The Evil of Banality[1]

Giuseppe Longo
Centre Cavaillès, République des Savoirs
CNRS et Ecole Normale Supérieure, Paris,
www.di.ens.fr/users/longo

Chronicle of a journey through space and methods

While in the United States in April 2025, I was overwhelmed by the banality of everything I saw on every screen. The words, gestures, and dominant expressions were reminiscent of a well-known text by Hannah Arendt (*Eichmann in Jerusalem: A Report on the Banality of Evil*, 1963), but in a "reversed" way. With great skill, Arendt showed us how a banal character, acting like a good employee, without any thoughts of his own or political agenda, can carry out and organize with rigor and precision the evil he is asked to produce. Conversely, some people have the extraordinary talent of extracting all the evil possible from banality itself. A virus? Just inject bleach into their veins. Give good citizens the opportunity to defend themselves with weapons by killing the bad guys. All taxes should be flat. Once elected by a majority, you can do whatever you want. Energy? "Drill, baby, drill"... –It's simple, it's banal. From banalities, a few great political leaders know how to extract and propose evil and turn it into policy, even war, which is always easy to start.

We will try to contrast this method of constructing knowledge and action with what it means to "think," using "extreme" examples from mathematics and art history. And we will think of Alexander Grothendieck[2] and Daniel Arasse[3]: any mathematical question, any conceptual framework for one; any painting, any painter or moment in painting for the other—they look at them differently and draw from them new perspectives, profound frameworks of thought that are radically original and often plural. And beautiful: scientifically, ethically... aesthetically – a real pleasure. The good of originality, of human thought that is constantly renewing itself, constructing new meaning.

We will see how machines, producing results based on statistical averages, on automatic learning built by following geodesics (optimal paths) in predefined spaces—enriched with a little physical randomness—generate banalities from average banalities, producing evil without even being asked to, simply by iterating and amplifying averages, by seeking maximum correlations, excluding any deviation, in fact any thought as a thought of what is different, of novelty. Just like certain political figures we are more and more often seeing in power. The former (the machines) do so on the basis of maximizing statistical correlations, which trivialize everything; the latter (the politicians) do so thanks to a remarkable sensitivity to everything that is worst in banality. And when these two worlds collaborate, a new techno-oligarchism emerges—a highly original

1 Dedicated to Ulrich Loening (1932 – 2025), molecular biologist, for his scientific work and his gentle way of arguing and constructing critical thinking with others. To appear in Cornell Series: *Mechanema: AI and the Humanities*, 2025 (in French, in the proceedings of the conference *ENMI 2024*, Centre Pompidou, Paris, 2025 and, in Italian, in *Consecutio Rerum. Rivista critica della Postmodernità*, see download).

2 Fernando Zalamea, *Synthetic Philosophy of Contemporary Mathematics*, Urbanomic (UK), Sequence Press (USA), 2012, ref-review.

3 Sara Longo, *Daniel Arasse et les plaisirs de la peinture*, Éditions de la Sorbonne, 2022, ref-presentation.

one, because it is the result of human history, a new hybridization of humans with their artifacts. Do we have any alternatives to offer?

Scientism, the premise of banality

Artificial Intelligence

But is this perspective, which cuts through the contours of the worst of banality, an isolated phenomenon? Does it also affect "science"? It is clearly at the heart of technoscience. Let us first consider computing systems—i.e., systems of writing and rewriting[4] —which are now all immersed in vast networks of huge databases. All they do is check the identity of finite sequences of 0s and 1s and replace sequences with others ("sequence matching and sequence replacement"[5]): the rule $00 \rightarrow 01$ is an instruction that transforms the sequence 1001 into 1011. The compiler and the operating system reduce any programming language to these computations, to the application of imperative rules that order the "replacement" of sequences of 0 and 1 with others — nothing else happens in a discrete-state digital machine: "bits" change state according to rules (or according to physical randomness—quite different from noise, which we know how to avoid).

We have built a science with these tools, computer science, born of its own limitations: the "negative results" of Gödel, Church, and Turing in the 1930s. To demonstrate, contrary to a common conjecture (such as the completeness of axiomatic writing, which would allow everything to be proven and computed), that there are undecidable propositions and non-computable functions, these mathematicians had to rigorously define what "computation" means in general, and thus defined its computability. Only then was it possible to demonstrate that certain propositions or functions *cannot* be deduced formally or computed. Their three different approaches, which they proved to be equivalent (a remarkable mathematical result), made it possible, on the one hand, to demonstrate that these rules of *sequence matching and sequence replacement* are perfectly general and, from the 1950s onwards, to provide a scientific framework for the development of computer science and its different styles of programming, thanks also to the knowledge and practice of these limits[6].

