Geert Lovink

Cybernetics for the Twenty-First Century: An Interview with Philosopher Yuk Hui

In his latest book, Recursivity and Contingency *(2019), the Hong Kong philosopher Yuk Hui argues that recursivity is not merely mechanical repetition. He is interested in "irregularity deviating from rules." He develops what could be called a neovitalist position, which goes beyond the view, dominant in popular culture today, that there is life inside the robot (or soon will be). In the "organology" Hui proposes, a system mimics growth and variation inside its own technical realm. "Recursivity is characterised," he writes, "by the looping movement of returning to itself in order to determine itself, while every movement is open to contingency, which in turn determines its singularity."*[1]

Following On the Existence of Digital Objects *(2016) and* The Question Concerning Technology in China: An Essay in Cosmotechnics *(2017),* Recursivity and Contingency *is Yuk Hui's third and by far most ambitious book. Divided into five chapters that deal with different eras and thinkers, it starts with Kant's reflective judgement, which Hui sees as a precursor to recursivity. The book then moves on to Hegel's reflective logic, which anticipates cybernetics. According to Hui's organology (and that of Bernard Stiegler), science and technology should be understood as means for returning to life, as paths towards true pluralism, or "multiple cosmotechnics," to use Hui's own key concept from his earlier book.*

Our understanding of computational possibilities should not be limited to the "disruptive" technologies of Silicon Valley, oriented as they are towards short-term profits. Hui looks beyond this myopic view of technology. His foundational project is to dig into the philosophical foundations of today's digitality, to examine the episteme that presents itself as a new form of totality (or as a "techno-subconsciousness," as I have described it elsewhere). How can we think individuation in an age when the online self is surrounded by artificial stupidity and algorithmic exclusion in the name of ruthless profit maximization and state control? Is there a liberated self inside cybernetics?
    – Geert Lovink

Geert Lovink: Could you introduce the terms "recursivity" and "contingency"? How do these two terms relate to feedback, which is a central concept in cybernetics? Is it possible to sketch out potential cybernetic technologies that are not based on the principles of the current information revolution?

Yuk Hui: Recursivity is a general term for looping. This is not mere repetition, but rather more like a

spiral, where every loop is different as the process moves generally towards an end, whether a closed one or an open one. As a computer science student, I was fascinated by recursion because it is the true spirit of automation: with a few lines of recursive code you can solve a complicated problem that might demand much more code if you tried to solve it in a linear way.

The notion of recursivity represents an epistemological break from the mechanistic worldview that dominated the seventeenth and eighteenth centuries, especially Cartesian mechanism. The most well-known treatise on this break is Immanuel Kant's 1790 *Critique of Judgment*, which proposes a reflective judgment whose mode of operation is anti-Cartesian, nonlinear, and self-legitimate (i.e., it derives universal rules from the particular instead of being determined by a priori universal laws). Reflective judgment is central to Kant's understanding of both beauty and nature, which is why the two parts of his book are dedicated to aesthetic judgment and teleological judgment. Departing from Kant, and with a generalized concept of recursivity, I try to analyze the emergence of two lines of thought related to the concept of the organic in the twentieth century: organicism and organology. The former opens towards a philosophy of biology and the latter a philosophy of life. In the book, I attempt to recontextualize organicism and organology within today's technical reality.

Contingency is central to recursivity. In the mechanical mode of operation, which is built on linear causation, a contingent event may lead to the collapse of the system. For example, machinery may malfunction and cause an industrial catastrophe. But in the recursive mode of operation, contingency is necessary since it enriches the system and allows it to develop. A living organism can absorb contingency and render it valuable. So can today's machine learning.

GL: Cybernetic concepts such as feedback and the "black box" often gives rise to a simplistic understanding of automation. How can we overcome this?

YH: In the time of Descartes, and later Marx (who described human–machine relations in the factories of nineteenth-century Manchester), automated machines performed homogeneous, repetitive work, like a clock. As Marx wrote, a craftsman-turned-factory-worker failed to cooperate with this kind of machine on both a psychological and somatic level because a machine enclosed within itself is a separated reality. Marx attributed this failure to alienation. In our time, however, automated machines are no

longer based on the same epistemology. Rather, they are recursive – capable of integrating contingency into their operations.

This centrality of recursivity to contemporary machinery has been obscured by various ways of describing capitalism, due to the fact that Marxists tend to discuss information technology in much too abstract terms – "immaterial labor," "free labor," and so forth. Deleuze tried to make this point in his famous "Postscript on Societies of Control," but he lacked the vocabulary to do so, and simply borrowed the concept of modulation from the philosopher Gilbert Simondon.

