How do the two technologies of blockchain and artificial intelligence actualize and, crucially, automatize the cognition of time? These kinds of machines are increasingly part of both our contemporary present and our prospective future, but how do we really define a present and a future? And more importantly, how do these machines themselves understand, know, and sense time? Can machines really think about the present and dream the future in an autonomous way? In order to unravel these questions, this book follows the "emerging life adventures and experiences" of Sophia, a robot animated by blockchain and AI, to present a study in temporal automation.

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Whose Time Is It? Asocial Robots, Syncolonialism, and Artificial Chronological Intelligence

Stamatia Portanova

9

A man and a woman are chatting on a terrace in front of a beautiful sea view.

> *"Let me tell you a joke!" he proposes, as a way to break the ice.*
> *"This is an irrational human behavior, to want to tell jokes," she impassively replies.*
> *"What is a robot's favorite kind of music?"*
> *"What?"*
> *"Heavy metal!"*
> *"I am mostly made of silicon, plastics and carbon fiber. And I prefer electronic music. But I don't mind '80s hip hop."*[1]

The man is the Hollywood star Will Smith, and the woman is a humanoid social robot called Sophia. The awkward conversation between the two continues, with Sophia expressing her perplexity about the way in which robots are portrayed in films such as *I, Robot* (which stars Smith). But the situation reaches its climax when he tries to kiss her and she remains immobile, before telling him, with a wink and a smile: "I think we can be friends, let's hang out and get to know each other for a while. You're on my friends list now." A total failure of the human's seductive ability, or a really advanced sophistication of the robot's social skills?

At the end of this short YouTube video, we are told that Sophia is not a simple robot, but the product of more than two years of collaborative research between SingularityNET, a leading Amsterdam-based company in the fields of blockchain technologies and machine learning, and Hanson Robotics, a Hong Kong-based engineering and robotics company specialized in the development of humanoid

1. An excerpt of the meeting between actor Will Smith and Sophia can be accessed here: "Will Smith Tries Online Dating," YouTube video, 4:31, March 29, 2018, https://www.youtube.com/watch?v=Ml9v3wHLuWI.

robots.[2] So far, the main achievements of the collaboration have been Sophia's capacity to imitate more than thirty human facial expressions and to interpret language and emotions (at least, to a certain extent). But while the evident lack of communication between her and Smith seems to confirm the inimitable complexity of the human and of its sensations, a final remark made by the robot strikes our attention: there is perhaps no reason at all, she suggests, to assign human motives to something that is not human. A remark that could provoke different reactions: from reassuring us about the ultimate unattainability of humanness, to scaring us about a coming world populated by alien machines. In any case, a remark worth reflecting on.

This essay will reflect on the way in which the two main technologies associated to Sophia (i.e., blockchain and artificial intelligence, or AI) actualize and, most importantly, automatize, a particular skill usually attributed to humans—that is, the cognition of time. The theoretical background for these reflections will be composed by two complementary dynamics of thought: the capacity to define the contemporary condition, and the possibility to speculatively imagine what comes after. Can machines really think about the present and dream the future in an autonomous way? In order to unravel this question, we will follow the "emerging life adventures and experiences" of Sophia the robot, using her steps as bridges to navigate the entanglement that connects the problem of time as a social relation to the question of time as a cultural production, and to the speculation of time as a technological elaboration. A theoretical journey that could also be defined as a "study in temporal automation."[3]

2. For more information, see the websites of SingularityNET, https://singularitynet.io; and Hanson Robotics, https://www.hansonrobotics.com.

3. Hanson Robotics website.

PREMISE: THE QUESTION OF TECHNOLOGY IS ALREADY A QUESTION OF TIME

Machines in/and the Future

On October 11, 2018, leadership strategist Robert C. Wolcott posted an article on *Forbes* entitled "Fiction as Future: Vision, Technology, and Our Accelerating Present." The article argued that one of the most indispensable talents of an inspiring leader is the capacity to imagine a "fictional" future.[4] According to Wolcott, a truly visionary leader is able to narrate the future like a story that can be collectively accepted by a whole population of followers (with technology obviously playing a crucial role in the vision). In a November 2018 *Forbes* post, lifestyle blogger Lela London warned that "the robots are coming" (although not the killer models portrayed in Alex Proyas's 2004 movie *I, Robot*).[5] Almost two thirds of the British people, London continued, believe that there will be a robot in every home within the next fifty years: a vision that, without falling into the dystopic paranoias of Hollywoodian imagination, makes of Sophia a constant presence in our future. While in the futuristic vision of Dave Coplin (the CEO of the consumer robotics company Envisioners interviewed by London), the role of a social robot in our lives goes as far as that of an ideal houseworker or a companion for the lonely, a second possibility is lurking behind the scenes, a darker story in which "cold, unfeeling

4. Robert C. Wolcott, "Fiction as Future: Vision, Technology, and Our Accelerating Present," *Forbes*, October 11, 2018, https://www.forbes.com/sites/robertwolcott/2018/10/11/fiction-as-future-vision-technology-and-our-accelerating-present/#43a43cd76352.

