism but co-formation. To put it in process philosophy language: like humans, technology participates in the becoming of the world.

This approach can also be framed as structuralist. In the social sciences, Bourdieu is known for his further development of structuralism. We develop and are situated within a social environment and Bourdieu (1984; 1990) famously argued that this happens via the creation of *habits*: we develop a particular way of thinking, feeling, and acting. As such we and our acts are always embedded in social relations. Bourdieu explained how the social grammar becomes habitual and incorporated. But this happens in an implicit, tacit way. There are rules, there is an order, but the social organization and orchestration happens without a conductor (Bourdieu 1990, 53). This becomes also clear when we consider how Bourdieu was influenced by both Cassirer *and* Wittgenstein: as Calhoun (2002) points out, as an ex-rugby player and a reader of the later Wittgenstein, Boudrieu used the metaphor of games to argue that when we play we are also aware of being part of something larger. Like Wittgenstein, Bourdieu thought that this was not just a matter of following rules but also getting a sense of how to play. It is also about implicit knowledge, and is especially a *social* matter: 'it requires a constant awareness of and responsiveness to the play of one's opponent (and in some cases one's teammates' (3). Applied to technology use, one could say that technology use is also a matter of habitus: technology use is embedded in habitus, and technologies also form our habitus and thus shape our link to the social. We are habituated by technology. As Romele (2020b) puts it: 'digital media and technologies are just the continuations of social and cultural habituations by others means'; these media and technologies are 'habitus machines'. This happens largely in an tacit way. We are usually not aware of it. We are not aware of the social as a transcendental structure, and we are not aware of what technology – as pre-structured by the social – does to us.

Four transcendental structures and the implications for understanding and evaluating AI and other digital technologies

Let me now analyse these conditions of possibility in a more systematic way. If technology can and must be approached at least *also* in a transcendental way, *what* are conditions of possibility of technology use and meaning? What are the structures and grammars of technology?

There are at least the following four *conditions of possibility* or transcendental *structures* of technology:

1) Language
2) Social Relations
3) Human Bodies
4) Material Infrastructures

Let me elucidate these different structures and on the way apply the framework to AI and algorithmic data processing and, more generally, to digital technologies.

Language is a transcendental structure of technology since the way we experience, use, and talk about and *to* technology is shaped by the *milieu* of our language – a specific language and language in general. Hermeneutically and epistemologically speaking, we do not have direct, unmediated access to our own tools; the way we use them and what they mean to us is mediated by language and by a specific language. This includes grammar and narratives. For example, the meaning of what a specific AI or robot "is", is co-constructed by the way we talk about them grammatically speaking. It matters, for instance, if we say "it" and "the machine" to a robot or if we use "she" or "he". (Coeckelbergh, 2011) Here the expression "grammar" of technology needs to be taken literally: the grammar pre-conditions how we perceive and engage with the robot. Consider also how bias in AI may be created by a specific language, for example English. Caliskan, Bryson, and Narayanan (2017) have shown that the English language itself contains imprints of historic biases. An AI-based search engine that uses the English language will likely adopt those biases – for example gender biases; this may lead to unintentional discrimination. AI, and more generally algorithmic data processing, is thus always already also an intervention in social relations and is made possible by social relations.

Moreover, if we entertain a narrative about AI that sees current AI as a step towards general artificial intelligence and superintelligence, as transhumanists do (see for example Bostrom, 2014), then that narrative shapes the actual use and development of the technologies: investments and efforts will then go into trying to create that kind of AI, and people will experiment with technologies for the purpose of so-called "human enhancement." A specific narrative and discourse then make possible particular developments and governs them. For example, tech companies like OpenAI, DeepMind, Google Brain, and Facebook A.I. Research are trying to develop artificial general intelligence (AGI). The technology is still an idea, it is all hypothetical. But the narratives about AGI and superintelligence nevertheless drive these developments; they

provide the transcendental support. Without presupposing these narratives and discourses, it is impossible to make sense of what these companies do and to support the use of these technologies.

More generally, the meaning and use of digital technologies is made possible by the grammars and narratives of language and specific languages. One of these languages is of course a specific coding language, but also natural language use pre-structures the meaning and use of digital technologies. The way we talk about AI and digital technologies is not neutral in relation to what these technologies "are". Even the very word "artificial intelligence" is not hermeneutically neutral: it *already* compares the machine's cognitive capacities to those of humans and ascribes "intelligence" to machines, *before* we even discuss the matter (for example as philosophers) or develop and use the technology. It already suggests that such a comparison between humans and machines even makes sense. This use of language about AI thus pre-structures most discussions about AI, unless the precondition is revealed, in which case a critical discussion can take place.

