

## Transductive reticulation: How to reflect on digital thinghood

Review of: **Yuk Hui: *On the Existence of Digital Objects***, University of Minnesota Press, Minneapolis, 2016, 314 p.

With a title obviously alluding to Gilbert Simondon's famous 1958 book *Du mode d'existence des objets techniques* (only recently translated into English) this exceptionally original and superbly masterful treatise by Yuk Hui provides a thorough and in-depth philosophical analysis of the existence of *digital* technical objects. Such objects had already appeared in the time Simondon wrote his book, of course, but were not explicitly investigated by him. One of the reasons probably being that they were anything but ubiquitous at the time. Hui, living in a time awash with digital objects that literally pervade the most intimate aspects of our lives now, is actually the first scholar to conduct such an investigation. Although there is evidently no shortage today of philosophical studies of digital media, as noted in the introduction, their focus is almost exclusively on the digital and informational aspects of these media, never on their nature or way of being as objects or things, i.e., on their objectivity or thinghood.

It is this ›ontological‹ and most specifically philosophical approach that is pursued in this book, and in a constant dialogue with the whole philosophical tradition starting from Aristotle via Duns Scotus, Thomas Aquinas, Descartes, Hume, Kant, Hegel and Husserl to Heidegger and Simondon. All of them are Hui's most important informants and interlocutors in this book and who also inspire its ›political agenda‹ (5). Even more so, the book directly relates this philosophical analysis to the computational or engineering approaches of digital objects within the computer sciences, engaging in both philosophical and technical debates with computer scientists such as Brian Cantwell Smith, Tim Berners-Lee, David Alan Grier and Alan Turing. In passing, it provides clear introductions in the thoughts of Husserl, Heidegger and Simondon. And although the general backdrop and ›spirit‹ of the book leans heavily towards ›continental philosophy‹, it also features discussions with key analytic thinkers such as Wittgenstein, Quine and Putnam. On top of that, it is also informed at times by insights from the social sciences and the humanities.

A digital object for Hui is anything that appears on a digital screen or forms part of a computer program and is composed of data and metadata regulated by structures or schemes (1), e.g. a document file containing personal data of a user or an HTML

webpage. They are new kinds of industrially produced technical objects utterly familiar to everyone, yet still overlooked by both philosophy and computer science. Hui's goal is to develop an understanding of the digital object, i.e., its object-nature, by reciprocally examining both the philosophical tradition's theories of natural and technical objects and the so-called ontology theories from computer science. On a most basic level, he aims to understand digital objects in terms of relations, thereby employing a notion of relation inspired initially by Bachelard but more specifically adapted from Simondon as well as Heidegger. The latter is explicitly interpreted by Hui as a philosopher of relations, in stark contrast to the object-oriented reading of Heidegger by Graham Harman, to whom he briefly positions himself.

Bachelard and Simondon also provide Hui with his basic methodology, the so-called orders of magnitude. It means approaching objects from different physical, technical or operational levels (starting from electrons and bits via coding languages and data to whole digital networks) pursued through different instruments. The *spectrum* of orders of magnitude chosen in this study is that of data, since data form the intermediary between the level of pure computation and that of human experience (32). The ultimate political agenda of this book, derived from both Heidegger and Simondon (and to some extent also Ellul, who is considered by Hui as having many affinities with Simondon), is precisely concerned with this relation between the human and digital technology and revolves around the issue of alienation or what in Marxism is called proletarianization. Heidegger in his way understood it in terms of the danger inherent in technological enframing. In the spirit of Simondon, Hui aims to contribute to overcoming the current alienation resulting from a misunderstanding or lack of understanding of digital technologies by offering a thorough relational conceptualization of digital objects and the systems or networks in which they appear with a view »to translate it into critical questions for the design of technical artefacts« (39).

The book is well-structured and divided into three parts, each consisting of two sections. The first part on ›Objects‹ describes the genesis of digital objects through an examination of the history of markup languages and analyzes the object-nature of digital objects. The second part entitled ›Relations‹ develops a materialist understanding of the relationality of the digital object as operating within digital networks through the concept of interobjectivity and considers the temporal dimension of these networks, primarily in dialogue with Heidegger. Finally, the third part entitled ›Logics‹ reflects on the logical aspects of digital networks and mobilizes first Husserlian intentional logic and then Simondonian transductive logic against the extensional-discursive as well as the classical logic operationalized currently in digital networks. It is in this final part that the critical thrust of this book becomes most manifest.