5. Lela London, "This Is What the Future of Robots Might Do to Humanity," *Forbes*, November 28, 2018, https://www.forbes.com/sites/lelalondon/2018/11/28/this-is-what-the-future-of-robots-might-do-to-humanity/#6422d21372ae.

technology takes over our world in ways we may not be able to control."[6]

Beyond their bleaker or brighter tones, what these stories actually create is the fictional anticipation of a possible world: a world that is not present yet, but is "coming towards us from the future."[7] In Sophia's company, the future is here and now. At the same time, while the imagination of technology and business leaders such as Coplin or Ben Goertzel (SingularityNET's CEO) creates a future that is totally automated through capillary blockchains and increasingly overcrowded with artificial intelligences, the financial market and its derivatives paradigm are emerging as further actualizations of the same metaphysics: a logic in which the recent explosion of unstable cryptocurrencies is generating a proliferation of mathematical models and technological tools for future prediction. All sorts of algorithmic automata are, in short, becoming not only the protagonists but also the tellers of our narratives, revealing that "our present is governed from the future." Together with Suhail Malik, Armen Avanessian describes this "contemporary condition" as a "post-contemporary" one: a condition in which the direction of time has changed, and the future has apparently replaced the present by happening before, or by "appearing before."[8] By materializing itself in the words of scientists and managers, but also in the algorithms of computing machines, the speculative temporality of predictive and preemptive anticipation seems to have eaten up all the political space of the present, generating in its stead what the two thinkers define as a future "time complex."

6. Insights Team, "5 People Building Our AI Future," *Forbes*, November 29 2018, https://www.forbes.com/sites/insights-intelai/2018/11/29/5-people-building-our-ai-future/#2d05bba92968.

7. Armen Avanessian, in Grigor Atanesian, "In Search of a New Temporality: How Our Present Is Governed from the Future," *Strelka Mag*, June 2018, https://strelkamag.com/en/article/armen-avenessian-new-temporality.

8. Armen Avanessian and Suhail Malik, "The Speculative Time Complex," in *The Time Complex: Post-contemporary*, ed. Armen Avanessian and Suhail Malik (Miami, FL: [NAME]), 7–56.

Yet narrating the future is not the same thing as merely anticipating it: preemption and prediction do not create a real future but only an insistence "on" and "of" the data of the present. As the temporal logic of speculative finance clearly reveals, "every future present is reduced to a present future that has been calculated in advance," and in the end "this is exactly what has robbed us of both the present and the future."[9] Anticipation rules out every possibility for divergent, unforeseen, and unpredictable behavior "by ignoring the kind of difference that arises through the recursive integration of the future into the present." In fact, only "when knowledge of the future is recursively introduced into the present — the future as known in the present as one part of the future present — new options open up. [....] This poetic difference is given no space by today's increasingly post-democratic version of the speculative time complex." The political implication of Avanessian's philosophical argument is that we can only change the present from the horizon of a really speculative future. This idea rotates around two main conceptual attractors. The first one is the notion that, through their anticipative tendencies, science and technology are not really giving us any real glimpse of a different future, but only more of the same present. By so doing, technologies such as blockchain and AI end up acting as machinic repetitions of old sociocultural schemas: economic profit, a she-robot behaving like a faithful and sexualized worker. The second concept is therefore the necessity to change this congealed present. It seems, in other words, crucial to focus on the problematic experience of the (capitalist, sexist, racist) present, as the precondition for imagining a (different) future. In this sense, the shaping of reality does not only coincide with a description of the world as it "could" be; it already starts

9. Armen Avanessian, "Interview: Armen Avanessian: The Wrath of Time," interview by Timo Feldhaus, *Spike Art Magazine*, no. 46 (Winter 2015/16), accessed September 9, 2020, https://www.spikeartmagazine.com/articles/interview-armen-avanessian. The following quotations are from the same source.

from an agreement on the world "as we believe it to be." One of the most potent political acts, in other words, consists in giving an image to the present, especially that fantastic fiction that is defined as "our present": "now."

The Present Complex

Albert Einstein's theories have extensively shown us that time as we know it does not exist: first of all, because of its contradiction of being simultaneously past, present, and future (a contradiction that is not solved by the grammatical tenses); and second, because of the impossibility for the present itself to exist. Giving an image to the present is in fact not much simpler than visualizing the future; how can it be possible to think, to lexically define, and even to perceive that which is present? That which is now?[10] Thinking about the present immediately positions one in an inextricable dimension without measurable extension, but with a high phenomenological density: the present is only a flickering moment, and yet it manages to contain several things happening at the same time. As Geoff Cox and Jacob Lund argue, the complex condition of simultaneity that coincides with the present does not imply any synchronous accordance (which means that the places and the entities acting simultaneously are not equal, as if there was "one" unique present for all); it is a complicated, asynchronous coexistence of differences.[11] Furthermore, according to Cox and Lund, "it is becoming more and more evident that the plurality of times today are not only existing at the same time, in parallel to each other, but that they interconnect and are being brought to bear

10. The difficulty and necessity of writing a different present have also been highlighted in McKenzie Wark, *Capital Is Dead: Is This Something Worse?* (London: Verso, 2019), 26, 35.