Social relations also pre-structure and make possible technology use and meaning. As I already suggested, the habits we develop in and while using digital technologies such as AI are embedded in a wider social-cultural context. For example, the development of AI is often embedded in games of competition, say between big tech firms but also between countries and governments (e.g., between the West and China). But also closer to home, social relations make possible particular meanings and uses. Consider "intelligent" assistive devices such as Alexa: what Alexa says makes only sense if what is said is related to a specific social context, for example relations with a family. It is only within such a context that it makes sense when for example someone treats Alexa as a member of the family. The sense-making process related to the technology presupposes an entire social world, which often remains implicit and is not articulated. If AI, or any digital technology for that matter, fails to establish this social lifeworld embedding, it fails as a social device, for example as a social robot or as a social assistive device. The use and development of such technologies is in this sense parasitic on the social structures that already exist. It cannot function in isolation from the social relations, social structures, and social institutions that are already there and make possible the meaning and use of the technology. This "making possible" is always also at the same time a *constraining* and a governing. Again the problem of bias in AI offers an excellent example: if AI is used in a society that is pervaded by a particular kind of bias or set of biases (e.g. gender bias, racial bias) and the social relations formed by it, then these biases and social relations will pre-structure the use of the AI, and for example lead to discrimination on the basis of race when AI is used in juridical systems. What AI then does and means depends on the existence, nature, and history of these social structures and institutions. Consider for instance the famous case of COMPAS in the U.S.: the software, used by a US court for risk assessment concerning prisoners, was said to be more prone to mistakenly label black defendants as likely to reoffend[1]. Both

[1] Buranyi, Stephen. 2017. 'Rise of the Racist Robots – How AI is Learning All our Worst Impulses.' Guardian, 8 August 2017. https://www.theguardian.com/inequality/2017/aug/08/rise-of-the-racist-robots-how-ai-is-learning-all-our-worst-impulses

the use of this technology and the meanings that surround the case can only be fully understood within the specific social context and history of the U.S., which made and makes possible such uses of AI and such discussions about AI. Other societies and cultures may or may not have similar social contexts and hence may or may not have similar cases.

There is nothing deterministic about this influence of the social as a transcendental structure, however: we can change social relations and we can change our technologies. We can change the social games we play and the 'technology games' (Coeckelbergh, 2018) we play. But in order to do that, we first have to be aware of the reality and persistence of these pre-structures and conditions of possibility. If we fail to develop this awareness, stick with a flat ontology that focuses on technologies as mere things and tools, and falsely think that technology is hermeneutically and normatively neutral, we will continue to be governed by our technologies in ways that are not always morally and politically acceptable. If, however, we manage to reveal the social preconditions of the meaning and use of AI and other technologies, and understand that and how technologies are very much entangled with the social and its structures, formations, and institutions, we open up the possibility of social-technological change.

Furthermore, while this article remains agnostic regarding the potential existence of transcendental forms as proposed by the idealist philosophical tradition, the mentioned social transcendental structures are not to be understood in an idealist way: they are not abstract forms that pre-structure cognition and shape our intuition of objects, as in Kant (1781/1996), or purely symbolical forms. Instead, they are part of the world and part of the way we are in the world. They are related to concrete uses and performances within a social and cultural context, and they have material and bodily aspects. They are not transcendent. Yet often remaining inexplicit and hidden from view, they pre-structure and shape how we relate to technology and what technology does to us. This leads us to the next two transcendental structures: the human body and material infrastructures.

The human body is a transcendental structure of the meaning and use of technology for at least two reasons. First, as contemporary "enactivist" cognitive science and philosophy has convincingly shown (see for example Varela, Thomson and Rosch, 1991), the way we experience and think about *anything* is embodied. When we think, we do not leave our body behind. We are bodies-minds interacting with our environment, and as such we make sense of the world. We enactively and embodied bring forth a world of meaning and significance. Embodied cognition theory reacts against what it takes to be the dualism of Descartes and other modern thinkers and against the idea that cognition is about re-presenting. Instead, cognition is seen as an active relationship to the world 'anchored in the living body' (Di et al., 2017, p. 20).

For AI, this means that making meaning of AI is pre-structured by our embodied way of being and knowing. Thus, when we think about AI, we may for example project a human body onto the artificial agent. This way of approaching AI is understandable and helps us to make sense. But as in the cases mentioned so far, it is also constraining: it means that it becomes difficult for us to think about AI in a way that does not imagine it as, say, a humanoid robot. Second, our body and our bodily way of being in the world

pre-structures and makes possible our experience and use of digital technologies. Even if we immerse ourselves in an AI-based virtual world in which we move with an avatar (perhaps a kind of 'metaverse' as proposed by Zuckerberg[2] or indeed many already existing multi-player online games) or engage with AI-based digital technologies in ways that do not involve a representation of a human body at all, we do not leave our body behind but instead move through that virtual world in a bodily manner, in a way that is similar to how we move our biological body through the offline world. We can only make sense of the virtual world and move within it because we have a human body. Offline forms online. Thus, while phenomenologically and ontically it might appear that when I enter a virtual world, I transcend my body, I do not leave my biological body behind in the sense that it remains what Husserl (1952/1989) called the 'zero point' (German: *nullpunkt*) of perception (p. 61) and what Merleau-Ponty (1945) considered the condition for having a world. It is the point from which I move into the world and make sense of the world – virtual or not. The living and moving body is therefore also part of the grammar of technology.