Artificial intelligence that works—the kind that emerged in the late 1980s from some very beautiful ideas, known as *deep learning* (so called because the two-dimensional networks of the 1950s are layered in three dimensions)—uses, among other things, continuous mathematics and optimization methods.[7] After the disappointing results of traditional AI, based solely on the manipulation of signs, multilayer neural networks have made it possible, thanks to often complex mathematical methods (wavelets, renormalization, etc., borrowed from mathematical physics, sometimes original), to construct invariants of shapes, sounds, and language. Image recognition —a far from trivial achievement—is now integrated into our smartphones. Perhaps it is precisely because of its widespread use that we are more aware of its mechanical nature. Today, AI has become an increasingly useful tool in our daily activities, but also in certain scientific fields.

Deep learning and statistical methods (LLMs, which we will discuss) are, however, implemented on the same discrete-state machines, with their 0s and 1s, networked and incredibly

4 Jean Lassègue, Longo G., *L'empire numérique. De l'alphabet à l'IA*, PUF, Paris, 2025.
5 Marc Bezem, Klop, J.W., and Roel de Vrijer, R., *Term Rewriting Systems*, Cambridge U. Press, 2013.
6 Giuseppe Longo, *Le cauchemar de Prométhée. Les sciences et leurs limites*, PUF, Paris, 2023.
7 Yan LeCun, *Quand la machine apprend. La révolution des neurones artificiels et de l'apprentissage profond*, Odile Jacob, Paris, 2023.

powerful—but their limitations are overlooked. On the contrary, the widespread promise is that "they will soon be able to do everything," including replacing humans in all activities—such promises being the hallmarks of scientism. It would be impossible to list all the promises made over the last twenty years about replacing humans. Here is just one example among many: in 2016, Geoffrey Hinton, winner of the Turing Award and one of the "godfathers of artificial intelligence," said: *"*People should stop training radiologists, *now*. It's just completely obvious that, within five years, deep learning is going to do better than radiologists. *"* (video). The decline brought about also by this statement, coming from a scientific authority, may have contributed to the shortage of radiologists in the United States[8].

Despite this scientistic arrogance, applications exist and are important. When radiologists, dermatologists, etc., intelligently build and organize vast digital libraries of images that can be consulted using well-designed algorithms, in collaboration, there are major benefits: diagnoses and prognoses are improved, productivity and skills are increased, because it is also necessary to know how to interact with machines. That is the difference: the myth of replacement devalues or excludes work; the intelligent practice of human/machine collaboration, on the other hand, values it[9].

Genocentric biology

Another dominant technoscience in the life sciences—mainstream, genocentric molecular biology—is not far behind. As early as 1971, Grothendieck had the courage to write that Jacques Monod's 1970 book *Chance and Necessity* (which, in itself, is by no means trivial) already contained all the evils of "scientism"[10]. And now, in numerous YouTube videos, Jennifer Doudna, winner of the 2020 Nobel Prize in Chemistry, claims that CRISPR-Cas9, a remarkable DNA editing technique, will cure (almost) all diseases—including, she recently stated, death itself[11].

Scientism here is to believe that a single component of the organism—DNA and its four letters—and a single level of analysis—the molecular level—will allow us to fully understand and control ontogenesis (development) and phylogenesis (evolution). This is yet another hypothesis of completeness of a sequence of letters (known as the "central dogma of molecular biology": the four letters of DNA contain all hereditary information, since only the DNA contains this information and nothing can modify it, but random mutations[12]).

We would therefore have to trust DNA reprogramming to control plants and animals in the ecosystem. New GMOs could soon, even in Europe, further devastate humus and the

8 International Radiology Societies Tackle Radiologist Shortage, 2020: https://www.rsna.org/news/2020/february/international-radiology-societies-and-shortage

9 Jeffrey Funj, Smith G., Why LLMs Are Not Boosting Productivity, *Mind Matters*, March, 2025. See articles on this subject in the *Financial Times* of January 31 and March 14, 2024: "when AI and humans work together, they can do better than either would alone".

