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## NEOSUBSTANTIVISM AS COSMOTECHNICS

*gilbert simondon versus the transhumanist synthesis*

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## I neosubstantivism, cosmotechinics, technocene

**T**echnological substantivism, a philosophical view of technology long considered defunct, has acquired a renewed and urgent relevance. I will refer to *neosubstantivism* as the contemporary, mutant version of substantivism that underlies dominant visions of technology. In turn, neosubstantivism designates our present *cosmotechinics* (Hui, *Question*, “Cosmotechinics as Cosmopolitics,” and “On Cosmotechinics”), whose other name is the *Technocene* (Sloterdijk 328).

Neosubstantivism has colonized our politics (left, right, and center) to become the ruling theology of our end times, complete with a myth of Creation in which humans are born from a “technogenesis” (Stiegler 26–27; Hayles 1–18) and an eschatology in which the species transcends the flesh to become One with the Godhead of technology.<sup>1</sup> The church of neosubstantivism has left-wing accelerationists, alt-right apocalyptic antihumanists, zealot Singularitarian entrepreneurs, technophile cornucopians, and even ecologically inclined degrowthers, praying at the same altar. The blockbuster success of this religion in its various political orientations is partly due to the fact that it articulates a palpable and prevalent feeling in industrialized societies: the notion that there is no *outside* of the global system. Mark Fisher has famously referred to this feeling as *capitalist realism*: “the widespread sense that not only is capitalism the only viable political and economic system, but also that it is now impossible even to imagine a coherent alternative to it” (2). As the extractive capitalist machine reaches its material

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limits, we feel we are trapped inside a vehicle with malfunctioning brakes, racing towards the edge of a gaping precipice. The experience of the “system” as a monolithic Behemoth leads to an awareness of planetary boundaries (Nitzke and Pethes) and of the Earth as a *hyperobject* (Morton). Once their mechanisms are set in motion, systems obey the law of inertia and move with a force proportional to their mass. There is no alternative because capitalism is *substantialized* in a vast web of machines and structures with their immovable trajectories in which humans are embedded. This resignation, the inability to dream outside the system, soaks and corrodes our political imaginary.

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Beneath their differences, all variants of neo-substantivism have this central belief in common: the overarching and all-pervasive civilizational role of technology in the future of the human species, a cosmic role previously afforded to divine or natural forces. I will focus on the myth of the *Singularity* as a case study on neosubstantivism, found here in the context of an apologia for free market economics and conservative politics.<sup>2</sup> Singularitarianism is worthy of study because of its ideological power, its representativeness, and because of the peculiar way in which it naturalizes technology. I hope to mobilize the philosophy of Gilbert Simondon and the conceptual resources of Yuk Hui's cosmotechnics to disassemble some central assumptions of Singularitarianism. These two philosophical alternatives offer lines of flight out of the Technocene by questioning the neosubstantivist identification of technology and cosmology.

The naturalization of technology<sup>3</sup> as thing and process, and its expansion to the status of all-encompassing cosmic force are two aspects of the same shift. Questioning the anthropocentric bias that underlies the notion of an "Anthropocene," the Technocene emplaces technology as the true subject of history, a force which is not only akin to nature but which comes to swallow and replace nature as a "neo-environment" and *autotelic totality* (Cera 244). As Hui remarks, the order is reversed: from playing a supplementary and prosthetic role, technology becomes the origin, "itself the ground in contradistinction to the figure" ("On Cosmotechnics" 320). Another way to see the Technocene is as techno-fetishism, which Benjamin Noys describes as a "mysticism of [the] material object being treated as possessed of divine powers [...] The result is the inflation of the technological object to something that horrifies and fascinates, electing it out of history into a natural or metaphysical realm" (3). The deomorphic role of technology is patently visible in everyday discourse, where technology is routinely portrayed as a substantial subject with omnipotent capacities. A quick Internet search yields familiar statements such as: *Technology will change the way we*

*live, 5G wireless technology will muck up weather predictions, Technology will not save us, Digital technology will strengthen America's biggest banks, How technology will change the clothes we wear, etc.* The agential force of technology as subject has the ideological function of occluding the real forces at work behind technological change.

We thus find ourselves in the thicket of two founding theses of classical substantivism. The first thesis is the one substantivism is most renowned for: technology is an autonomous entity that expands following its own internal, self-given laws in a manner wholly opaque to human agency and control. Jacques Ellul, the French Catholic thinker most readily associated with substantivism, disaggregates the systemic, quasi-organismic nature of the "technological system" into five defining features: *automatism, monism, self-augmentation, universalism, and autonomy* (*Technological Society* 79–148).<sup>4</sup> The global technological system is a collection of tightly interrelated technologies ("techniques," in Ellul's parlance) that "combine to form a whole, each part supporting and reinforcing the others" (111). Hence, in Ellul's terms, technology "has taken substance, has become a reality in itself. It is no longer merely a means and an intermediary. It is an object in itself, an independent reality with which we must reckon" (63).