Note that through *habituation* (as mentioned above in relation to Bourdieu), the body is also already involved in our socially situated use and experience of digital technologies: our habits are not abstract social and cultural "things" but are incorporated, embodied, and performed. The social is transcendental but not transcendent: it is only present in what we do, what we tell, what we write, how we move, etc. It is embodied, moving, and changing. It is living. Similarly, language use is connected to what we do with our voice, our hands, and so on. The transcendental structures that precondition the meaning and use of technology are inter-related; they meet in the nexus of technology meaning and use, where all transcendental structures are at play.

Finally, in spite of the perception that AI and other digital technologies have to do with an immaterial world, the preconditions for using and making sense of these technologies are very material: *material infrastructures* and other material technologies related to the technology in question. In line with the empirical turn in philosophy of technology (Achterhuis, 2001) and with much work in social studies of science and technology, it must be emphasized that our current digital technologies, including AI and data science process, are only possible because the material infrastructures, physical processes, and material devices that support their use and without which our sense-making of and with technologies is not possible. For example, if I use an AI-based search engine or an intelligent assistive device, these technologies are not only embedded in material devices such as computers and mobile phones (and hence these technologies are always more than "virtual" code) on which they totally depend for their functioning and use. These material devices and physical processes are in turn extremely dependent on, and made possible by, other material technologies and processes such as the infrastructure of data centres and (mobile) data transmission

[2] The term refers to a form of online virtual reality, see for example https://www.theverge.com/22588022/mark-zuckerberg-facebook-ceo-metaverse-interview

technologies, electricity production, and the production of the devices. AI and other algorithmic and data processes are thus not very immaterial at all once we relate them to their material structures and infrastructures. As critical studies of technology and for example Crawford (2021) have shown, these material processes are in turn related to often exploitative and dehumanizing labor processes and have environmental consequences, threatening a sustainable future. Ultimately, planet earth and its vulnerable ecosystems and climates make possible our use of digital technologies. They are the "zero point" of our so-called digital lives. AI is nothing without these artificial and non-artificial bodies, ecologies, and supporting infrastructures, which must be presupposed even when we believe that we play around in a different, digital or virtual world. Technology ultimately depends on life.[3]

CONCLUSION

This article has argued that the use of digital technologies and the making of meaning of and with these technologies is only possible on the basis of a number of conditions of possibility or transcendental structures. These "grammars" or preconditions make possible the meaning and use of the technologies, but also at the same time constrain it. This transcendental and structuralist approach has enabled me to conceptualize some issues regarding AI and digital technologies as pertaining to the conditions of possibility or "grammars" of AI.

Yet this "detour" through technology's transcendental conditions does not only promise a more adequate understanding of AI and digital technologies; it also (1) suggests a broader research program about the grammars of technology and (2) invites us to consider some normative implications – both ethical and political.

First, as already became clear in the course of this article, the proposed structuralist and transcendental conceptual framework is applicable to technology in general, and not only to AI and other digital technologies. It also enables us to further discuss the relations between technology and language. More work needs to be done to elaborate this approach to the hermeneutics of technology. I suggest further investigations into the ways in which the various grammars of technology operate, but also into their interconnections and their other relations to technology. For example, language is a structure and condition of possibility of technology use, but language is also related to the social, and language use and its meaning are in turn themselves conditioned by technologies and media, for example when digital social media (pre-)structure how we talk to each another. This opens up interesting directions for further developing the "grammars of technology" approach in ways that reveal rich and complex worlds of technology.

Second, given the influence of these grammars on how we use technologies and on the meanings we co-create, revealing the grammars of digital and other technologies

[3] As I already suggested previously (Coeckelbergh, 2022), earth is a condition of possibility that makes possible our form of life, and that includes technology.

is also a critical task or at least a precondition for a critical task. Evaluating technologies does then not only need the "ontic", flat description and analysis of our tools and media, but also and especially the revealing and questioning of the transcendental structures of technological experience, meaning-making, use, and performance. Evaluating technologies is then also about questioning our language use, our social relations, the way we bodily and kinetically relate to our environment, and our material infrastructures and production processes (and the related labour processes). In other words, if we adopt this structuralist and transcendental approach, the challenge of understanding and questioning technology means nothing less than the challenge of understanding and questioning our ways of being in the world – indeed our form of life – and its relevant processes of formation and becoming. This is not only a task for philosophers of technology but for all philosophers who – to use Cassirer's words – wish to remain loyal to philosophy's mission.

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СВЕДЕНИЯ ОБ АВТОРЕ/ INFORMATION ABOUT THE AUTHOR

Марк Кекельберг, mark.coeckelbergh@univie.ac.at
ORCID 0000-0001-9576-1002

Mark Coeckelbergh, , mark.coeckelbergh@univie.ac.at
ORCID 0000-0001-9576-1002

Статья поступила 10 марта 2022
одобрена после рецензирования 26 мая 2022
принята к публикации 10 июня 2022

Received: 10 March 2022
Revised: 21 May 2022
Accepted: 10 June 2022