10 Alexander Grothendieck, « La Nouvelle Église universelle », *Survivre… et vivre* n°9, August-Sept. 1971.

11 YouTube: search: *Jennifer A. Doudna*. See especially, on the subject of power and control over living beings: Jennifer A. Doudna, Sternberg S. *A Crack in Creation, the new power to control Evolution*, Bodley Head, London, 2017. It contains promises of all kinds of genetic therapies and GMOs resistant to all forms of attack.

12 See Monod, op. cit., Jacob, F. (1974), *Le modèle linguistique en biologie*, Éd. de Minuit; and for a critique of the "power to control" evolution: Giuseppe Longo, *Programming Evolution: a Crack in Science* (review of A *Crack in Creation, the new power to control Evolution*, by J. A. Doudna and S. H. Sternberg), in *Organisms. Journal of Biological Sciences*, 5(1), 5-16, 2021. For another promise, after the sequencing of the human genome: von Eschenbach, A. C. (2003). NCI [National Cancer Institute] sets goal of eliminating suffering and death due to cancer by 2015. *Journal of the National Medical Association*, *95*(7), 637-639.

environment, further reduce plant and insects' diversity (the latter already down 70% in biomass in 50 years), and harm various forms of symbiosis. This banal view of evolution—seen as a competition between genetic programs, now "reprogrammable" by humans—could lead to a repetition of the devastation already caused by pesticides associated with or integrated into GMOs in America and India[13]. The battle is on in Europe on this issue[14].

The myth common to both forms of scientism is that of the completeness of alphabetic writing, as we said, coded if necessary in 0 and 1, and of replacement rules (such as "00 → 01" or J. Doudna's molecular "scissors"). These are absolutely remarkable techniques, whose hybridization with human thought also produces intelligibility and significant advances. But they are being diverted toward the control and replacement of humans, toward the destruction of life and its ecosystem. In both cases, intelligibility and action are based on what could be called "imperative Pythagoreanism:"[15] the rules of rewriting and the genes encode instructions, orders; digital or alphabetic coding (Big Data and DNA) would make it possible to understand and control the world, to reprogram it. Beyond these alpha-numeric myths, we will return to "bodily" gestures, to the emotions of thought, and multiple perspectives, which are potentially proper to all humans, referring to Grothendieck and Arasse, the two thinkers of mathematics and art mentioned above.

The "artificial brute force" that destroys itself or destroys humans

Let's take one of the most effective and widespread applications of AI as our first example: machine translation. In this field, huge databases built by humans (e.g., the official translations of the European Community) make it possible to find translations for almost any sentence—by checking the identity of sequences, with some probabilistic deviations and replacements by other sequences—or at least for fragments of sentences. Glueing these fragments together produces acceptable texts, albeit sometimes with serious mistranslations. This is, of course, very different from understanding the overall meaning of a page or text—an understanding that, in a competent human translator, can influence the translation of even the smallest sentence. But overall, it works: the brute force of the most basic computation is now useful to us—subject to a posteriori human review. The better if the latter is able to understand what the author really and globally means. Yet, the cost of this control, which may be considered unnecessary, and the increasing use and abuse of machines will mean that we'll have to live with banalizing translations.

There is also growing use of LLMs (large language models). These are very powerful statistical parrots that correlate and average everything written on networks and in all accessible databases, based on a given sequence of words (the "prompt"). Without possessing the remarkable talent of some humans for choosing the ethically worst in average banality—which is still a matter of "meaning"—LLMs can nevertheless maximize banality. This is a question of statistical dominance. And Wolfram, although he thinks the universe is a big Turing machine, a programmable digital computer, describes it very well here:

> "Given the text so far, what should be the next word [or 'token', more generally]?" Because for some reason—that maybe one day we'll have a scientific-style understanding of—if we always pick the highest-ranked token [statistically], we'll typically get a very 'flat' essay, that never seems to 'show any creativity' (and even

13 Tatiana Giraud, Amelier M., *L'attention au vivant*, L'Observatoire Éds, Paris, 2024.

14 See the website of *the European Network of Scientists for Social and Environmental Responsibility*: https://ensser.org.

