Geert Lovink and Yuk Hui

Digital Objects and Metadata Schemes

Yuk Hui has dared to pull philosophy into the twenty-first century by asking what a digital object is. Originally from Hong Kong, he has been roaming Europe since 2006. He first did his PhD in London at Goldsmiths College, then relocated to Paris and worked at Bernard Stiegler's Institute of Research and Innovation before moving, inevitably, to Berlin, where he is a postdoc at Leuphana University (Lüneburg). His first book, On the Existence of Digital Objects*, arranges a dialogue between the technophobic metaphysics of Martin Heidegger and the French technology thinker Gilbert Simondon (author of the neglected 1958 classic* On the Mode of Existence of Technical Objects*). In his debut, Yuk Hui elegantly plays with the double meaning of the word "ontologies": on the one hand, the eternal level of the question of Being [1]; on the other, the technical meaning of the word used by computer science to describe the hierarchies inside representations of knowledge such as metadata.*

Ontology in the context of the internet is often associated with the inventor of the World Wide Web, Tim Berners-Lee, and his term "semantic web," a set of standards for data formats and exchange protocols. One way to describe On the Existence of Digital Objects *is to say that it gives the touching yet superior engineering mindset of Berners-Lee a solid continental European foundation. Programmers do not just hang out on Slashdot, 4Chan, and Reddit; they also read Husserl. Indeed, some hyper humans might … My question is why the geek establishment didn't foresee the rise of platform capitalism, with monopolies such as Google and Facebook. Information science's approach to ontology has proven naive, if not shortsighted. The internet as a public realm that the engineering class takes for granted has all but disappeared, leaving no space to implement experimentation on the fundamental (indeed ontological) level. This raises the question of whether ontological adventures such as this one can be successful without a political angle.*

According to Yuk Hui, "The idea of the philosopher as a figure who stands outside as mere critic and defends the purity of thought has been washed away in the flux of technological progress." The nature of technics needs to be taken into account when talking about being. That's an ambitious starting point. However, the real existing social media dominance puts on the table the question of what role philosophical investigations (such as Hui's) can play. Should research become more technical (and necessarily more traditional in order to be accepted)? Or should it go against the grain and refuse to build foundations in the service of an insular engineering class that is in dire need of a Žižek-

A tongue-in-cheek prototype of a Chinese computer keyboard, the first to feature one key per character instead of the multiple hidden commands required to type Chinese on QWERTY and Wubi keyboards.

The first Chinese computer capable of running one million calculations per second is inaugurated in 1973.

style political provocation? Another approach could be to compare Hui's surprisingly Deleuze-free style with American programmer-theorists such as Alex Galloway and Wendy Chun, who have never dug as deep into classic philosophy in search of the foundations of our digital existence. Who's ready to read XML syntax alongside Schelling and turn knowledge of Python and C into action, thereby changing the language of philosophy itself?

At times, On the Existence of Digital Objects *falls into the obligatory comparative exercise of explaining how author A is unlike author B – but then it recovers quickly, giving us a sense of things to come. What's really upsetting about the future of this digital philosophy-in-the-making is the "black box society" (Frank Pasquale), the secretive algorithms that cannot be read, let alone changed. How can philosophy become technical when it, once again, can only speculate about its object?*

Let's praise Yuk Hui for his priceless effort to practice what Friedrich Kittler always proposed, yet towards the end of his life drifted away from, escaping to Ancient Greece. Bernard Stiegler's preface to Hui's book is equally appreciative. Next stop for Yuk Hui is a similarly ambitious study on the nature of technology in China, which he has just finished. Let's now get to the subject: the digital objects that surround us, and steer us, in such virtual, invisible, and intimate ways.

Geert Lovink: Can you sketch the long-term implications of your approach for philosophy at large and how it is taught? Where are we in terms of the debates and experiments to integrate technics into the philosophy curriculum? Networks and philosophy have yet to encounter one another. How do you want to stage this? Some say that the "encounter" is a Christian notion to start with.