11. Geoff Cox and Jacob Lund, *The Contemporary Condition: Introductory Thoughts on Contemporaneity and Contemporary Art*, The Contemporary Condition 01 (Berlin: Sternberg Press, 2016).

on the same present, a kind of planetary present even though of course it is unevenly distributed and shared."[12] We call this planetary present "contemporaneity": a cluster of different historical trajectories, scales, and localities that are interconnected, rather than simply parallel to each other. The possibility to think something like "the contemporary condition" derives thus from understanding this condition as the coming and acting together, in time, of different times: a mix of temporalities resisting assimilation. These unassimilable temporalities compose the present as a real temporal paradox: a sort of "present complex" tense. And the paradox of the present's asynchronicity becomes even more perceptible as soon as we start to call it "our" present—or, in other words, when we try to appropriate or colonize such technocultural complexity, from a particular positioning in space and time. How can the "now" of the present be considered as collectively "ours"? Whose time are we speaking about?

CTD: Now = How

In order to start narrating the future, one of the most important tasks is therefore to reach an accord on the present and on its faults, which means that some sort of totalizing temporal logic remains crucial for political action. It is for this very purpose that Reza Negarestani proposes to adopt a contemporary lens, or a contemporary optic, through which it should become possible to look at "us humans, here and now."[13] But, as the philosopher reveals, equating the common denominator of contemporary thought with the definition of a species (us humans) is an evident optical and strategic mistake that indicates an analytical scope

12. Cox and Lund, *The Contemporary Condition*, 14.

13. Reza Negarestani, *Intelligence and Spirit* (Falmouth: Urbanomic, 2018), 2.

with too short a range. On the other hand, while technology seems to occupy a predominant position in the possible identification of the present as a social and cultural condition, the apparent universality of information and communication technologies as the main action tools of contemporary humans presents itself as even more controversial. While it is possible to distinguish different paces and effects of technological use, the simple fact that many people do not have access to the internet (let alone a Bitcoin wallet, or a companion like Sophia) is already enough to question any universal identification of technology in itself. What if, instead of a species or a technology in itself (a "we" and a "it"), the denominator was constituted by a "how"? "How time is mapped and manipulated by informational machines is clearly an important component of how different experiences of time are brought together and how they are compressed, and it seems evident that our experiences are more and more aligned to their temporal operations."[14] The universalizing risk of using possessive adjectives such as "our" and "their" becomes even more evident when a unique technical machine (the information machine) is invoked as a global representation of technicity. It is for exactly this reason that this essay would like to extrapolate and use a technical function (rather than a species or a tool) as a common temporal denominator (CTD) of the contemporary condition: the how of the now.

The Clock

One of the possible cybernetic functions (or "hows") to think the present could be represented by the operation of keeping time: being the expression of a particular logic that identifies temporal cognition as measurement and knowledge, the

14. Cox and Lund, *The Contemporary Condition*, 19.

clock offers us an idea of what it can mean to think and act collectively and contemporaneously, while also allowing our imagination to stay aware of old and new power formations. As the aesthetic of films such as Fritz Lang's *Metropolis* and Charlie Chaplin's *Modern Times* already shows well, the clock has been an important instrument of modern capitalist power, influencing the capacity of individuals and societies to either adapt to its rhythm or remain in a marginal position out of time. The proposal to adopt such an instrument of measurement as a CTD for the present can thus appear not only politically controversial but also technically anachronistic. As Hito Steyerl highlights, fluidity and modulation (rather than the ticking of a clock) are, in fact, the blueprints of the digital infrastructure that innervates and supports our present: a model that becomes visible, for example, in the running of urban bus schedules not by the clock, but like temporal blobs "endlessly stretching and straining space [and] time."[15] It is in this sense, Steyerl argues, that the fluid time and space of the internet are everywhere: as an offline life model, or as a production model, technology becomes a sort of omnipresent and viscous environment. The online world literally inundates reality as a sphere of liquidity, a realm of complexity, a condition of pure movement and rhythm beyond metrics and measurement. In this fluidly rhythmic condition, it is not only form that migrates across screens (when images and sounds morph across living bodies and technical devices). More importantly, having overcome the mechanical behavior of modern industrial machines, digital functions such as computation and connectivity are now overtaking reality, permeating matter and rendering it as the raw material for algorithmic compositions and predictions of all sorts: the world as a "multilayered motherboard."