It follows that it is futile "to hope to be able to suppress the 'bad' side of technique and preserve the 'good'" (Ellul, *Technological Society* 111). *Value-ladenness* is another founding thesis of substantivism: technology exceeds the merely "technical" to embody values that inform its very material configuration. Artefacts, machines, and techniques are not ontologically neutral and morally innocent vehicles for the expression of human goals; on the contrary, values are substantialized in material structures and the interactions they enable. In riding a car or drinking from a Styrofoam cup, we are assenting to values we may have not chosen and which many of us are probably unaware of. From a wider perspective, a given technological configuration can incarnate a whole epoch or *Geist*.

According to this view, it may be legitimate to conflate capitalism, its technologies and the Technocene as facets of the same irreducible epochal phenomenon.

However, the autonomous force of technology also escapes the intentions of the ruling socioeconomic and political order. The “automatism of technique” will end up crushing capitalism, which is unable to control the forces of production and prevent them from turning against it (Ellul, *Technological Society* 82). Ellul cites approvingly from *The Communist Manifesto*:

Modern bourgeois society with its relations of production, of exchange and of property, a society that has conjured up such gigantic means of production and of exchange, is like the sorcerer who is no longer able to control the powers of the nether world, whom he has called up by his spells. (Marx and Engels 41)

On their part, accelerationists believe it is possible to repurpose the machines of capitalism and put them to other ends, in the context of an alternative post-capitalist society (Srnicek and Williams). One important question is whether these structures can be co-opted or redirected towards other ends.

It follows that the Technocene displays a polarity: the *near* and the *far*. While the *far* reaches out to the blurry spatio-temporal boundaries of a whole epoch, the *near* points to the technological shaping of actions and perceptions; the *pragmatic* and *hermeneutic* dimensions of mediation, respectively – a topic of central interest to post-phenomenological accounts of technology and design, such as Peter-Paul Verbeek’s (*What Things Do*, “Materializing Morality,” and “Obstetric Ultrasound”) and to Actor-Network Theory (Latour, *Science in Action*, *Pandora’s Hope*, and *Reassembling the Social*). These views converge on the nodal insight that artefacts can display quasi-intentionality and goal-directedness, materializing “scripts” (Latour, “On Technical Mediation” 31) and “programs of action” (Akrich and Latour 260–61) that exert a constitutive, causal force on the shaping of human

intentions and actions – what we may call *microsubstantivism*.

In this context, Hui’s concept of *cosmotech-nics* can fulfill at least three important critical functions. Firstly, the notion of cosmotech-nics returns technology to history – or better still, to *histories*. To return technology to history may help us break the stronghold of neosubstantivism and challenge modernity’s hold on technology. Secondly, cosmotech-nics may help us think beyond the traditional distinction between nature and technology without collapsing the former into the latter. Thirdly, cosmotech-nics highlights moral aspects of technically mediated practice and restores some space for human agency; this is important inasmuch as any cosmotech-nics is also a *cosmopolitics*.

Cosmotech-nics stands for the deep interweaving of human action and technology as shaped by diverse moral universes (Hui, *Question* 18–32). Cosmologies provide “not only schemas that define the modes of participation, but also correspond to the moral grounds of such participation” (Hui, “On Cosmotech-nics” 321). Cosmotech-nics is plural, an invitation to dream alternative futures, another technology and politics beyond the Technocene. Hui’s work focuses mainly on Chinese cosmotech-nics with a view to reopen “the question of technology through the affirmation of non-modern cultures” (338). Our strategy is to stay within Western philosophy and approach cosmotech-nics from the perspective of Simondon. As we shall see, the Singularity preaches passivity before a cosmos ruled by deomorphic technology. Simondon, on the other hand, regards the relation between humans and their creation as one of inter-individual collaboration. Next, we shall delve deeper into these contrasting views.

## 2 the singularity and the transhumanist mutant synthesis

The Singularity is a particularly virulent form of neosubstantivism that provides an image of technological change friendly to the tech-industry and the conservative political agenda. What makes Singularitarianism worth examining is its

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performative aspect, the fact it is fast becoming a self-fulfilled prophecy. It is a belief that drives technological change itself.

The Singularity is an End of History narrative that predicts a future point in time where technological progress accelerates to infinity (Ellul's self-augmentation). Although originally the Singularity only concerned machine intelligence (Vinge), the engineer and futurologist Ray Kurzweil broadened its scope to include all information technologies and related developments. "The key idea underlying the impending Singularity is that the pace of change of our human-created technology is accelerating and its powers are expanding at an exponential pace" (Kurzweil, *Singularity* 7–8). Kurzweil has turned the Singularity into a successful business model, establishing it as the core philosophy for a tech-startup "accelerator" located at Singularity University, a venture he started in 2008 with fellow businessman and Singularitarian Peter Diamandis. In Kurzweil's view, the Singularity does not merely entail that machine intelligence will surpass human intelligence, but that there will be a merging of the two that will mark the entry into a post-biological mode of being:

The Singularity will allow us to transcend these limitations of our biological bodies and brains. We will gain power over our fates. Our mortality will be in our own hands. We will be able to live as long as we want [...] By the end of this century, the nonbiological portion of our intelligence will be trillions of trillions of times more powerful than unaided human intelligence. (*Singularity* 8)

Our descendants will lead a digital existence on a substratum of nanobot clouds. Their exodus from Earth in search of intergalactic adventure "is the ultimate destiny of the Singularity and of the universe" (Kurzweil, *Singularity* 21). The progression leading to this point is presented as an innocent induction from historical trends, hinging mainly on the rapid increase in computational power. For Kurzweil, technological change is driven by natural forces that are an unproblematic extension of "evolutionary" trends: "Exponential growth is a feature of any evolutionary process, of which

technology is a primary example" (11). Evolution seeks to create patterns of ever "increasing order" (13) in a process that will eventually lead to the Sixth Epoch of Evolution, where intelligence "will begin to saturate matter and energy in its midst" (21).

The central strategy of the Technocene is the *naturalization* of technology, sometimes in a theological or cosmic guise. In Kurzweil's version, naturalization is the ground for a *moral legitimization* of free market economics that continues a tradition inaugurated by the Physiocrats in the eighteenth century, and later immortalized in Adam Smith's famous metaphor of the Invisible Hand. The naturalization of the markets was partly a product of the spread of the mechanistic worldview into social phenomena. As an extension of mechanical nature, society was conceived in terms of a social physics and the market as a self-regulating machine that should remain free of all political intervention. In a book called *Bionomics: Economy as Business Ecosystem*, Michael Rothschild states the thesis clearly:

Capitalism, or the market economy, or the free-enterprise system – whatever you choose to label it – was not planned. Like life on earth, it did not need to be. Capitalism just happened and it will keep happening. Quite spontaneously. Capitalism flourishes whenever it is not suppressed, because it is a naturally occurring phenomenon. It is the way human society organizes itself for survival in a world of limited resources. A capitalist economy can best be comprehended as a living ecosystem. (xi)

"Networks" are the present descendants of self-regulating machines such as the balance, which provided inspiration for the first wave of mechanistic models of the market (Mayr). The Singularity advocates the deregulation of markets and a "proactionary" approach to technological development that is also championed by other transhumanists such as Max More and Fuller and Lipinska.

On his part, Kevin Kelly, founder editor of *Wired* magazine and another Silicon Valley visionary, follows this same path, coining his

own neologism, the “technium,” to refer to the global network of machines and systems that constitutes a global organism in its own right (15). Kelly presents this uncredited repackaging of Ellul’s *technique* in a book entitled *What Technology Wants*. This title boldly illustrates the technology-as-subject at the heart of the Technocene. Opting for vitalist and animistic metaphors, Kelly refers to the technium as the Seventh Kingdom of Nature, an organic whole that evolves following the same principles as living things:

[...] systems – all systems – generate their own momentum. Because the technium is an outgrowth of the human mind, it is also an outgrowth of life, and by extension it is also an outgrowth of the physical and chemical self-organization that first led to life. The technium shares a deep common root not only with the human mind, but with ancient life and other self-organized systems as well. (15)

In classical substantivism, technology and nature remain ontologically distinct, and the former is often seen as exploiting, subjugating, or mediating the latter. “Technique is opposed to nature,” writes Ellul. “Art, artifice, artificial: technique as art is the creation of an artificial system” (*Technological Society* 79).<sup>5</sup> For neo-substantivism, this distinction has ceased to hold any meaning. The central irony here is that substantivism started out its philosophical career as a cautionary view on the catastrophic effects of modern technology, and now Silicon Valley’s think-gurus have co-opted and retro-engineered it into a technophilic fable. If there is any “original” nature left somewhere, it doesn’t matter anymore. As Zoltan Istvan, US presidential candidate for the Transhumanist Party, claims:

What we’re doing to the planet is not as important as what we are achieving as a species entering the transition to the transhumanist age [...] [E]nvironmentalists are mistaken in thinking the Earth is our only or permanent home. Before the century is out, our home for much intelligent life will likely be the microprocessor. We will merge

with machines and explore both the virtual and physical universe as sentient robots. That’s the obvious destiny of our species and the coming AI age.

The fantasy of flight from planet Earth grotesquely reimagines capitalist realism in terms of a parasitic global organism that, after sucking its cradle planet dry, sets out on a mission to lay waste to other worlds. In this manner, the Singularity narrative pushes out the limits to capitalistic growth to the far reaches of the cosmos. The main message is that we should not worry about altering current power structures or seek less self-destructive socioeconomic arrangements. According to Kurzweil, the exponential logic of technological growth is negentropic and follows a Law of Accelerating Returns (“Law of Accelerating Returns” 383). From this angle, the Singularity is a version of technophile cornucopianism, also known as the *image of the unlimited good*, or the *open systems view* (Trawick and Hornborg 3).