Yuk Hui: Like Bernard Stiegler, I am trying to reread philosophy according to the question of technics, not only within European philosophy but also Chinese philosophy – for the latter I am collaborating with some Chinese scholars, for example Professor Gao Shiming from the China Academy of Art. Stiegler is a very good example of this since he bases his reading of the history of philosophy on what he calls the "tertiary retention," which is artificial memory. Tertiary retention is a supplement to what Edmund Husserl calls "primary retention" (impression) and "secondary retention" (recollection). Stiegler develops his reading in a systematic and rigorous way. However, we still need to do an enormous amount of work to take this further, and necessarily with a "collective" if not a school (and indeed Bernard has a philosophy school in Épineuil-le-Fleuriel), which will firstly have to deeply engage with philosophical texts and the philosophical tradition instead of mere intuition, which is always necessary but not sufficient; secondly, it will have to closely engage with technological development, and in this regard it is necessary to work with engineers; and thirdly, it will have to take the concept of technics beyond Western discourse, which seems to me a very urgent task in the Anthropocene.

You said that networks and philosophy have yet to encounter one another. I would say that such encounters are immanent. We can always see the question of networks in different thinkers, implicitly or explicitly. For example, it's clearly evident in Saint Simon, Marx, Heidegger, Simondon, Deleuze, etc., not to mention in more contemporary philosophers; however, we need to *retrieve* and *thematize* these thinkers – "in the Christian sense," as you said, like the encounters of Christ in the Gospels – in order to respond to the problems of our epoch. This is exactly the point I have made before.

GL: What went wrong with the corporate discourse around Big Data? What's so boring and suspicious about it? And why haven't the "digital humanities" risen up against this monstrosity? Would you be in favor of data being discredited altogether? Or would you rather say: another data is possible? Recently, a "data prevention manifesto" was posted on the nettime list. It argued against protection and the "privacy" paradigm. We would be much better off, it said, preventing the production of data in the first place. Would you say that data has already crushed the reputation of Theory as we know it in the arts and humanities? What do you say to people who accuse you of promoting the Big Enemy of critical thinking?

YH: For me the main stake of Big Data, together with algorithms, is prediction. It is another form of the determination of time, which is probably not the same form of temporizing the past, the present, and the future that we can find in Bergson, Heidegger, Lyotard, Deleuze, etc. This means that we must discover in Big Data a new and powerful synthesis of time, and figure out how to deal with it. This new synthesis of time is what I call "tertiary protention," which is intended to supplement Stiegler's concept of tertiary retention. As we have discussed before, for Husserl there is primary and secondary retention, as well as primary and secondary protention (anticipation). In Stiegler's theory, tertiary retention is the support for other forms of retention and protention; however, we must add that protention cannot be reduced to retention. This is very explicit in Husserl's later

writings on time-consciousness, e.g., the so-called Bernau manuscript (1917–18). Of course, there is ambiguity – for example, debt is an example of tertiary protention as well as tertiary retention, since it anticipates that which we will have to return, and it is recorded as traces. Tertiary protention is amplified due to the increasing ability of machines to predict and to anticipate. We might say that as long as we become part of Big Data, we are actually constantly in debt to certain unknowns.

We know the story of Edward Bernays and we know about the psychology of marketing, which since the twentieth century has been based on a mechanism geared toward the manipulation of psychopower. Now, however, the mechanism is not just concerned with psychopower; rather, personalization and prediction have become even more effective and direct. The predictions of Big Data give us an "average" experience, since Big Data is based on the mean. However, it is not average in the sense that everyone is the same; rather, Big Data shows variations around the mean, which give the impression that everyone is different. These variations are what Deleuze would call "the particular," meaning that they can be reduced to a mean, to an average. They might also be described as the "differences" that sociologists Scott Lash and Celia Lury pointed out in their book *Global Culture Industry*. However, these differences are *reducible*.

Therefore, I would not say that Big Data is boring, but rather that it is truly suspicious, and we will have to transform this practice of Big Data. This is also related to your question of why the digital humanities haven't risen up against this monstrosity. Many digital humanities projects are part of this paradigm. When you visualize the co-relations between hundreds of thousands of images, you are employing the same logic as the Big Data industry (albeit harmlessly) and you are exhibiting its aesthetics. This kind of digital humanities still has a place for now, but I don't believe it can continue much longer, since we are reaching the end of a transitional stage. Data is by no means our "Big Enemy." We should be aware of the history of data, which has been a subject in the humanities for a long time without being thematized. It is now time to enter a new stage by taking the question of data and the organization of data further. It seems to me that this has to be the task of the future "digital humanities."