If we want to overcome this failure to appreciate recursivity, we need to understand its significance, and find ways to describe it and analyze it. Martin Heidegger claimed that the emergence of cybernetics in the mid-twentieth century marked the completion and end of philosophy. In response to Heidegger, I recontextualize cybernetics within the history of philosophy, with the aim of exposing both its limits and potential. In order to do this, a new language and new concepts are needed. This is why the book focuses on developing the concepts of recursivity and contingency, which I then use to analyze the theoretical foundations of organicism and organology.

We can distinguish two strains of organicism: a philosophy of nature (exemplified by Friedrich Wilhelm Joseph von Schelling, Joseph Needham, Joseph Henry Woodger, and Alfred North Whitehead, among others), and a what I call a "mechano-organicism," which encompasses cybernetics as well as systems theory. Through historical analysis I try to think recursivity beyond cybernetics. This is reflected in how the book is structured: the first two chapters are dedicated to organicism from Kant to cybernetics via Schelling, Hegel, Norbert Wiener, and Kurt Gödel; the third and fourth chapters are dedicated to organology from Kant to Henri Bergson, Georges Canguilhem, Simondon, Bernard Stiegler, and my own reflection on this tradition; the last chapter unfolds a political philosophy that argues against the totalizing tendency of far-too-humanist modern technology.

GL: What is mechanism today, in a world where digitization has taken over? The nineteenth-century mechanistic worldview essentially tried to explain life without life. This has since given way to the "organic" perspective that is dominant today. Why is it nonetheless necessary to distance ourselves from the mechanistic? Is it still a living ideology?

YH: We live in an age of neo-mechanism, in which technical objects are *becoming* organic.

Towards the end of the eighteenth century, Kant wanted to give a new life to philosophy in the wake of mechanism, so he set up a new condition of philosophizing, namely the organic. Being mechanistic doesn't necessarily mean being related to machines; rather, it refers to machines that are built on linear causality, for example clocks, or thermodynamic machines like the steam engine. When I say that Kant set up the "organic" as the condition of philosophizing, it means that for philosophy to be, it has to be organic. So for post-Kantians like Johann Gottlieb Fichte, Schelling, and Hegel, there is a pronounced organic mode of thinking, ranging from the philosophy of nature to political philosophy. And if philosophy since Kant has mechanism as its counterpart, it seems that today, as you and others have observed, this counterpart has been transformed into an organic being. Our computers, smartphones, and domestic robots are no longer mechanical but are rather becoming organic. I propose this as a new condition of philosophizing. Philosophy has to painfully break away from the self-contentment of organicity, and open up new realms of thinking.

What I wanted to elaborate in this book is not only a history of philosophy and a history of technology, but also what comes after this organic mode of thinking, or a *new* condition of philosophizing after Kant. Organicism is still regarded as a remedy to industrialism today, even though the actualities of machines and industry in the twenty-first century are no longer the same as they were hundreds of years ago. A false analysis can be misleading and also harmful for the understanding and assessment of our situation today. Philosophy has to negate the totalizing tendency in organic thinking, which is in the process of being implemented in different technical apparatuses, from social credit systems to the "superintelligence." I think Jean-François Lyotard already reflected on this some forty years ago in his *Postmodern Condition*, especially in his critique of Niklas Luhmann's systems theory. One should reread Lyotard carefully. This is why my last chapter is devoted to Lyotard and the "inhumanism" that I want to elaborate as a philosophy of fragmentation.

GL: You write that for a vitalist such as Bergson, artificial systems are mechanical and not real. "Science, when it becomes mechanical, prevents us from comprehending the creativity which is life itself. Life is a recursive process of making in the unmaking."[2] In this passage you quote Canguilhem, Foucault's mentor, who argued in *Knowledge of Life* from 1966 that we should "rejoin life through science."

YH: Bergson was a philosopher who opposed the organic to the mechanical. This was due to the historical background that we briefly mentioned before, the nineteenth century being the age of mechanism, physics, and industrialism. In 1907, Bergson published *Creative Evolution*, which for Canguilhem, together with the journal *L'Année Biologique* launched in the same year, marked the birth of the philosophy of biology in France. It was also Canguilhem, in his 1947 essay "Machine and Organism," who proposes that there is a general organology in Bergson's *Creative Evolution*. The return to life is a return to an organic whole which renders the mechanical part possible. This organic whole takes the name of "*élan vital*" in Bergson. Life is a recursive process; it is a constant exchange between the figure and the ground (if we use Gestalt vocabulary) through a process of making and unmaking.

This is also why evolution is creative, since it is fundamentally organological in the sense that evolution is also a process in which human beings are obliged to constantly create new organs (e.g., figures), while not being blinded by them, i.e., by not regarding them as the totality of reality. Mechanism wants to explain life, without realizing that it is only a phase of life, e.g., a figure. Bergson, on the other hand, wants to resituate mechanism in a broader reality – namely life itself. So Bergson is not against science or even mechanism, but rather against science becoming merely mechanical and ignoring life. There is basically no opposition between Bergson and Canguilhem, since both of them reject the proposal to explain life without life. They want to "rejoin life through science."