The moral function of a cosmotechnics is to regulate human behavior in the context of an overarching and self-contained image of the world. A cosmotechnics legitimates certain actions and opinions firstly by shaping the perceptions of those that subscribe to it. In this case, the function of the Singularity is to provide an optimistic picture of technology and sanction the central role of the entrepreneur as the motor of history. It provides a holistic image to counter the disorientation often felt in the face of complex, traumatic change.

To begin with, Singularitarianism has been designed to be broad and vague enough to accommodate any new technology released into the market and enthusiastically endorsed in the media. Nanomedicine, wearable tech, cognitive implants, expert systems, *in vitro* meat – anything can be incorporated into the story. The function of Singularitarianism is to cushion the low points of the tech hype-cycle, promoting optimism and continued investment in the face of market downturns and cultural backlashes. Ensuring this hype-sustaining effect requires an adequate temporal frame. As any

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self-respecting prophet knows, your prediction must be neither set too *early* (in case it is promptly defeated by facts) nor too *late* (ensuring your audience continues to believe they may enjoy the promised benefits in their own lifetime).

In the threshold of the Sixth Epoch of Evolution, Silicon Valley cosmotechnics promotes an attitude of hopeful passivity before the monumental forces of the Seventh Kingdom of Nature – unless you are one of the few powerful actors granted a significant role in this play. Singularitarianism represents technological acceleration as a spontaneous process, free of control and from vested human interests, but the reality is the opposite: the Singularity promotes a narrow view of innovation driven by technologies of control, and managed by a few powerful (mostly) men – to the extent that technology *can* be “managed” in the Technocene. It is a worldview tailor-made for and by the military–digital complex. Here, the locus of power is the commercial and proprietary control that the capitalist system demands from all “innovation.”

Adapting substantivism to the worldview of the tech entrepreneur requires some fine-tuning, beginning with the introduction of substantivism’s traditional foes, *instrumentalism* and *determinism*, into the mix. In their seminal essay “The Californian Ideology,” Barbrook and Cameron already draw attention to the “contradictory mix of technological determinism and libertarian individualism” that characterizes the orthodoxy of Silicon Valley’s virtual class (54). Determinism provides the link between substantivism, instrumentalism, and individualism. Briefly stated, technology follows its own developmental path (substantivism) *and* is the cause for change in all other spheres of human activity (determinism); in turn, this means that the individual in charge of introducing new technologies into the market occupies a privileged place at the center of the cosmos, as the unmoved mover behind all historical change. At some point in this story, instrumentalism is introduced: the view that technologies are neutral vehicles for human intentions, making no causal

contribution to the outcomes of action, let alone to the genesis of those very intentions. Advertisements and corporate mission statements issuing from Silicon Valley make routine use of instrumentalist narratives in which the user is positioned as a free, empowered individual who uses technologies to accomplish his or her goals more effectively and broaden the horizon of agential possibilities. Finally, we should add another *-ism* to the picture: *solutionism*, the view that technology can solve all of humanity’s problems (Morozov).

Singularitarianism pushes instrumentalism to its limit, and in a very peculiar way. The Singularity marks the point of convergence between technological evolution and the spiritual ascension of a chosen group of humans. Technology becomes the vehicle for spiritual transcendence, the instrument for the fulfilment of human nature. The logical end point of the autonomous evolution of technology coincides with the consummation of the cosmic destiny of humanity. Both moments are one and the same. In this way, technology not only mediates but substantializes the union of humanity and the universe in a sort of Holy Trinity (human–machine–cosmos). To this end, Kurzweil claims that humanity’s nanobotic descendants will preserve their human essence. In this sense, Kurzweil’s version of the Singularity is humanistic and somewhat reassuring.

Singularitarianism draws transhumanism into its fold by way of this numinous narrative, to give birth to what I call the *Transhumanist Synthesis*: the terminal merger of Singularitarianism with the trope of “deliberate selection” and “enhancing evolution” through market-based eugenics (Harris 11). The Transhumanist Synthesis emerges partly from the failure of previous forms of “soft,” humanistic transhumanism; and partly from the voracious colonizing effect of the market itself. Soft transhumanism is grounded on the idea of wide beneficence. “The claim is that for *most* current human beings, there are possible posthuman modes of being such that it could be good for these humans to become posthuman in one of those ways” (Bostrom, “Why I Want” 108; emphasis in the original). In the original view of Directed

Evolution, posthumanity will be the cumulative result of individual enhancements on species-wide traits. Thus, a better humanity will arise from the action of the Invisible Hand. The human enhancement project appealed to a future state of collective beneficence that would affect all or most of humanity for the better. The writings of Nick Bostrom (e.g., “Human Genetic Enhancements,” “In Defense of Posthuman Dignity,” and “Why I Want to be a Posthuman”); Bostrom and Sandberg, “The Wisdom of Nature”) represent the most developed attempts at a philosophical defense of this earlier stage of transhumanism and clearly lays bare its failure (see Vaccari, “Why Should”).<sup>6</sup>