15 See Lassègue and Longo (2025, cited).

> sometimes repeats word for word). But if sometimes (at random) we pick lower-ranked words, we get a 'more interesting' essay."[16]

And this randomness is introduced from the outside: by thermal fluctuation, by measuring the spin up/down of an electron... with no connection to meaning, of course. However, this senseless randomness is not enough to prevent the model from collapsing: a recent and abundant literature is concerned about this. In a recent article[17], the authors—known researchers in the field—use network analysis to evaluate the repetitiveness and diversity of texts. They observe that when models are refined based on their own results—a process inherent in learning and called "autophagy"—there is a degradation in performance and diversity over time, until what is called *model collapse*. Their findings indicate that, following this *recursive* training on their own output, the generated text becomes increasingly repetitive and semantically uniform, eventually producing endless iterative gibberish.

But why is recursion—a very precise mathematical concept that allows a few basic functions to generate a beautiful invariant: the set of all computable functions—so unproductive in its specific form in LLMs? Recursion is a property of arithmetic functions, which are defined on the infinite set of integers. It is one of many "circular" methods that apply to an infinite set to produce another infinite set (of functions)[18]. In the finite universe on which LLMs compute and average, constructive mathematical circularities turns into autophagy, self-generating platitudes. And this comes at a staggering energy cost. The universe is not a computation, and if we constrain a circular computation to a finite set of data, in spite of some randomness taken from outside, we "fetishize iteration"[19], and the model collapses, becoming "all gray."

We also come up against limits when we let the machine move on in the city traffic. The "autonomous car," presented as a universal transportation tool that was supposed—twice, between 2000 and 2015—to replace all drivers within five years, has resulted in only a few hundred experimental vehicles, mainly in California, where human driving is very regular. The point is that we are all, as animals, specialists in movement in space. The computer strategy of "recognizing all possible configurations" cannot compete with our abilities, even with colossal databases and enormous energy costs. We, large vertebrates in particular, have been hunting for millions of years, first learning—through play and imitation—to anticipate the movement of anything that moves, thanks to eye movements that are sometimes preconscious but always rapid. Through long practice, like that of a tennis player—but in reality, like that of any large vertebrate—we even learn to trace, through these saccades, a pursuit curve**,** a complex line that anticipates the trajectory of prey or a ball, and we position ourselves where the object will arrive. In this way, we anticipate the trajectory of every car and every pedestrian. This has nothing to do with recognizing all possible configurations. What's more, we do not tolerate—and rightly so—that an autonomous car can make a mistake, to the point of killing a human being. But we tolerate it in war, where AI is highly successful: any mistake then becomes inevitable "collateral damage."

---

16 Stephen Wolfram, *What Is ChatGPT Doing ... and Why Does It Work?* 2023, online.

17 Daniele Gambetta et al., « Characterizing Model Collapse in Large Language Models Using Semantic Networks and Next-Token Probability », *arXiv,* 2025.

18 For an introduction to recursive, impredicative, and other definitions and their expressiveness: Giuseppe Longo, Cercles vicieux. *Mathématiques, Informatique et Sciences humaines*, no. 152, 2000.

19 Gilles Châtelet, *Les enjeux du mobile (The Challenges of Mobile Technology: Mathematics, Physics, Philosophy*), Seuil, 1993.

From a computable world to a plurality of universes and perspectives.
Illustrious computer scientists (Turing Award winners!), such as Judea Pearl and Leslie Valiant, tell us that the laws of nature are algorithms, enriched by statistical methods or interactive methods (echo rhythms).[20] We would thus live in a universe made intelligible by a single mathematical concept: that of a program running on digital Big Data, adjusted with a little randomness and interaction; a universe as absolute as Newtonian space-time, described and governed by digital machines (or the genetic program). Conversely, scientific practice—and, to return to our example, Grothendieck's plural universes, or topoi—offers us a "relativistic" mathematics, with different logics, but which can be correlated. It offers us an open methodology for producing new spaces and also for moving from one to another: a true "Einsteinian turn" in mathematics[21]. In short, this plurality of systems constitutes a dynamic of conceptual spaces (categories), to which new spaces are constantly being added—all potential tools for understanding the world.

These spaces are by no means arbitrary: they are proposed in friction with the world, with the different branches of mathematics. Like invention in physics, with its symmetries, for example, aesthetics also permeates mathematical creativity and imagination on at least two levels: as a catalyst and as a regulator (Zalamea, 2012, cited). For Paul Valéry, imagination is a "distortion of the memory of sensations"; contemporary mathematics—Grothendieck in particular—systematically studies the *distortions of concepts.*

Further upstream, thought is first and foremost a reworking and adaptive processing of emotions experienced in a plastic body, in constant connection with—and through—the brain. This brain has developed over the course of animal evolution to act within the space of an ecosystem. A brain that does not function in a "jam jar" (as Gilles Châtelet put it), nor in a metal box: it inhabits a material body, which, by moving in a world, forces us to adopt multiple points of view.