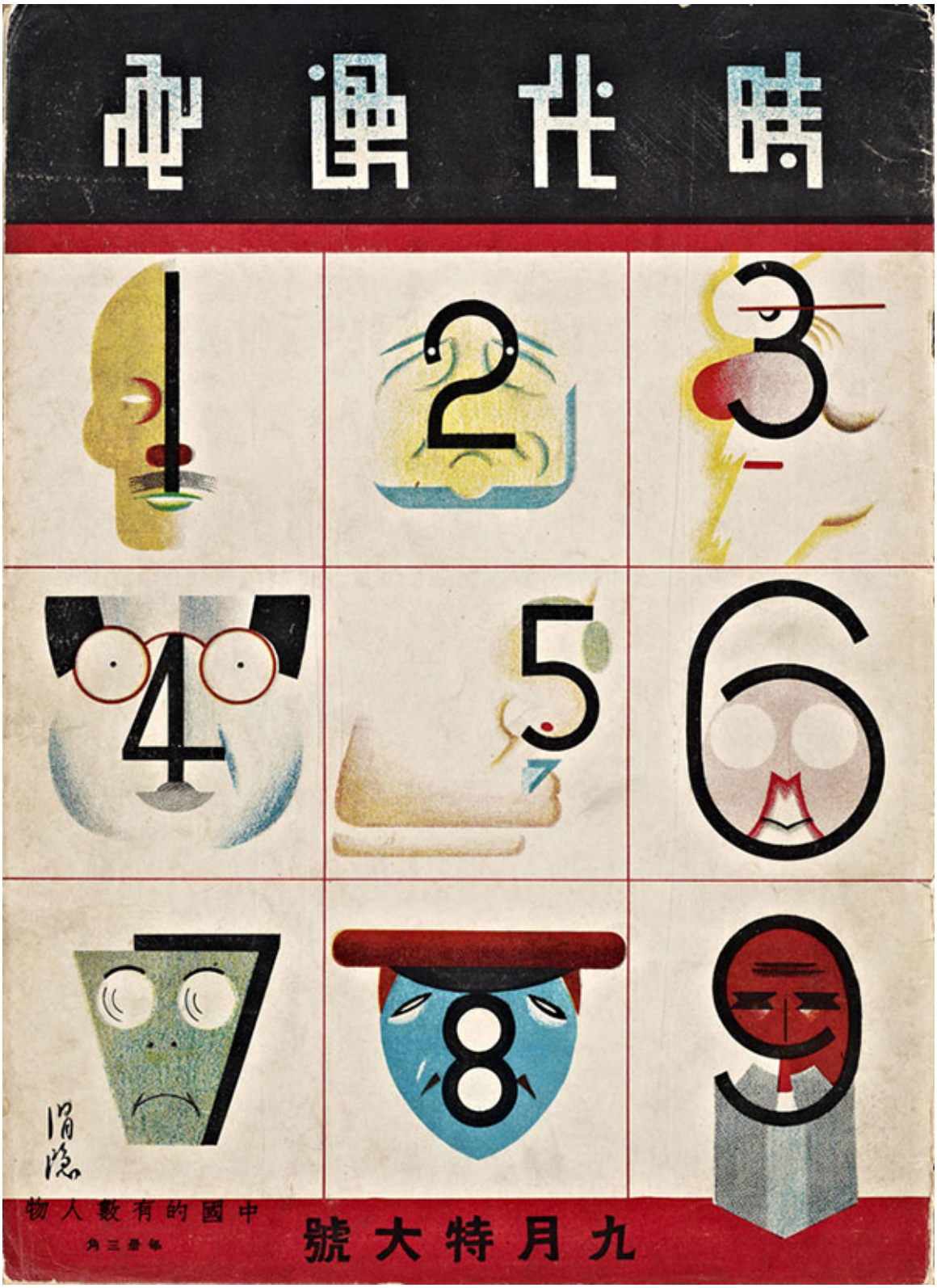
GL: You have said that "the digital is the capacity to process data." Can we dig into that? This "dynamic" approach presumes that there is also a static view, of zeros and ones, in which the digital merely *is*. Is it an intolerable thought that data can just exist, without any context – data as such?