GL: Should we no longer be concerned about the uncritical use of biological metaphors in technological and social contexts? I come from a political generation where this was openly questioned. Why do you speak of the "evolution" of systems? What do we gain by speaking of "emergence," knowing that all these technologies are consciously fabricated by humans, aka male engineers?

YH: Today, when certain dualist logics (e.g., human vs. machine) have been more or less overcome, yet criticism of dualism as such remains essential for various social and political projects – such as overcoming modernity, for example – isn't this ignorance problematic? How do we reflect critically on all this? That is the aim of my book. What does it mean for one to become cyborg? Donna Haraway has always been an organicist. Her work was significant in the 1990s for overcoming the dichotomy between the mechanical and the organic. However, at that time the organic mode of thinking was already

coming to an end. Maybe today we should reconsider all these concepts from the new condition of philosophizing that I tried to explain above and that I elaborate in my book.

To ask a concrete question: Is someone who has an artificial arm and an artificial eye no longer human, since within this person the organic and the mechanistic are no longer opposed? Or from another perspective, is transhumanism, with its belief that the entire body can be replaced and enhanced, actually built upon a linear way of thinking, one that expresses an extreme humanism? On the surface, transhumanism seems to want to get rid of the concept of the human. However, this gesture is only camouflage. Transhumanism is a quintessentially humanist approach to the world, since all is captured within a metaphysical gaze.

How helpful is it to think from the perspective of organology? The term "general organology" was coined by Canguilhem in "Machine and Organism." But more than anyone else it was Bernard Stiegler who elaborated on the subject. He developed the concept of organology around 2003 while he was the director of IRCAM at the Centre Georges Pompidou, an institute dedicated to experimental music. The term actually comes from music, not Bergson. Notwithstanding the different motivations of Canguilhem, Stiegler, and Bergson, they all point to the idea that human life can only be maintained through the organization of the inorganic, i.e., through the invention and use of tools. Maybe we should pose the question in this way: Will the development of artificial intelligence and machine learning allow us to rejoin life?

Let's move a step further. What if these machines are no longer simply "organized inorganic" entities, but rather gigantic systems in the making? The evolution from technical objects to technical systems was my focus in *On the Existence of Digital Objects*, and it is further elaborated in *Recursivity and Contingency*. These systems are now the organizing agents of human lives and social orders. It seems to me necessary to return to these questions and to extend the concept of organology already developed by anthropologists and philosophers to the analysis of our actual situation.

GL: Towards the end of your new book you ask if recursive thinking will allow us to the relaunch the question of organicism and technodiversity, or if it will only by used by a deterministic system "that is moving toward its own destruction."[3] We already know about the reductionist school of thought – it has taken over the world. How about the non-reductionist school of thought? What can people do to become part of it? Is it a movement? What forms

of organizations do you envision for it? A Frankfurt School? Bauhaus? What are some contemporary examples that inspire you?

YH: You are absolutely right, this has to be a new movement, or a new school of thought that develops different understandings and practices of technology. In recent years, many people have been talking about a certain revival of the Black Mountain College model, since this new movement will first of all demand a new syllabus and new forms of collectivity, with the aim of transforming the industrial world, like what the Bauhaus wanted to do. For my part, in 2014 I established a research network called "Research Network of Philosophy and Technology." We have been trying to develop collaborations between different institutions and individuals, but we still have a long way to go. I believe that this has to be a collaborative project. We will need the participation of researchers who share a certain analysis and set of problematics.

GL: Is cybernetics the metaphysics of today? Heidegger may have predicted that cybernetics would replace philosophy, but there is no sign of this so far, at least not in the Western academic world. Philosophy of technology is a marginal subdiscipline at best. Is it time for a radical reform of the academic disciplines?

YH: In *Recursivity and Contingency*, I try to show why Heidegger was right concerning the end of metaphysics and also why it is necessary to think beyond Heidegger. In 1966, journalists from *Der Spiegel* asked Heidegger what comes after philosophy. He replied: cybernetics. The organic is, for Heidegger, nothing but the mechanical-technological triumph of modernity over nature. This is why I think the organic mode of thinking, and the fields it has given rise to such as ecology, cybernetics, Gaia theory, etc., are manifestations of this "end." The question is how to think beyond this end.

In his 1964 essay "The End of Philosophy and the Task of Thinking," Heidegger also says that this end means that world civilization will henceforth be based on Western European thought. This is of course a provocative assertion, and I deal with it extensively in my second book, *The Question Concerning Technology in China: An Essay in Cosmotechnics*.