And this applies even to mathematical construction, as conceived by Grothendieck:

> ... as its name suggests, a "point of view" in itself remains fragmentary. It reveals one of the aspects of a landscape or panorama, among a multiplicity of others that are equally valid, equally "real"... Thus, the fruitful point of view is nothing other than this "eye" that allows us to both discover and recognize the unity in the multiplicity of what is discovered... It is to the extent that complementary points of view of the same reality are combined, that our "eyes" multiply, that a gaze penetrates further into the knowledge of things. The richer and more complex the reality we wish to know, the more important it is to have several "eyes" to apprehend it in all its amplitude and its fine grain.[22]

In mathematics, when moving from one *topos* to another, we propose and articulate different points of view on the same object; we connect, through conceptual bridges, structures that are a priori very distant from one another[23].

---

20 See Judea Pearl, Mackenzie D. *The Book of Why: The New Science of Cause and Effect*, Basic Book, NY, 2018. Leslie Valiant, *Probably Approximately Correct*, Basic Books, 2013.

21 Fernando Zalamea, *Synthetic Philosophy of Contemporary Mathematics*, Urbanomic (UK), Sequence Press (USA), 2012 (review in Giuseppe Longo, Conceptual Analyses from a Grothendieckian Perspective, *Speculations,* December, 2015).

22 Alexander Grothendieck, *Récoltes et semailles*, 1986; Gallimard, 2021

23 For those who are still looking for "applications," here is a little personal experience: by interpreting an Impredicative Theory of Types in a topos ("effective," work with Moggi, download), it was possible to propose very

To continue our parallel with art, let us quote a recent reader of Daniel Arasse's work:

> There is no single truth, no key, not even a riddle to solve: the painting is the result of a multiplicity of gazes, entangled meanings; the painter works to weave and complicate its fabric, while the historian works to reveal its knots[24].... The interpretation of a work of art has often been conceived as the operation of undoing a set of knots... [but] we must pull at the threads without worrying about untangling anything[25]. We will surely encounter new knots and accidents which, in order to be studied, will require the use of new tools[26]... There are also principles, inalienable *modi operandi*: always highlight the gap [*l'écart*], take into account the painting as the primary and ultimate object, the presence of the surprised viewer, and finally the specificity of a thought that cannot be reduced to external, verbal knowledge.[27]

The painter's *gestures* have meaning in themselves, just like those of the mathematician, because they are rich in history. On this subject, Bernard Teissier observes that to understand a theorem, it is certainly necessary to be able to follow the reasoning and logic, but we only really understand it when our ape brain manages to grasp it: we need to *see* the shape of a surface, a trajectory, their deformations, the role of an edge, a boundary, the gestures to produce them...[28] - this creating and seeing, in proving and understanding, is the result of a history, which is also evolving. Modern formal writing stabilizes the construction, but it is demonstrably incomplete[29].

From writing to the machine: critical transitions to new hybrid cognitive processes

Some tools invented by humans evoke an *exosomatization*, an extension of the body, analogous to and extending our organs: carved stone, the bow and arrow... But these inventions are also, and perhaps above all, social constructs. The mastery of fire goes far beyond our physicality: it brings us together and changes our relationship with the community and the ecosystem. We will briefly discuss another "critical transition" that has transformed humanity: the invention of writing.

First, let us emphasize that the use of the term "critical transition" is not an insignificant. It is borrowed from mathematical physics[30] and used in our approaches to living systems[31]. In our

---

expressive extensions of certain programming languages (see the article with Cardelli, download, and Christopher League, Shao Z., Trifonov V. « Representing Java classes in a typed intermediate language. » *ACM SIGPLAN Notices, Volume 34, Issue 9,* pp 183–196, 1999).

24 Daniel Arasse, "La signification figurative chez Titien ," 1980, p. 155.

25 Daniel Arasse, *Histoires de peintures*, 2004, p. 311: "We learn nothing from images. Images serve to remind us of something, but if we don't know what they mean, we cannot learn from them." See Paul Veyne, *How to Write History*, 1971, pp. 13–27 and p. 123.

26 If there is a quest for truth in Arasse's art history, it lies in the search for paradoxes. Indeed, his writings suggest that discrepancies, divergences, and paradoxes can (paradoxically) be objectified and demonstrated because they are *historical* (these last three notes are in Sara Longo, 2022, cited).