YH: There are not only two views, static and dynamic. There are different orders of magnitude, and each of these orders of magnitude can be seen as a reality in itself. The methodology of *On the Existence of Digital Objects* incorporates such an understanding of orders of magnitude, which it is often used in epistemology. Therefore 0 and 1 is one order of magnitude, and data another. If we regard 0 and 1 as the only order of magnitude, we will be easily trapped in a metaphysical impasse. The philosopher Edward Fredkin has proposed what he calls a "digital ontology," or "digital physics," since he takes 0 and 1 as the foundation of being, like Thales's water, Heraclitus's fire, or Anaximander's *apeiron*.

However, when we look at things from a phenomenological point of view, this digital metaphysics doesn't do much except confirm Heidegger's critique of technology: its essence is no longer technological but enframing (*Gestell*), and being is treated as a calculable standing reserve (*Bestand*). This is why I have proposed that we focus on the question of data as the main question of the digital. I take this insight also partly from Jacques Ellul. In fact, already in the 1970s, in his book *Le système technicien*[2] – a work that extended Simondon's analysis of technical objects – Ellul observed that the totalization of systems was possible only because of the computer's ability to process data.

You have asked, "Can data just exist, without any context"? I think the answer is yes, even without having to follow Quentin Meillassoux's critique of correlationism. Firstly, we need to understand the history of the concept of data. Data is what is given, as the etymology of the Latin word *datum* suggests. At the same time, it is sense data, which is also given – Husserl calls it *das Gegebene*. The French word for data, *donnée*, which is also the past participle of the verb "to give" (*donner*), retains this sense. We can say that in empiricist and transcendental philosophy, there are different ways of organizing data. For Hume, it is based on the rules of association (contiguity, resemblance, causality), and for Kant it is based on certain *a priori* structures, including intuition and the understanding.

The use of the word "data" to designate computational information is only employed towards the end of the first half of the twentieth century. Essentially, this not only gives a new meaning to the term "data," it also implies a necessity to rethink its organization. Hence the reason for this book. However, whether what is



The cover of issue no. 9 of the Shanghai humor magazine *Modern Sketch*, from the 1930s. The cover reads, "China's Characters Who Count," and the illustrations depict China's top personalities, including Chiang Kai-shek as number 1.

given is conceivable or not is another debate. When Heidegger talks about Being as *es gibt*, the word *geben* is emphasized as sending (*schicken*), as *Geschenk*, and what is given presents itself and hides at the same time, as Heraclitus says in his fragments. We might say that there is *Datum an sich*, like Kant's *Ding an sich*, but it doesn't necessarily mean that data is a black box or that it withdraws, as some speculative realists have said. For Heidegger, only through hiding is revealing possible. And even if we say that data belongs to the noumenal world, most Chinese philosophers would disagree with Kant that humans don't have intellectual intuition and cannot access the noumenal. This is why I wanted to turn this dead-end question of "withdrawal" and *Ding an sich* into a question of relations.

GL: In the past, I learned to make a distinction between passive and active digital objects. There were executive files and static files such as documents or database entries. Does it make sense to make a distinction between programs and data? There is also a sociological dimension here: programs are written by geeks, whereas data is produced by clueless, ordinary users. These days, people talk about algorithms and bots. Both of them manipulate data in their own way.

YH: A long time ago, when we played games that came on floppy disks, it was necessary to use an .exe file to execute a .dat file. I guess this is what you mean by active and passive. This is still the case in some computational environments. The web, however, is a different environment, since it is supposed to be running all the time and is programmed in most cases with scripting languages. In general, in the past fifty years the mark-up languages have further developed and evolved – for example, from GML to SGML, from HTML1 to HTML5, from XHTML 1.0 to XHTML 2.0, and now web ontologies as well as formal ontologies. The use of mark-up languages like GML to format data started with IBM in the 1960s, and then in the 1980s there was a lot of work on knowledge representation (KR).[3] When we examine these histories, we see that the line between a data object and a program started to blur: not only do these objects carry constraints and functions, they also effectively allow communication between different platforms and applications. Programs and platforms can only communicate when the "ontologies" or "categorizations" are shared. They are becoming more and more "active" in the sense that you just spoke of.