The Synthesis abandons all pretense of beneficence to relentlessly insist on the inevitability of technological “advance,” on the *necessity* of what technology wants. The appointment of Kurzweil as Head of Engineering at Google sealed the creation of the Synthesis by absorbing transhumanism into Silicon Valley’s ideological agenda. Posthumanity will not necessarily be better, not even good. Naturally, this means that the “Rapture for nerds” (MacLeod 115) will be for an elected few, while the rest of our descendants will have to be content with remaining Mostly Original Substrate Humans (Kurzweil, *The Age* 229) – assuming they don’t perish in the post-capitalist apocalypse left behind by the cloud of nanobots.

### 3 simondon against silicon valley

Our final step is to examine the thought of Simondon from the perspective of cosmotechnics, mining philosophical resources towards a critique of neosubstantivism in the guise previously examined. What does Simondon have to say to the ruling techno-theocracy?

In the introduction to *On the Mode of Existence of Technical Objects* ((1958) 2017), Simondon sets a task for the philosopher, that of the critic of myths. Simondon is concerned with bridging the distance between culture and technology that arises partly as a result of fragmentation and hyper-specialization (118). Culture treats the technical object

as foreign, inhuman, and contradictory: as a lump of matter *and* as something that harbors intentions, good or (mostly) evil. Culture does not understand technology because it considers the technical object as identical to the *machine*: a closed block, an impenetrable black box. The myth of the *robot* encapsulates the alienation of the technical object in modern culture, combining fantasies of power while substantializing and materializing the technical object (157).

To remedy this state of affairs, Simondon seeks to establish a pedagogical program and political project, a *new encyclopedism*, and hence a *new humanism*, that can fully integrate the technical object into culture. For Simondon, humanism is primarily concerned with human liberation, and the goal of freedom is achieved with a universal kind of knowledge. Simondon’s account of technology aims to free human beings by opening up the technical object and elucidate its universal mode of existence.

[The human] is enslaved to his dependence on unknown and distant powers that direct him while he can neither know nor react against them; it is isolation that enslaves him [...] Having become a machine in a mechanized world, he can regain his freedom only by taking on this role and by superseding it through an understanding of technical functions thought from the point of view of their universality. (Simondon, *Mode of Existence* 117)

Previous to the nineteenth century, technology was grounded on bodily and perceptual schemas. From a phenomenological and social perspective, humans perceived themselves to be at the center of technical action. However, in the industrial revolution, the individual becomes a “mere spectator” of the machines to work (Simondon, *Mode of Existence* 132). Thus, the alienation denounced by Marx is as much economic as it is physiological and psychological (133). From this alienated point of view, progress is no longer lived as a continuous process, but as a fragmented one, proceeding in leaps and bounds. The resulting image looks suspiciously current:



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Progress is henceforth thought of as cosmic, at the level of its overall results. It is thought abstractly, intellectually, in a doctrinal manner. Progress is no longer thought by craftsmen, but by mathematicians, who conceive of progress as man taking possession of nature. Beginning with the Saint-Simonians, this idea of progress starts to support technocratism. (Simondon, *Mode of Existence* 132)

Simondon's theory of technology follows seamlessly from his theory of *individuation*. Individuation is the thread that connects Simondon's analysis of physical systems, living things and technologies.<sup>7</sup> The distinction between these three realms is not due to an a priori ontological classification that picks out essences, identities, or substances, but which focuses on operations. In Simondon's genetic and processual view, nature, the human, and technology are marked by different *regimes of individuation*. In this scheme, technical objects follow different laws than those of biological evolution, although they *tend towards* natural objects and may even lose their artificial character in some cases (Simondon, *Mode of Existence* 49). *Concretization* denominates the specific regime of individuation proper to technology, a process of functional and structural convergence in which a technical object progressively gains complexity by "informing" itself. The technical object develops following internal norms (structural, energetic, and functional) and in phases oriented towards greater perfection. In this process of "information" (a term which Simondon defines in his own specific way), preindividual potentials are actualized into structures.

Although, on a first approach, Simondon's mechanology appears strongly committed to substantivism, we should follow Darío Sandrone in labelling this philosopher a *technical realist*, in the context of a tradition of machine theory that encompasses Karl Marx, Robert Willis, Franz Reuleaux, and Jacques Lafitte. Divided into weak and strong currents, the tradition of technical realism understands technology as a form of knowledge "constituted by actions and objects that, to a large extent, are linked to the objective principles of the natural sciences and

mathematics, and which possess certain autonomy with respect to the practical function determined by the context of use" (Sandrone 309–10; my translation).