This critical and political agenda of the book is co-extensive with its philosophical or ontological project in that it aims at a fundamental rearticulation of the positions of both humans and objects in the existing and emerging digital technical systems. Those should be interpreted as positively enabling and fostering the individuations properly of both humans and objects instead of frustrating them and producing their disindividuation. To that end, it critically confronts the so-called ontologies as they are used in computer science with both the formal and transcendental ontologies developed by Husserl in the context of his phenomenology of intentional experience and the so-called fundamental ontology developed by Heidegger in the context of *Being and Time*'s project of renewing the question of being. The latter is an explicit critique of the metaphysical nature of all traditional ontologies including Husserl, whose theory forms the base of the computer science technical ontologies, as Hui shows. Exclusively focused on beings and forgetful of being, such ontologies are in fact ›realized‹ in the current digital milieus. Perceived from a Heideggerian perspective it is a concrete accomplishment of the metaphysical project through the reign of enframing [*Ge-stell*]. In other words, it is the deepest essence of what resides in his concept of danger [*Ge-fahr*]. That is to say, it is the installment of the complete oblivion of being or the total elimination of man's openness to being. Such a thing would really announce something like ›the end of time‹ (37), i.e., of existential time as it becomes integrated – or better: disintegrates – in the technical system.

Emphasizing the real presence of this danger in our current ›information society‹ – or as Bernard Stiegler recently started to call it, ›automatic society‹ – Hui lucidly evokes the practical meaning by writing that »people tend more and more to rely on machines to organize their lives and give to mobile phones the responsibility for synchronizing their meetings, eating, sleeping, and so on. In this synchronization, there is a destruction of the unity of time, which Heidegger calls *care*« and asks: »When everything is becoming data and being represented in logical statements, and then automated by algorithms, isn't this a higher mode of *Enframing*? « (37–8). Today, Hui argues that we cannot really speak about our existence anymore in terms of a ›temporal ecstasy‹ in Heidegger's sense, but rather as being lost in a ›technological ecstasy‹, i.e., a techno-engulfed and techno-driven »way of becoming that has no clear idea of its direction yet is characterized by acceleration and adventure« and that is bereft of any rhythm (47).

The (noo)(techno)political issue here principally amounts to the question of how to deal with this alienating arrangement. Thinking with yet against Heidegger, taking his inspiration from both Simondon's *mechanology* and his project of a ›technological humanism‹, as well as from Stiegler's technical re-reading of Heideggerian existential ontology and the former's call for a technopolitics as ›noopolitics‹, Hui proposes an understanding of technics as time, and of time as technically conditioned. He argues that besides the tertiary *retentions* identified by Stiegler as supportive

of ›human‹ temporality, we can distinguish within the digital milieu what he calls ›tertiary protentions‹. These are enabled by algorithms and more precisely, by interconnected algorithms (38). This is a crucial conceptual novelty developed in the book. Tertiary retention for Stiegler refers to all kinds of external technical memories that support and overdetermine, according to him, the primary (i.e., perceptual) and secondary (i.e., imaginative) retentions, but also protentions that Husserl distinguished in his analysis of the temporal experience of transcendental subjectivity.

What Hui means by tertiary protentions can be understood based on another major conceptual invention of the book. It is the notion of *interobjectivity* proposing a genuinely material and technological understanding of technical systems and milieus that differs from the usual, human-centered or intersubjective approaches of such systems in current philosophy. The digital objects that make up technical systems like the World Wide Web are in fact *materialized discursive relations* that were formerly, i.e., until the invention of cybernetic technologies, only occurring in the minds of humans, but are now being objectified in material circuits and can as such be manipulated through algorithms (153). As ensembles of interobjective relations, digital technical systems, in their increasingly symbiotic relation with humans, allow for the implementation of new temporalities of ›being-there‹ [*Dasein*] in which its temporal extases (i.e., past, present and future) are increasingly *overdetermined* – and more and more automatically so – *in an active way* by digital objects of all sorts, bypassing or short-circuiting the subject and the intersubjective relations as it were.

Thus conceived, digital objects can act as tertiary protentions that actively synthesize, in Kantian terms, the temporal unity produced by the subject's transcendental imagination, rendering the latter to be passive (244). It gives rise to a new form of determination that is not the traditional one of ›I think‹ but becomes an alienating ›I guess you think...‹, giving ›us a future that is present‹ (245). And for Hui this phenomenon deepens being-there's ›fall into forgetting the question of Being, because here ›seeing is always already directed toward certain destinations before thinking arrives‹ (247). Therefore, it is a *synthesis* that tends to become a *syndosis* (ibid.). Such tertiary or technical protentionality can be achieved through digitally materialized – and electronically powered (!) – algorithms because such algorithms combine logic with *control*, as computer scientist Robert Kowalski has emphasized (236).