GL: You write that the phenomenological tradition failed to comprehend technical and digital objects. At the same time, it is undisputed that Martin Heidegger is one of the most influential technology philosophers of the twentieth century. How do these two things go together?

YH: Let me be precise about this critique of phenomenology. I hold that the new definition of data seems to have problematized phenomenological investigations, which give an ambiguous role to technical objects in the construction of experiences. It is true that phenomenology has its own history dealing with technical objects in the larger sense of the term. For example, the early Husserl prioritizes expression (*Ausdruck*) over indication or sign (*Anzeichen*), since the latter doesn't express anything – it is passive, like Hume's association of ideas, while the former always demands an active sense explication. The late Husserl developed a different insight, where he addresses cultural objects, and the lifeworld (*Lebenswelt*) was primary in his investigation. Heidegger's analysis of the ready-to-hand – which for me is actually a reversal of Husserl's distinction between expression and indication – is very important to the understanding of technical objects, and that is why I offer it as a supplement to what Simondon calls the "concretization" of technical objects. I think that Simondon was aware of that, since he made Heidegger his ally in Part III of *Du mode d'existence des objets techniques*.

When I say that the phenomenological tradition is not sufficient to deal with digital objects, I mean first that the role of the technical object is ambiguous in these investigations, and therefore we must retrieve it through a rereading of Husserl and Heidegger – and here we must thank Jacques Derrida and Bernard Stiegler for their pioneering work (and we must also pay attention to the differences in their readings). Second, there is a reluctance to investigate the constitution of these objects. Husserl left what constitutes so called "pre-predicative experience" largely unexamined, surprisingly enough, considering that Husserl's slogan was "back to things themselves."

Phenomenology concerns the question of experience, which is how the subject constitutes itself through intentionality (whether via genesis or embodiment) and how objects are constituted as phenomena in the immanence of consciousness through intentional acts. To be more precise, there is a polar relation between the subject and the object, but what constitutes the object pole is rather limited, or maybe even only phenomenal. For example, phenomenology

does not look into the schemes inside a technical object, and for this reason Simondon says that a phenomenological investigation of technical objects is dangerous. The investigation of digital objects is an attempt to rework the object pole and redefine its relation to the subject – that is to say, to experience. We must say that compared to Husserl, Heidegger paid much more attention to objects as well as to the constitution of objects. However, he did so in a different direction. Heidegger wanted to show that the constitution of the object is ontotheological, a tradition that started with Plato and Aristotle – though it is more complicated with the latter, since the early Heidegger's lectures on Aristotle praised him for being closer to the Pre-Socratics than to Plato on the question of Being. A fiercer critique from Heidegger arrived later, for example in his four volumes on Nietzsche, in which Aristotle is described almost as a reactionary against Plato.

GL: From the very beginning data has had its own metadata. Files have names or a unique string of numbers. They go together. This is also what you say about digital objects: the "ontologies" are not separate from the actual data.

YH: Indeed, ontologies can be simply described as metadata schemes, which define and hence give meaning to data. Beware: the term "ontology" here is different from how it is randomly used in the humanities today. I describe this evolution of metadata schemes as a genesis of digital objects, and we can see that with the ontologies of the semantic web, descriptions of data are more refined, and the objectness of these entities becomes very clear. I remember already in 2010, during a conference on the semantic web, an engineer said that we were no longer dealing with mere data, but things, in the sense that data had become things. And if we pay attention to what this means, we see that it is not simply about how to do categorization – though categorization remains a crucial question and practice. It is also that categorization becomes productive. It produces objects in their own right, like Kant's concepts, and these objects are both real and material. In this sense we can talk about the *onto*-genesis of digital objects.