The dynamics of technological change can enter into conflict with economic pressures, as well as with cultural and social standards. Whereas for Singularitarianism the dynamics of capitalism are perfectly integrated with the "natural" course of technological progress, for Simondon the capitalistic values that drive production and consumption often hinder the immanent logic of the technical object. The market constrains and slows down technical becoming by adding contingent, superfluous structures and forcing extraneous functions on the "pure" technical object. Conversely, the way to rectify our alienation and achieve true "progress" is not through the mechanisms of the free market, less through some search for technological transcendence, but through a concerted and collective design of systems beyond the narrow concerns of certain socioeconomic sectors. Simondon's cultural revolution is meant to be broad and far-reaching, a true reform of culture with technology at the center.<sup>8</sup> The destiny of the human is, for Simondon, intimately tied in with technology, but Simondon sees this relation as one of collaboration and inter-individual coupling. Likewise, Simondon's philosophy resists the mechanistic thesis at the heart of the transhumanist project. Human beings are not machines. Technology originates in life, in the struggle for dominance over the environment. Technical invention issues from the kind of problems that living things face in their everyday struggle for survival. Invention arises from interruptions and discontinuities that challenge the organism's "operative accomplishment continuous with its project [*accomplissement opératoire continu dans son projet*]" (Simondon, *Imagination* 139). The living dimension is the key to understanding the relation between humans and technologies, and the function of humans in technical ensembles.

There is something alive in a technical ensemble, and the integrative function of

life can be ensured only by human beings; the human being has the capacity to understand the functioning of the machine, on the one hand, and the capacity to live, on the other: one can speak of technical life as being that which actualizes this relation between these two functions in man. Man is capable of taken upon himself the relation between the living being that he is and the machine he fabricates; the technical operation requires both technical and natural life. (Simondon, *Imagination* 140)

The passage in *Mode of Existence* describing the complementarity of human and machine memory is illustrative of how the collaboration between humans and machines works (Simondon, *Mode of Existence* 135–39). There is no isomorphism or equivalence between the functions carried out by technical and living things. It follows that, for Simondon, it would be impossible to “download” consciousness onto an artificial substratum, since mental life is the outcome of very specific structures and processes; in this sense, Simondon is a *body-centrist* (Clark 56). The concreteness of biological beings, the complex web of reciprocal causality upon which their performance depends, sets a material limit to functional substitution and to potential mergers.<sup>9</sup> Likewise, paradigms such as automation, standardization, augmentation, and enhancement fail to grasp the true relation between humans and technical objects. In Simondon’s terms, the function of the Singularity is to produce a “technophany” (*technophanie*), a ritualistic and symbolic guise that veils the technical object; it allows the insertion of the object into culture, yet it immobilizes it, impeding its free expression (“Psychosociologie de la technicité”) (*Sur la technique* 39–52).

The cosmotechnical nature of Simondon’s thought is most visible in its *normativity*. The starting point for a Simondonian cosmotechnics is the recognition of the specific dynamics of technical reality and its role in transindividuation. Simondon demands that we establish an *ethical* relationship with the technical creatures in our midst. Modern cosmotechnics is alienating precisely because it degrades technical objects, stripping technical action from any

ritual and moral overtones, and framing it as merely mechanical, instrumental action. Rather than a tool or a utensil, the technical object is

[...] condensed human effort, waiting, an available virtual being, a potential action. For this reason, we must not only refine our gaze, to purify it, but we must also reform the technical operation: it must aim to constitute an open object, perfectible, and neotenic, that is to say depository of an evolutionary potential; this object must not be a sold, possessed thing, but a thing that institutes a participation [...] [F]ree in relation to the human, though linked to him, the technical object augments the density of the human field of activity: it is really a social being [...] the concrete ensemble [*l’ensemble concret*] is the couple human–machine. Modes of being and of thought, types of social structure that could not exist with individuals without equipment, solitary humans, can be concretized and structured through this contribution, this enrichment in potential. (Simondon, *Sur la technique* 363; my translation)

A cosmotechnics is an *image* in the Simondonian sense: a pattern or schema that propagates transductively through the social body and which underpins its collective activity, helping to structure it (Bardin 222). At the heart of this image, we find the duality of human action, which presents at once a *technical* and a *symbolic* aspect (Bardin 177–78). Simondon is a thinker of cosmotechnics par excellence, since his philosophy unites the image of the cosmos, the symbolic and the technical as three aspects that: (1) are condensed in a single gesture; and (2) point to the common origin of all forms of human thought in a primordial relation to the cosmos.