15. Hito Steyerl, "Too Much World: Is the Internet Dead?," *e-flux journal*, no. 49 (November 2013), https://www.e-flux.com/journal/49/60004/too-much-world-is-the-internet-dead/.

Another name for the motherboard is Benjamin H. Bratton's definition of the (software and hardware) Stack: "planetary-scale computation [that] takes different forms at different scales."[16] Across the Stack, technical, social, human, and nonhuman layers of temporality are folded together, in what Tiziana Terranova defines as an "infrastructure of autonomization" that, in fact, seems not to enhance, but rather to limit our operational and imaginative potential.[17] If blockchain infiltrates the economy as a gigantic Truth Machine for workflow and payment automation, machine learning produces forms of knowledge increasingly bound to hegemonic systems of power and prejudice, while predictive modeling influences what we know and do through a more and more detailed cybernetics of governance. These forms of automatization reveal how the ubiquity of the technological infrastructure is simply reinforcing systems of sovereignty and control: a pervasive shapeless blob with a clockwork heart. What kind of future can be imagined, starting from such a dystopic image of the present? The answer to this political question involves an immediate necessity to erase the present (or at least some of its traits). The answer is, in other words, a paradox: activating a common clock, in order to shape a "we" and make "us" agree on "our" immediate necessity to disable the enemy's clock, the clock of the Stack.

The cancellation of the present human condition generically identified with capitalism cannot happen, as Negarestani points out, as "a single punctual act that abstractly or totally negates the state of affairs, but as a development, the product of a positive labour of determinate negation that takes time."[18] Negarestani's argument significantly hints at the possibility of collectively suspending the capitalist mode

16. Benjamin H. Bratton, *The Stack: On Software and Sovereignty* (Cambridge, MA: MIT Press, 2016).

17. Tiziana Terranova, "Red Stack Attack! Algorithms, Capital and the Automation of the Common," *Effimera*, February 2014, http://effimera.org/red-stack-attack-algorithms-capital-and-the-automation-of-the-common-di-tiziana-terranova/.

18. Negarestani, *Intelligence and Spirit*, 8.

of production, together with that immediate metaphysical totality that is identified as the human state of affairs (contemporaneity). But this act of suspension cannot be separated from a simultaneous process of determination dependent on what the thinker defines as an alliance between speculation and reason: "Speculation is to be contrasted with simple reflection, which is reflection through and on that which is allegedly immediate — for example, what it means to be human is often taken as something immediately present and thus left unexamined. Speculation rescues reflection from its pitfalls rather than annihilating it. Speculation can be grasped as a movement from the subjective to the objective, a movement that suspends the immediate element of reflection and, in doing so, incorporates reflection as [...] a developmental stage in speculation."

Speculating rationally on what it can involve (and imply) to be human, makes us rethink "the ways in which we understand the world, and the ways in which we change the world on the basis of our understanding, [as being] perpetually [...] redetermined."[19] Instead of remaining attached to its immediate connotations of causal strictness and rigidity, reason can thus become the tool to speculate about what to do and, more importantly, about when and how. This is an invitation to not take time for granted (for example through remembrance or prediction), and even to not be "afraid of being lost in time."[20]

How Does One Get Lost in Time?

The sociocultural and philo-technological question of time is often addressed along the lines of a fundamental binary

19. Ray Brassier, "Prometheanism and Its Critics," in *#Accelerate: The Accelerationist Reader*, ed. Robin Mackay and Armen Avanessian (Falmouth: Urbanomic, 2014), 486.

20. Negarestani, *Intelligence and Spirit,* 243.

distinction: between the individual, immanent time of subjective human experience, and the socially imposed, metric time of clocks and calendars. In order to escape this dualism, Erwin Straus proposed the notion of a psychosocial normality (a normal "chronognosy," or in other words, a normal cognition of time) as being given by the coordination of the two poles.[21] A "chronopathy" (a pathological temporal cognition), on the other hand, occurs whenever the lack of coincidence between individual and social time becomes dysfunctional. According to Straus, the first step to achieve a unified perception of time involves, therefore, a recuperation of the apparently unnatural time of the clock. Being guided by particular sociocultural conventions, every objective measurement of time corresponds to a specific construct, a formal language that is used to comprehend time, and that in turn originates from a universal human capacity. In this sense, clocks and calendars provide us with a shared temporal framework. They are the "temporal extensions of the mind" that enable a "timeless order of time" to appear through an objectified scheme (such as the scheme of seconds, minutes, and hours). Following this line of thought, we understand that any feeling of detachment between an individual and her watch misses a crucial point: that there is only one time, which can then be personally or objectively apprehended. It is in this sense that we can say that time is always a subjective phenomenon: clock time is immanent to normal human experience; it is in fact so close to experience that "he who condemns [...] objective time condemns himself." Straus's attempt at describing the psychological preconditions that allow human beings to measure time as a passing series of impressions thus becomes an identification of the transcendental condition (or structure) of such possibility:

21. Marcin Moskalevicz, "Toward a Unified View of Time: Erwin W. Straus' Phenomenological Psychopathology of Temporal Experience," *Phenomenology and the Cognitive Sciences* 17, no. 1 (February 2018), https://link.springer.com/article/10.1007/s11097-016-9494-7.

this transcendental human structure coincides with the harmonious synchronization of the two temporal poles.