GL: With Simondon, we could say that our efforts in media theory, electronic arts, tactical media, digital design, and net criticism can be described as a movement to reinscribe technics in culture. In most cases, however, they drift apart – not the least in philosophy itself. In today's philosophy as (media) spectacle, we witness the authentic writer in the live act of deep thinking. Technology might spoil the party. Your genesis of digital objects might not be in high demand. Are you aware of that tension?

YH: I am not sure that what you have described can be called a movement to reinscribe technics in culture in Simondon's sense, though I must admit that there is much excellent work that I appreciate a lot. According to Simondon, we need to overcome the opposition between culture and technics. This is because on the one hand, technology has been seen as a source of alienation, as what is responsible for the decline of culture; on the other hand, culture denigrates technics as something inferior in the social hierarchy. For example, robots are often seen as slaves – technical objects are only objects of consumption. For this reason Simondon, at the beginning of *Du mode d'existence des objets techniques*, says that his task is to show that "there is no such thing as a robot … a robot is no more a machine than a statue is a living being"; a robot "is merely a product of the imagination, of man's fictive powers, a product of the art of illusion." That is to say, we need a turn: it is not simply about studying technology, but rather turning technology into a support for culture. I've seen many researchers working on topics such as the sociality of Facebook or Twitter, but I've rarely seen any critical stance on this. As a result, the research becomes an added value to the industry – which also claims that it reinscribes technics in culture, but this is really just the culture industry. In philosophy, decades ago, we saw the tension between ontology and epistemology expressed in the legendary Davos philosophical debate between Heidegger and Ernst Cassirer in 1929. The former read Kant according to his fundamental ontology, while the latter rejected this reading and instead proposed an epistemological one. It is clear today that there is a fundamental tension between ontology and technics. In fact, this was already very clear in Heidegger's fundamental ontology and in his analysis of modern technology, which for him was a consequence of Western ontotheology. Stiegler's three-volume *Technics and Time* is important because it demonstrates this tension and suggests another framework for thinking this tension as not an opposition. However, there is still much work to be done to make this question more visible and to reflect on it in different domains.

GL: Relational technology plays an important role in your book. We could consider it the basis of all social media. Would it make sense to further develop a philosophy of the

relational model?

YH: Yes, indeed, that is the principle question of my book. And for myself, the question of being is the question of relation. Over the years I have tried to work this out in a rereading of Heidegger, which I left out of the book so as not to obscure its object or message. We have seen that in recent years, some theorists have proposed certain relational models, but many of them do not specify what a relation is. I am not sure if one has to stroll through Whitehead's *Process and Reality* in order to show that an app is relational. In my book, I try to answer the question: What is a relation? And what does it mean when we think of being in terms of relations, especially in the digital condition? The term "relation" has been used in semiosis and perception, but semiosis and perception don't exhaust the question of relation.

In medieval philosophy, we have *relationes secundum esse* and *relationes secundum dici*, one according to being and the other according to speech. In my book I didn't follow this vocabulary of medieval philosophy, since I wanted to move away from substance and theology, so I redescribed these relations as "existential relations" and "discursive relations." I wanted to describe a dynamic model in which, firstly, both relations are in reciprocal relation, and secondly, technology can be seen as the process of the discovery (which is mostly the task of science) and materialization of discursive relations (this is the question of *logos*). As you can see in chapter three of the book, entitled "The Space of Networks," I wanted to retrieve the concept of relation from Ancient philosophy, and then elaborate on the materialization of discursive relations; and in chapter four, "The Time of Technical Systems," I reinscribe it in what I call a technical system, in which the discursive relations become inter-objective relations, and existential relations manifest themselves as temporalities. This is the general model that I propose for the analysis of technical systems, and I have used it in multiple practical projects. However, I must admit that it is impossible to exhaust the question of relation, and I will continue elaborating on it in future works.

GL: As an outsider to the main international standards organization for the World Wide Web, the W3C (World Wide Web Consortium), I have witnessed a move away from the semantic web towards a much more political aim of "re-decentralizing" the web, particularly in the post-Snowden period. Tim Berners-Lee was the original inventor of the web, back in 1991. His proposal for a new way to organize knowledge on the web, outlined in his 2001 article "The Semantic Web," failed because of its inability to understand language (as Bernard Stiegler and others claimed). My interpretation would be that the naive multi-stakeholder approach got stuck in the monopolistic power politics of the stacks – Google, Facebook, Apple, and Microsoft – which demonstrated that they were uninterested in the formalistic, scientific rearrangement of protocols. In the end, the scientists were pushed aside.