The concept of cosmotechnics concerns the idea that different cultures and epochs have different ways of thinking about technology. Cosmotechnics is central to *Recursivity and Contingency* too, since the book tries to reconstruct different understandings of technology, with the aim of developing Heidegger's concept of "enframing" (*Gestell*), which he regards as the essence of modern

technology. I do not argue that we abandon cybernetics, just recognize both its limits and its potential.

In *Recursivity and Contingency* there is a dialogue between cybernetics and Chinese thought through the figure of Joseph Needham. You can see the book as a footnote to §17 of *The Question Concerning Technology in China*, where I discussed Needham's characterization of Chinese philosophy as organicism. In the latter book, I argue for the existence of a Chinese technological thought that is grounded in a different understanding of the cosmos and the moral. I am glad to see that this proposal has been welcomed in China, Japan, and Korea (largely because of the similarity of thought in those places). Some younger scholars have enthusiastically engaged with it. The Korean translation has already come out, and the Chinese and Japanese translations will come out later in the year.

If we follow what Heidegger says – that world civilization is now completely based on Western European thought – then the end of philosophy is also a call for other ways of thinking. Can the Global South rediscover its own cosmotechnics and technological thought, and thereby give new direction to technological development in general? Will the defeat of Huawei in the recent political struggle between the US and China force the company to develop its own operating system, or will it just develop another version of Android coded in Chinese? This is decisive for a new technological agenda as well as a new geopolitics to come.

You asked about philosophy of technology. I rarely present myself as a philosopher of technology unless I find myself in a situation where I am forced to choose a narrow discipline. Like Stiegler, I tend to believe that technology is the first philosophy. Philosophy has always been conditioned and called forth by the technological conditions of its given epoch.

GL: Just as cybernetics has failed to replace philosophy in the academy, disciplines like "digital studies" and "internet studies" have yet to catch on. At the same time, we've seen the rise of "digital humanities," which has been given the unholy task of innovating a dwindling field of knowledge from the inside. Any humanities approach that is not data-driven is in fact fading away. What's going on here?

YH: Today, every discipline wants to have artificial intelligence, machine learning, and big data as their research subjects. We see it in sociology, architecture, philosophy, anthropology, media studies, the natural sciences – you name it. But as you suggested, the research questions are often rather narrow. I am not against digital humanities. The problem is

that its agenda is far too limited. Two years ago, I was invited for a job interview by a department of digital humanities in England. Afterward I was told, with a certain amount of regret, that they didn't need a philosopher at the moment.

It seems to me that technology has become the common thread across disparate disciplines. In other words, different disciplines all want to respond to the challenge of technology. Will this bring forth new forms of radical technological thought that aren't limited to twentieth-century media theory, philosophy of technology, and literature studies? Digital humanities is not yet a global discipline. Maybe as it is adopted in different localities, it should be questioned and redefined. I think this is what researchers from different disciplines have to think together. We have to take this opportunity to rethink the existing disciplines and allow new thoughts to flourish.

GL: The gap between the intense use of digital technology and the fundamental understanding of the transformations caused by these technologies is growing by the day. What would you suggest to bridge this gap? I don't see this happening in Europe, a continent that is rapidly closing in on itself, becoming more and more regressive. Should we pin our hopes for new technological thinking on Asia? Or should we perhaps envision distributed networks of knowledge production?

YH: We need to rethink the education system and the existing divisions of disciplines that have been adopted in the past several decades. It is probably not possible to bridge the gap between already existing disciplines, since when you attempt to bridge a gap, this gap is at the same time maintained. One possibility is to create a new discipline in which this gap no longer exists.

I spent the best time of my youth studying and working in England, France, and Germany. Europe is deep in my heart, but I am afraid that Europe will be impoverished by its increasing racism and conservatism. I wouldn't want to say that new technological thought will necessarily come out of Asia instead of Europe, but I do believe that such thought can only emerge out of the incompatibility between systems of thought, since it is the incompatibility between them that leads to the individuation of thinking itself, avoiding both subordination and domination. However, I have increasing doubts if Europe is ready for this. It seems to me of ultimate importance to rearticulate the relation between philosophy, technology, and geopolitics today, which I am afraid remains largely unthought.

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Yuk Hui is a philosopher based in Berlin. He is the author of three monographs: *On the Existence of Digital Objects* (Univ. of Minessota Press, 2016), *The Question Concerning Technology in China: An Essay in Cosmotechnics* (MIT Press, 2016), and *Recursivity and Contingency* (Rowman & Littlefield, 2019).
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Yuk Hui, *Recursivity and Contingency* (Rowman & Littlefield, 2019), X.

2
Hui, *Recursivity and Contingency*.

3
Hui, *Recursivity and Contingency*.