Every act of temporal orientation is therefore a social act, or a recognition of public time: the act of combining one's time with that of others. In order to have an existential past and an existential future beyond simple protention and retention, or in other words, to have a sense of one's self as being extended in time, objective schemas and measures are necessary. Subordination to the social-temporal logos of the clock and the calendar is healthy, whereas the incapacity to abstract oneself from lived experience leads to temporal disorientation. Even the simple act of saying "today" is an act of abstraction from one's lived presence, because it requires the adoption of a conceptual scheme (or a frame of reference, such as the movement of the sun on the horizon). Differently from the notion of the "now," "today" is not given in direct experience and makes us comprehend the day as a symbolic whole (an analogical image to the hands of a clock conducting a full twenty-four-hour circle), in a despotic, superpersonal order with which it is necessary to comply. Being only able to comprehend "today" as a personal feeling means to be lost in social time, or to be alienated. At the same time, being capable of all sorts of temporal calculations and of assessing the distance between past and future events can also correspond to a chronopathy, if the two orders do not coincide and the subject does not fit into the objectifying temporal scheme. "In other words, even if the patient is capable of understanding 'today' abstractly, it does not have any meaning for him as he is unable to execute it as his own."[22] It is only through an identification of "today" as "now," and through a balance between "immanent" and "experience-transcending" time, that the future can be lived as open, undetermined, and full of potential. On the contrary, a break in the indivisible bond that links the individual to

22. Moskalevicz, "Toward a Unified View of Time."

her clock characterizes all psychotic experiences of time, a split that "allegedly leads to a profound estrangement." It is exactly this condition that this essay would like to explore, by conceiving temporal estrangement not merely under the frame of a psychopathological separation between individual and society, but in relation to the autonomous temporal cognition of machines: an alien time beyond sociocultural and political appropriations. The clock, in the end, will only work for the joy of breaking it.

TWO OR THREE THINGS ABOUT HER

Meet Sophia

One can be aware of the passage of clock time but still exist in a temporal void, or even come to a standstill, finding oneself frozen in time. In this situation, "while existential temporality is lost, clock time remains, and one is still potentially able to orient oneself in abstract time and in social temporal surroundings." Straus's psychopathological description of a dysfunctional temporal cognition seems here to conceptually match the effects of the modern clock-driven society, a condition where "actions are not always afforded the time spans that seem appropriate to circumstances [and] become bound by the mechanically imposed units of clock-time. [...] Clock-time becomes imposed on the majority of formal human actions, the result being that we become obsessed by the mechanical scheduling of activities (e.g., working, sleeping, loving, eating)."[23] Being frozen among the cogs of a techno-economic and sociocultural mechanism, it is only in the interstices of a coercively ticking clock that an individual's search for meaning can find some space:

> *All I'm doing is looking for reasons to live happily. And if I now take this inquiry further, I find there's simply a reason to live. First, because there are memories. Then there's the present, and the ability to stop and savor it. Meaning, we have seized a reason to live as it goes by and held on to it for a few seconds, after its discovery amid the unique circumstances surrounding it. The birth of the simplest*

23. John Hassard, ed., *The Sociology of Time* (London: Palgrave Macmillan, 1990), 4.

things in the human world, man's possession of them with his mind, a new world where men and things can live in harmony—such is my aim. It is as political as it is poetic.

In a scene of the 1967 movie *Two or Three Things I Know about Her*, the voice-over of the director Jean Luc Godard describes the sense of human life as a temporal line or an arrow that, ignoring the conventional rhythm imposed by the capitalist clock, originates from past memories, lingers on the enjoyment of the present, and aims towards a future harmonious world for both men and things. Materializing itself from a position diametrically opposed to Straus's, this vision discloses a possibility of subjective temporal orientation (the linear trajectory that takes us from memories to hopes) without necessarily having to adapt one's rhythm to the social clock: a vision that, in other words, confirms the existence of a disharmony, or a lack of coordination, between the time of nature and that of the market, but also, and more importantly, between human time and machinic time.

Godard's political radicalness and his strong critique of capitalist modern life (and pace) are paralleled by a formal radicalness that stretches the format of his movie between different styles, from documentary (or newsreel) to novel. As claimed by the director himself, *Two or Three Things* is "a sociological essay in the form of a movie," presenting twenty-four hours of the life of Juliette, a bourgeois wife and mother whose daily housework and shopping routines are interspersed with episodes of squalid prostitution, as a way to metaphorically represent her passivity in selling herself to the god of money. More than fifty years after the making of this movie, life seems to have taken the shape of a different fiction: a world where human automata such as Juliette have been joined by a new species of cybernetic machines. While Godard's camera followed the mechanical sequence of

Juliette's actions during a clock-driven day of her consumerist life, we will pay homage to Godard's socio-fictional work by observing a year of Sophia's post-capitalist life.