YH: I was very interested in the semantic web, both its logical questions and philosophical implications. In 2010, along with Harry Halpin and Alexandre Monnin, we launched the program "Philosophy of the Web" in Paris, which consisted of various events. I still think the semantic web is a very important project in the history of the web. The semantic web was intended to be a "world-building" project, and this is the reason Tim Berners-Lee called for "philosophical engineers," who would not only reflect on the world but build the world – an echo of Marx's thesis on Feuerbach. The semantic web aims for a world of automation. However, a world is more than automation; it also has politics, which the semantic web doesn't take into account. I don't think this is because the semantic web doesn't understand language – and we have to admit that machines don't deal with language in the way we do. This is why I suggest that we surrender the opposition between syntax and semantics and instead take up the concept of relation.

Brian Cantwell Smith, in his early and very important work *On the Origin of Objects*, has a very nice argument against the claim that machines only have syntax and no semantics, since such a distinction is far too anthropocentric. Contrary to what you have said, I am rather sure that Google, Facebook, Apple, and Microsoft are all interested in "the formalistic, scientific rearrangement of protocols"; however, they all want their own protocols, and so they are reluctant to all use the same standards. We have to recognize that there is an institutional politics between the W3C and its business members. I think someone who looked more deeply into the history of the W3C would have better insight on this. It is true that since the Snowdon affair, the W3C has launched the Magna Carta project and the campaign "Web We Want." However, since its launch it doesn't appear to me that there has been much progress.

The other reason for the "failure" that we have described – and Stiegler has been claiming this for years – is that the semantic web did not allow for a "social web," since its ultimate aim was the automation and standardization of data schemes. This is a different issue than the

"cyber-libertarian" project of Julian Assange. Rather, it is a question of social organization and the organization of the social. To address this question of automation, in my book I attempted to compare Husserl's intentional logic with extensional logic in order to show that we should reintroduce the question of experience into formal logic. This stands out as a rather strange chapter in the book, since it proposes a reading of Husserl that is closer to Deleuze and Simondon. This requires a long detour through Frege, Hilbert, Kripke, and Putnam. In 2012, I worked with Stiegler and Harry Halpin to reconceptualize the concept of the social by departing from Simondon's notion of collective individuation in order to develop an alternative to Facebook. Just as Uber is the biggest taxi company without taxis, social networks are the biggest communities without the social. The semantic web only wants to provide an industrial standard so that these industrial players will use it to facilitate the development of the web, to avoid "walled gardens," as some have said. But advocates of the semantic web have nothing to say about the industry itself. *This* is the stake of the semantic web, and not its failure to understand language.

A billboard alerts drivers to the risks of playing *Pokémon GO* while driving.

GL: Let's end with your upcoming book on the status of technology in China. Can we see this as a follow-up or logical extension of *On the Existence of Digital Objects*? Has your decade in Europe made it easier to reflect on China? What do you make of people who travel to Shenzhen to do ethnography there? Can philosophy be the king or queen of the sciences and in this way beat the social sciences?

YH: Indeed, the new book is intended to be a second work on the concept of relation that we discussed earlier. In *On the Existence of Digital Objects*, I deal with formal relations and objects. In *The Question Concerning Technology in China: An Essay in Cosmotechnics* (Urbanomic 2016), I deal with the relation between the cosmos and the moral. This book on China is an attempt to elucidate the differences between the way the concept of technics is understood in Chinese philosophy and the way it is understood in Ancient European philosophy. And as the title suggests, the book is an attempt to recontextualize and problematize Heidegger's famous essay "Die Frage nach der Technik," in order to revive the concept of a technics of world history, which I call "cosmotechnics." Picking up what François Jullien says, we can know ourselves by knowing others. His work on Chinese thought allows him to better understand European thought. I profited from years of living and studying in Britain, France, and Germany, reflecting on different systems of thought. A few years ago you joked that I was actually doing ethnography in Europe. With this book, I want to show that there has been a different concept of technics in China. It is neither the Greek *technē*, nor "technology" in the sense that emerged in European modernity. This difference is not obvious among researchers in China, and it has never been clearly articulated; indeed, this was very embarrassing! I once read an article from a well-known Chinese philosopher of technology who, when addressing the Chinese public, claimed that Prometheus was the origin of all technics (including Chinese technics). That is a complete disorientation, in the double sense of the word. Maybe the Greeks and the Chinese all come from Prometheus, but this is not easy to prove ...