In Simondon’s account, technical thought splits off from a primordial mode of grasping of the world which progressively unfolds into different *phases*, in the strictly physical meaning of the term (*phase ratio*).<sup>10</sup> The source of magical thinking is a basic structure of perception, the *figure-ground*, one step “immediately above the relationship that is

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simply between the living thing and its milieu” (Simondon, *Mode of Existence* 169). Magical thought grasps the world as a network of meaningful spots in the landscape: a mountain, a cave, events such as thunderstorms. It does not separate objects and individual humans. As Hui claims, in the magical phase, there is “hardly any distinction between cosmology and cosmotechnics, since cosmology only makes sense here when it is part of everyday practice” (*Question* 21). Technical, aesthetic, and religious modes of thought originate “at the moment of the splitting of the primitive magical unity” (Simondon, *Mode of Existence* 174). With technical thinking, the figure is decontextualized from the background and the key points are reconceptualized in functional terms. The powers and forces that were, until then, qualitative and concrete become mobile, and objectified in tools and instruments. Aesthetic thought appears as a product of this split, rather than a phase; it is “a permanent reminder of the rupture of unity of the magical mode of being, as well as a reminder of the search for its future unity” (174). Technical thought moves forward by multiplying objects “without being able to recapture the primitive unity” (186). Fragmentary and multiple by nature, technical objects engage the world at localized and particular points.

Now, if human cultures carry on their business against the ground of an independent technical reality, is it possible to have *multiple* cosmotechnics? Or do all cultures converge towards a single image of technics, determined by a universal *tendency*, to use Leroi-Gourhan’s term (90)? Simondon sees no contradiction in the plurality of cosmotechnics and the universal paths of technical objects. On the one hand, there is a *real* technical development beyond cultural dynamics. On the other, there is a rich proliferation of techniques and ways of doing things, inserted in an equally diverse variety of cosmologies and symbolic practices. Simondon opens a middle ground between the universalizing, profane cosmotechnics of Western metaphysics, and the notion of a cultural constructivism unhinged from any material constraints. Technics is a *limit* that remains invariant across

cultures, yet it can be overwritten by many different significations and symbolic charges, owing to the common origin of technics and symbolic thought that subsists in human gesture. In fact, Simondon goes further, arguing that the distinction culture-technics is internal to technics itself (Bardin 185).

It would therefore be more correct not to use the word *technique* to contrast it with *culture*: “culture” and “technique” are both activities of manipulation, therefore techniques: they are even techniques of human handling, because they exert an action on man through the intermediation of the environment in the case of activities generally called technical, and directly in the case of culture. (Simondon, *Sur la technique* 318)

The technical object is not outside of culture but at the center of it, as the collective depository of cognitive schemas and norms of action (Bardin 197–98). The technical object carries the residual force of life at the heart of the act of invention. The human being, and the living being more generally, is essentially a *transducer*, a receiver and transformer of information (Simondon, *Mode of Existence* 155). As such, the human is the “permanent organizer,” “the living interpreter of all machines among themselves.” Machines need the human “in the same way musicians in an orchestra need the conductor” (17). Technics establishes a communication between humans, diachronic and synchronic, by opening up a shared world of possible actions and by sedimenting what Bernard Stiegler calls “tertiary retentions” (1). In this sense, technics is always already anthropotechnics. As the substratum for transindividual processes, technical objects are political players that produce structural effects in the form of social systems. According to Andrea Bardin (221), for Simondon, the political is an ontogenetic process that runs through the social body, where social systems emerge and develop.

## 4 conclusions

The point of the preceding exercise is to help loosen the grip that neosubstantivism has on

our technological imaginary, drawing from the resources of the Western tradition. I hope to have hinted at how Simondon can help us build a liberating, alternative picture of the relationship between humans, technical things, and the cosmos. Likewise, the cosmotechnical view, as proposed by Hui, splinters the monolithic hold of a technological system. Systems, especially one as vast and fragile as the technological system, are fundamentally open to contingency and plurality (Hui, *Recursivity*).

Should Silicon Valley read less Harari, and more Simondon and Hui, then? The main obstacle to establish some kind of dialogue or dialectic is communicational. It has to do with the present state of culture, where the transmission of information and ideas is increasingly segmented in terms of bubbles and resonance chambers. Since all “metanarratives” have long been pronounced obsolete (Lyotard 34–52), perhaps a more apt term for a narrative such as the Singularity is “megadiscourse” (Winner, “Decadencia y caída del tecnotriunfalismo” 127), a metanarrative divorced from all notion of truth. The function of a megadiscourse remains ideological (the legitimation and reproduction of existing power structures) but a key distinguishing feature is that it is not meant for universal agreement and consumption. A megadiscourse is addressed to a limited audience of converts and its function is to prop up bubbles: market bubbles, cultural bubbles, ideological bubbles. Megadiscourses are manufactured just like any other product. In the 1940s, Ernst Cassirer observed that the engineering of myth is a phenomenon peculiar to the twentieth century. Myths, according to Cassirer, are no longer the spontaneous products of the collective imagination but “artificial things fabricated by very skilful artisans.” Our politicians and manipulators of perception have developed a “new technique of myth” that enable myths to “be manufactured in the same sense and in accordance with the same methods as any other modern weapon” (Cassirer 282), a fitting analogy in the context of the military–digital–industrial complex of which Silicon Valley is a key ally.

Further, Cassirer relates the phenomenon of myth-manufacture to a shift in the function of language, which returns to its magical, performative roots. Modern myths rely on magic words that are “destined to produce certain effects and to stir up certain emotions [...] new-fangled words [...] charged with feelings and violent passions” (Cassirer 283).