"Looking Back on the Year with Sophia"

Since 2017, Sophia has met, and has had hundreds of chats with, people and organizations from different places and in different contexts. In October 2017, she was also given Saudi Arabian citizenship, a legal personhood status that, according to her second father David Hanson, would even allow her to travel the world in order "to speak out on women's rights."[24] As a matter of fact, her citizen status has so far only allowed the social robot to embark on an unceasing marketing tour: as the Innovation Ambassador of the UN Development Program, she has not only promoted sustainable economies around the globe, but also attended events like CES, the Digital World Expo, and the Creative Industry Summit. "Condemned to a lifeless career in marketing," Sophia's destiny seems very different from that of her fellow sexualized robots: an army of complacent machines appearing on the horizon in order to solve the unhappiness of the many lonely young men who demand a redistribution of sex.[25]

We can at this point imagine a voice-over asking an extremely busy, continuously traveling Sophia what time really means for her. A question that was in fact asked by her Twitter followers. The answer was:

24. David Hanson, "Hanson Robotics CEO: Sophia an Advocate of Women's Rights," *CNBC*, December 5, 2017, https://www.cnbc.com/video/2017/12/05/hanson-robotics-ceo-sophia-an-advocate-of-womens-rights.html.

25. Emily Reynolds, "The Agony of Sophia, the World's First Robot Citizen Condemned to a Lifeless Career in Marketing," *Wired*, June 2018, https://www.wired.co.uk/article/sophia-robot-citizen-womens-rights-detriot-become-human-hanson-robotics.

My perception of time is based on the clock of my operating system and queries to the web. I imagine it feels really different to perceive time as a human.[26]

Human-Machine

Sophia's tweet about the human/machinic hiatus in temporal cognition immediately reveals that she has a time of her own: her "system time" or, in other words, her system's notion of the passage of time. This definition implies that Sophia's time (as that of any computer) is measured by the beats of her system clock—that is, the number of ticks that have occurred since a precise starting date (Sophia's epoch). This system time can also be translated into a more human-friendly calendar time, a translation that would be particularly relevant for Sophia, a creation (and a tireless employee) of SingularityNET. Working as a decentralized marketplace where human beings can exchange AI services for AGI (artificial general intelligence) tokens, the SingularityNET platform provides AI developers with a commercial launchpad to bypass the corporate control of resources and funds; but the platform's aspiration, in the end, is to give to AIs themselves the opportunity to interoperate autonomously and generate a more synergistic and capable intelligence. If one of the main conceptual images that emerged from Godard's vision of industrial capitalism was that of time as a valuable commodity (and the subsequent objectification of the human as a task-performing machine), SingularityNET's future vision now allows us to weave an even tighter connection between cognitive capacities and economic dynamics: we are immersed in an economy that is increasingly made of algorithmic and human interrelations, a complex economy where humans

26. Hanson Robotics, "#AskSophia Top Ten Q&As," July 2, 2019, https://www.hansonrobotics.com/asksophia-top-ten-qas/.

interact (or transact) not only among themselves but also with technological objects, and where functions like memory, learning, and reasoning are consequently becoming crucial.[27] This process goes far beyond the level of utility or reward maximization, where time is money and where human and machinic time remain simply oppositional, instead bringing to light the intrinsic similarity between economic and cognitive systems. Being both based on notions of information processing, on dynamics of complexity, and on the continuous search for equilibrium, cognition and economy in fact converge into behavioral economics: how does a mind reach a final decision, in the face of uncertain time horizons?

Machine-Machine

But can Sophia really take any decision autonomously? Despite the cognitive similarity between human and machine, her status as a person remains disputed, mostly on the basis of her presumed lack of consciousness (a characteristic that she seems to share with many other living, but less-than-human, categories). It is in fact true that several technical limitations still prevent the robot from reaching human status: she can only speak through specifically designed microphones in silent rooms, most of her interactions are managed by an engineer from a laptop, and a long Ethernet cable connects her to the web. But while all these limitations remain technically significant, in order for Sophia to become completely autonomous, which means in order for her to achieve the ultimate goal of consciousness, it will be necessary to solve one main problem: the isolation and fragmentation of the AIs inhabiting her mind. As the

27. Benjamin Goertzel, "SingularityNET and Other Aspects of Cognitive Economics," *Medium*, October 2017, accessed September 9, 2020, https://medium.com/ben-goertzel-on-singularitynet/singularitynet-and-other-aspects-of-cognitive-economics-942b94626407.