27 Sara Longo, *Daniel Arasse et les plaisirs de la peinture*, Éditions de la Sorbonne, 2022.

28 Bernard Teissier, « Protomathematics, Perception and the Meaning of Mathematical Objects », in P. Grialou, G. Longo and M. Okada (Eds.), *Images and Reasoning*, Keio University Press, Tokyo, pp. 135-146, 2005

29 Giuseppe Longo (2011). « Reflections on Concrete Incompleteness ». *Philosophia Mathematica*, *19*(3), 255-280.

30 Jefffrey Binney et al., *The Theory of Critical Phenomena: An Introduction to the Renormalization Group*, Oxford U.P., 1992

31 Giuseppe Longo, Montévil M., *Perspectives on Organisms: Biological Time, Symmetries and Singularities*, Springer, 2014; see also numerous articles on this topic here: downloadable.

usage, the metaphor refers to the continuity of a process marked by a very specific transition: in physics, critical transitions are changes in the state of a system that occur (parameterized) in the continuum, but with diverging derivatives (first, second, etc.). A transition in continuity, therefore, but one that often produces radical reorganizations, "changes in symmetries." Take the formation of a crystal or a snowflake when the temperature drops: the change of state, within the same material, is described in the continuum, but it modifies all the symmetries of the liquid, introduces new ones, and thus reorganizes the forms and relationships of the physical object to its context.

In the continuity of history—that of our humanity as much as our animality—on a material and conceptual "same line," horizontal so to speak, without transcendence or verticality, critical transitions modify our cognitive structures and social relations. Writing, the social process par excellence, reorganizes humans and their consciousness: it reveals the invisible nature of language, and even of thought, making it visible before our eyes—constructing a new self-awareness in humans, culminating in the invention of the "I" in narrative[32]. Within this revolution—this critical transition—that was the invention of writing, another internal transition preceded and enabled our alphanumeric machine: that of the Greek alphabet. Its "phonetic completeness" makes it "automatic," because this alphabet, with all its vowels, eliminates the semantic ambiguities induced by the lack of coding for vocalic sounds. We discuss this at length elsewhere, in our analysis of the historical conditions that made the birth of the Western computer possible.[33]

At each of these critical transitions—from carved stone to digital machines—new human/artifact hybridizations take place, and humans change. Today, we have the opportunity to build fruitful hybridizations, provided we work on essential points:

- **Building a historical and scientific epistemology**, which we have been doing for some time, by analyzing the nature and computational limits of the machine: its imperative determination, for example, or the particular mathematical and epistemic status of randomness, and therefore of unpredictability[34];
- **Analyzing the co-evolution of humans and their artifacts in historical terms**, because hybridization with humans is a fact inherent to all technology. It is at the very heart of our humanity. We must therefore move away from the misuse of language that crushes humans under the weight of computation: co-evolution has nothing to do with recursion, a mathematical closure property in number theory; it is equally misleading to attribute to machines forms of "emergence" specific to living beings[35]: they write and rewrite through a physical process, an electrical flow that we discretize by pressing keys on a keyboard and writing commands;

32 Julian Jaynes, *The Origin of Consciousness in the Breakdown of the Bicameral Mind*, Princeton U.P., 1976.

33 See Lassègue and Longo (2025).

34 See numerous articles in download, notably *The Deluge of Spurious Correlations* in Big Data, and others co-authored with Calude, Bravi, Paul, etc.

35 Giuseppe Longo, *Emergence vs Novelty Production in Physics vs Biology*, lecture at *Open Historicity of Life*, Paris, October 2023, forthcoming in Chollat, Montévil, Robert, eds.

- **Acquire a technical and political awareness** of the immense difficulties we face today in building a co-evolution based on the “common good”: machines and their software[36]. Proprietary oligopolies not only guide the use of networks and machines, but also the invention of new digital technologies. Science is certainly never neutral: it is always part of history. But, *through critical debate,* it can produce remarkable objectivity. Technoscience, on the other hand, when it presents itself as limitless and does not spell out its principles (or invents parodies of them), thereby preventing any critical confrontation, is shaped by and within the biases of proprietary and political objectives: control, death, and the amplification of banalities to the point of evil.

36 Anne Alombert, Giraud G., *Le capital que je ne suis pas*, Fayard, 2024.