I am probably not the best person to comment on the debate between philosophy and the social sciences. I wouldn't say that there is a king or queen of disciplines. However, we have to acknowledge that in philosophy there is a particular form of questioning and a strong attention to histories of thought and to the precision of concepts. This way of questioning allows us to problematize a lot of dubious definitions that are often taken for granted. I am also interested in the social sciences, and my first degree was in computer engineering with a focus on AI, and I continue to work on practical projects. Any insistence on the superiority of a discipline is in most cases only self-indulgence. Early this year in Berlin I spent thirty minutes listening to Alain Badiou and Jean-Luc Nancy debate the question of whether Marx was a philosopher. I wish I could get those thirty minutes back. I don't see what more we could get out of Marx if we renounced him as a philosopher. The rigor of a work is not solely determined by institutions or tradition. It depends on historical insights, consistent interrogations, and creativity. There is bad social science just as there is bad philosophy, not to

mention bad scientific research.

Apropos of Badiou, recently he criticized *Pokémon GO* as "the corruption of corruption" and claimed that "the battle against images is a Platonic battle." It is astonishing that this came out of the mouth of a Maoist, since every French Maoist knows by heart the saying "No investigation, no right to speak." However, we must also turn the question around: How deeply must one engage with *Pokémon GO* in order to speak about *Pokémon GO*? Or more generally, how deeply must one understand technology in order to talk about technology? We easily fall into two extreme orders or two problematic philosophical attitudes: one simply renounces modern technology, since it is intrinsically bad; and the other dogmatically endorses it in order to endow it with a certain "ontological dignity." We should get out of this *Unmündigkeit*, as Kant would call it, and overcome these obstinate oppositions. What is denounced may always appear in other forms in those who denounce it.

I hope that my book on China and technics can at least remind researchers who are, in your words, "doing ethnography in Shenzhen," that in China there is a history of technics and a history of modernization. Some researchers take globalization as a given fact so they can simply study the differences between "technical facts" – in André Leroi-Gourhan's sense, meaning the specificities of the tools and the different gestures of their users – without looking into the history of technics and modernization in China, into their "form of life," as if China is no different from an African country, or as if the differences that do exist are only superficial. Ethnographers know very well that one must problematize globalization and modernization. We may want to remind ourselves that after having witnessed the disintegration of nonmodern cultures, Claude Lévi-Strauss addressed his fellow anthropologists in *Tristes Tropiques* by saying that anthropology should be renamed "entropology." However, some quasi-critical ethnographic works only nurture such modernization. While we don't expect everyone to be Joseph Needham and we don't want to operate on a simple opposition between the global and the local, but do have to recognize "ontological diversities," as has been proposed by Philippe Descola, Eduardo Viveiros de Castro, Bruno Latour, and others who are part of the so-called "ontological turn" in anthropology. This is why I believe that, besides the proposal by these anthropologists to recognize multiple *natures*, we must first of all recognize the diversity of *cosmotechnics*, without which there is no discourse of nature – diversity not only in the sense of different "technical facts" or "technical systems" (as Leroi-Gourhan and Bertrand Gille have put it) but also in the sense of different ontologies and cosmologies. And once this multiplicity is affirmed, how are we going to imagine the development of technologies and theories in the Anthropocene? This will be the next battle for all of us.

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1
See https://en.wikipedia.org/wiki/Ontology.

2
English translation: *The Technological System* (London: Continuum, 1980)

3
See https://en.wikipedia.org/wiki/Knowledge_representation_and_reasoning.