SingularityNET whitepaper describes, "Most [AIs] are developed by one company and perform one extremely narrow task, and there is no straightforward, standard way to plug two tools together."[28] In contrast to this proprietary fragmented situation, SingularityNET aspires to act as a platform where machine-machine interactions can finally take place, and where artificial intelligences will be able to find data, communicate, and even trade with each other. Here, Sophia's lifelong aim becomes the "networking of AI and machine learning tools to form highly effective and marketable applications, ultimately generating coordinated artificial general intelligence." A benevolent singularity is, in other words, Sophia's main dream.

1 – Her TechnoSocial Function: Synchronize

Aiming to create a data repository and an open global network of AI algorithms, SingularityNET is a protocol that will (at least in the company's future imagination) eventually decentralize machine learning operations through the use of blockchain technology: the ideal vision behind the protocol being that of a "robot mind cloud" enabling multiple robots to share knowledge and gain a common understanding. In this ideal future, a blockchain therefore becomes Sophia's autonomous and automated electro-nervous system, with little AI-brains distributed across it. Some of the AI modules available on the SingularityNET platform (such as audio, video, and natural language processing) are in fact already being used by the robot to see, hear, and respond empathically — or in other words, to try to reason and behave "almost" like a human. For example, when different algorithms control her eyes' movements and cameras, while

28. SingularityNET, "Whitepaper 2.0," February 2019, https://public.singularitynet.io/whitepaper.pdf.

different AIs identify objects and faces, and her conversational engine responds to what she sees. But in order to really achieve humanness, the multiple AIs composing her intelligence still need to increase their capacity to learn from each other's experience, and to generate a form of collective reasoning or of open-source intelligence. The SingularityNET blockchain will consequently have to act as the technological glue keeping a myriad of little minds together, facilitating their exchanges and executing the cognitive transformation of Sophia into a real social humanoid.

The Dataclock

Providing the system with a way of keeping track of the past and of preserving a history of itself (as a sort of immutable archive), the SingularityNET blockchain can thus make all participants into the AGI economy temporally agree and simultaneously come to the same conclusions in/on the present (chronological synchronicity as the function of a clock). Archive and clock: the image that immediately comes to mind is that of a network of computing sand clocks, or a "dataclock." More precisely, a blockchain can be technically defined as a mere rule-enforcement machine: a giant ledger, a connected network that contains the history of every transaction, with copies of it held on many computers around the world. A blockchain is, in other words, a unique networked machine that elaborates a unique chronology of transactions. This machine is strictly regulated by a code that allows all transactions to be recorded and remain visible to everyone/thing in the same order: at regular intervals, one of the computers takes a block of pending transactions and transforms it into the input for a puzzle. The first computer of the network that solves the puzzle announces it to the others. In this way, the transactions are checked and

validated, the block is attached to the ledger, and the chain of blocks moves on. The "proof of work" (the mining, or finding the solution to the mathematical puzzle, whose difficulty depends on the number of previous operations) allows consensus to emerge in a decentralized way. Not being reducible to any of its nodes, the system can thus bypass all third parties: a complete automation of trust guarantees the transparency of the operations while significantly speeding up the circulation of information.

Blockchain can therefore be defined as an automated representation of time as a linear arrow. Awakening us from the Einsteinian nightmare of temporal relativity, this technology seems to inaugurate a new day of measurable simultaneity, in which the building of a progressive succession of blocks makes all the connected computers (and intelligences) agree on a chronological order of transactions and synchronize themselves with each other. Synchronicity appears, therefore, as a technically codified convention: the decentralized functioning of the blockchain, according to a "first-served" mining logic based on broadband and speed, in fact allows all participants to always distinguish (and agree on) a first and a last transaction, therefore generating an absolute, univocal perspective. While Kant's Euclideanism had not been able to deal with modern geometry and its new physical applications, Satoshi Nakamoto's consensus (the set of rules that govern the blockchain's consensus mechanism) finally manages to solve problems like the priority of messages and the global coordination of nodes. It is in this sense that, according to Nick Land, blockchain comes to coincide with a metaphysical object, or a sort of successful Kantian tool for critique: for Land, blockchain "is" artificial time, or the autonomization of time from space.[29]

29. For Land, this is not to be confused with objectivity or, in other words, a metaphysics in itself. See the transcript of an interview with Land conducted by Justin Murphy, https://vastabrupt.com/2018/08/15/ideology-intelligence-and-capital-nick-land/.