With the idea of tertiary protention, Hui thus refers to the fact that in our current situation digital milieus substantially impact our imagination and our everyday life orientation that ›becomes more and more an algorithmic process that analyzes and produces relations to pave the way for the experience of the next now or the immediate future‹ (221–2). Obvious examples for that are Google's autocomplete search functions or search algorithms proposing restaurants, cafes or sightseeing destinations, Amazon's user profiling algorithms suggesting books or other products to buy, Tinder's recommendation of dating partners based on matching algorithms as well

as developments like the Quantified Self, affective computing and surveillance programs. In this way, Hui contends, »technology is engaging more and more in our thinking processes« such that our life's decisions »are systematically determined by algorithms instead of relying on the subjective selection of significations« (223). It is this phenomenon that Stiegler has called cognitive, or more recently, noetic proletarianization. And it is achieved nowadays principally through the generalization of digital automation.

The problem Hui tries to tackle in the final part of the book is how to respond critically, and that explicitly means *technically*, to this alienating trend of increasing automation, dividing humans (or human culture) and technology more and more. In Hui's view, both Heidegger and Simondon sought for a new *convergence* between humans, things and the world. Yet Heidegger's proposal was to »step back« from technics and return to a nontechnical, purely language-based, poetic and meditative relation toward things (185), exemplified by his notion of the fourfold [*Geviert*] which is interpreted by Hui as his attempt to think of interobjectivity in a nontechnical way (160). Hui is ultimately more sympathetic to Simondon's attempt to find a solution *within* technics. He also considers it more in line with Heidegger's own famous Hölderlinian dictum that the saving power grows, where danger is, i.e., in technology itself (38). Although he of course meant technology's *essence*, to be considered ontologically and not technologically. However, this opens up a debate that I cannot enter into here.

It is Simondon's design of a *transductive* logic, further developed to re-conceptualize digital objects in terms of relations, that is recruited by Hui as both a philosophical and technical tool »to produce a new type of reticulation in favor of convergence« (189). Conceiving of the relata as constituted in and by the relation itself, such an eminently relational logic problematizes automation (being the lowest level of technical perfection for Simondon) and enables the curative reintegration of the human into the technical system and allowing other and less alienating forms of human and technology co-individuation. Hence, the redesign of digital technical systems on the basis of a transductive logic is here due to the potential of saving power residing in technology itself in order to »rescue« us from technology's endangerment to the human essence. This gesture is unmistakably reminiscent of the polyvalent logic proposal for a new understanding of cybernetics by the German-American logician and philosopher Gotthard Günther (1900–1984). He also may be considered an interesting interlocutor to explore in this context, especially in relation to both Heidegger and Simondon and because of the latter's well-known critique of cybernetics.

At the very end of the book, Hui, who is also a computer scientist and software engineer himself, describes a concrete research project conducted in collaboration with Bernard Stiegler and Harry Halpin at the Institut de Recherche et d'Innovation

in Paris. There the transductive logic was used to develop an alternative, i.e., more convergent social networking website wherein the collective and not, as in Facebook, the individual was determined by the default of establishing relations. This nicely illustrates Hui's conviction that »technics is fundamentally philosophical, if not metaphysical« and that »philosophy is as practical and technical as one may think technics to be« (251). This conviction is echoed by Tim Berners-Lee's famous assertion that Web developers are »philosophical engineers«, which I would argue deserves to become much more widespread among philosophers.

With the attempt to sketch some of its central issues above, I have in fact only scratched the surface of this innovative, incredibly rich and rigorously argued treatise, that is at times quite difficult, I have to admit, despite the remarkable clarity of the presentation offered by the author. It is impossible in a short review like this to do it any justice, yet I hope to have provided at least a taste of its breadth, depth and level of ambition. If I had to come up with a critical note it would be that the book does not consider, or hardly considers, the utmost important politico-economic aspects of digitization and does not enter a debate, for instance, with contemporary Marxist or Neo-Marxist views on digitization and automation, like those of the Italian post-operaists and post-autonomists. But one cannot do everything of course and this is more a matter of future research, as Bernard Stiegler suggests in his thoughtful and admiring foreword. In conclusion, I would utterly recommend this book for all those interested in digital culture and more generally, in the relation between humanity and technology. It has all the qualities of becoming a genuine classic in the future, in a domain that it is partially in the process of excavating itself. A truly outstanding achievement that deserves a wide audience and is in my view indispensable and essential reading.