The problem, then, may well be one of information flows, of open vs. closed systems. Megadiscourses can only emerge in closed systems, such as Silicon Valley’s cultural bubble. As Joichi Ito argues: “In Silicon Valley, the combination of groupthink and the financial success of this cult of technology has created a positive feedback system that has very little capacity for regulating through negative feedback.” The task of philosophy is to provide a vantage point that cuts across and transcends all perspectives on the technical object: that of the scientist, the engineer, the manufacturer, etc. Further, philosophy is a reflexive activity that feeds back into the technical and symbolic milieu that supports the functioning of social systems. As a transindividual activity, thought is reflexive “insofar as it can change the cultural milieu from which it emerges” (Bardin 202). However, as Bardin suggests, Simondon seems overly optimistic here, as his project requires strong institutions that can mediate the feedback loop between technics and transindividuation; those are, precisely, the institutions that free market mechanisms aim to weaken with a view to eradicate.



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## notes

1 Theology is the study of the divine and of religious belief. I use the term in two more specific senses. Firstly, as an account of the origin and destiny of human creatures in the context of a meaningful cosmos either created by God or rendered rational by the future arrival of a God to

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come: the reign of “Homo Deus” (Harari), or the human rendered divine by technology. In the second sense, theology refers to political theology, following the philosophy of Carl Schmitt: the way theological narratives and structures consolidate into earthly power structures. In this last sense, theology is “the study of the structures and sources of *legitimacy* – of the ways that people attempt to answer the question of who should be in charge and why” (Bailes).

2 We should keep in mind that the Singularity also features in Nick Land’s “dark accelerationism” as the anti-humanist version of Kurzweil’s cozy, humanist narrative (see Land, “Meltdown” and “Ideology, Intelligence, and Capital”).

3 The term *technology*, as opposed to *technics*, has a number of interpretations. I will use *technology* to also encompass *technics* in general, except in certain passages where drawing the distinction becomes crucial to the argument. Following Simondon, I will employ *technology* to refer to: (1) the modern epoch in the history of *technics*; and (2) a structured and universal body of knowledge on *technics*.

4 Ellul published his major work, *La technique ou l'enjeu du siècle* (*The Technological Society*) in 1954, an *annus mirabilis* for technological substantivism, since it also saw the appearance of Martin Heidegger’s *Die Frage nach der Technik* (appearing in *Vorträge und Aufsätze* (Pfullingen: Neske, 1954)). This work of Heidegger is also considered to advance a strong substantivist view of technology, although based on very different premises than those of Ellul. Due to reasons of space, we will not get a chance to discuss Heidegger here.

5 When Ellul denounces the encroachment of technology on nature, and the subsequent creation of a “second nature” as a technological totality that envelops human existence, he seems to assume there is a remnant of “nature” out there somewhere, and that technology can only replace nature from the perspective of the human. For example:

Technique now constitutes a fabric of its own, replacing nature. Technique is the complex and complete milieu in which human beings must live, and in relation to which they must define themselves. It is a universal mediator, producing a generalized mediation, totalizing and aspiring to totality. (Ellul, “The Search” 23)

6 The problem is twofold: (1) market-driven eugenics cannot guarantee future beneficence; and (2) the emphasis on “hi-tech” means of enhancement, as opposed to socio-economic reforms or the equitable distribution of “old” technologies, is arbitrary. Langdon Winner nicely sums it up: “Better genes and electronic implants? Hell, what about potable water?” (“Are Humans” 44).

7

The true principle of individuation is the genesis itself taking place, that is, the system in the course of becoming, while the energy actualizes itself. The true principle of individuation cannot be sought in what exists before individuation occurs, nor in what remains after individuation is accomplished; it is the energetic system that is individuating insofar as it realizes in itself that internal resonance of matter taking shape, and a mediation between orders of magnitude. The principle of individuation is the unique way in which the internal resonance of *this* matter is established in the process of taking *this* form. The principle of individuation is an operation. (Simondon, *L'individuation* 48; my translation, emphasis in the original)

8 At this point, the question of Simondonian politics is opened up. We don’t have enough space to deal with it here. The reader is referred to the body of literature on the constitutive role of technologies in the shaping of transindividual dynamics. See Combes, Bardin, and Read.

9 Another reason is that, for Simondon, there is no difference between function and structure. A description of a function coincides with the performance of the relevant structures. Function is immanent to structure (see Vaccari, “El artefacto”).

10

[...] a phase is only a phase in relation to others, from which it distinguishes itself in a manner that is totally independent of the notions of genus and species. The existence of a plurality of phases finally defines the reality of a neutral center of equilibrium in relation to which there is a phase shift. This schema is very different from the dialectical schema, because it implies neither necessary succession, nor the intervention of negativity

as a motor of progress [...] (Simondon, *Mode of Existence* 173)

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