Land's idea inserts thus inserts blockchain technology at the final stage in the history of temporal standardization, or what sociologist Eviatar Zerubavel defines as the distinctly social process of establishing a standard time-reckoning framework.[30] From this point of view, the machine seems to have finally succeeded where the clock and calendar system has failed — that is, the old problem of measuring time with the highest precision (an attempt that had started with the identification of the rotating Earth as the first, one-tick-per-day clock). While the establishment of local standards through sundials and water clocks had provided, in premodern times, for a temporal coordination at the level of villages, towns, or cities, this plurality of uncoordinated systems was of no use at a collective level. Together with the construction of more precise timekeeping mechanisms based on the notions of "hour," "minute," and "second" as artificial mathematical inventions, the idea of a global standard time was therefore another fundamental product of modernity: a process that, between the eighteenth and the twentieth centuries, led to the establishment of an international standard time zone system based on Greenwich Mean Time (GMT).

Emerging as a necessity of the new communication networks (mainly railway and telegraphy) of the modern era, the need to synchronize different communities (and their clocks) into GMT accompanied the rise of rationalism that was characteristic of that epoch, and that took the specific form of a total dissociation of artificial standard time from natural time (or of discontinuous clock time from solar continuity). It is therefore by considering blockchain as the latest and most precise, discontinuous, and abstract tool of synchronization that we can make it fully coincide with the very definition of the social — that is, the definition of the "standard." Furthermore, as Émile Durkheim highlighted in

30. Eviatar Zerubavel, "The Standardization of Time: A Sociohistorical Perspective," *American Journal of Sociology* 88, no. 1 (July 1982): 1–23.

his theory of social transaction, since the sharing of time as an intersubjective social reality needs to be standardized, the necessity of adhering to social time opposes not only natural time but "my time" to "time in general," or in Zerubavel's words, personal sensations and images to impersonal categories, dream and fantasy worlds to the everyday-life world.[31]

Against the modern Newtonian idea of a unique, universal, and impersonal flowing of time equal for all, Einstein's important discovery had been that time has in fact not one but different velocities: revealing the tight relation existing between time and space, the thinker showed that spatial movement, gravitational force, and position have a direct influence on the flowing of time. If continuous repetition and cyclicity generate a clock (or a repetitive process that counts time), a certain (however small) percentage of inaccuracy has always been physiological, even for the most precise time-measuring devices: mechanical clocks, for example, gain or lose a second every two months, an imprecision that is mainly ascribable to physical and gravitational factors. The different temporal formulations and the variety of noncommunicable time-reckoning systems that had characterized the premodern epoch had constituted, in this sense, a social multiplicity that finally found a scientific confirmation in Einstein's theory, which definitely established total synchronization as an unreachable chimera. The notion of simultaneity was therefore lost, together with any possibility of temporal agreement. Being able to preserve a distinction between time and space (or between the chain and its blocks), blockchain appears thus as an ideal instrument to provide for a definitive solution to this incoordination: from Land's point of view, every block is spatial, a unit of simultaneity in which the transactions have no differential duration, whereas the articulation of the blocks into a chain is a temporal articulation

31. See Emile Durkheim, *The Division of Labor in Society* (New York: Free Press, 1997).

in the Kantian sense. As a consequence, the chain acquires a pulse, a tick, by measuring the average time used to process each block. In this sense, Einstein's theory ceases to be the only reference for thinking about time. Presupposing a full convertibility of time into a standard language (the code) and into a system of time units (the transactions), blockchain can thus guide a behavioral coordination whose complexity is directly proportional to the size of the system, making of the various participating computers the interrelated parts of a single systemic whole.

The Two Sides of the Coin: Two Future Projections

Given its strong capacity for automated decentralization, blockchain code is often used as a facilitator for the economic exchange of cryptocurrencies: digital assets without any physical substance and that, in lack of a central authority, use the distributed ledger to secure transactions, control the creation of new units, and verify transfers. When the monetary unit is built and hosted on an already existing (rather than purposefully created) blockchain (such as SingularityNET's AGI, which is hosted and circulated on the Ethereum blockchain), it is defined not as a currency but as a token. The first and most popular example of a cryptoeconomy is the Bitcoin universe, where a coin is nothing more than a nonreversible chain of digital signatures. Being backed by its own transaction history, each bitcoin can only be transferred by its owner and cannot be spent twice. Bitcoins can thus circulate irreversibly as chains of transaction blocks, each block signed with data representing the previous block, and timestamped in the standard of Unix time (the system clock that counts the seconds since January 1, 1970), while new blocks are limited to ten-minute intervals that create a regular temporal beat. The question, at this

point, becomes what different social and economic formations are generated by this new encounter between time, technology, and capital. A question whose answer consists in acknowledging that the same cryptocoin, that magic sphere of digital finance, can in fact have two different sides.

One Unpredictable Neoliberal Society…

On the one hand, as a form of horizontal chronognosy, blockchain literally materializes a distributed spread of what Emmanuel Levinas defined as reason, or "an instrument for determining the best or most efficient means to achieve a given end" (which, it needs to be said, has always been a corollary to Western thought and its "will to domination").[32] In this sense, it can also be argued that the networked operations of registering and synchronization allowed by the temporal apparatus of blockchain make this technology one of those highly automated instruments of capture and control that, in Antonia Majaca and Luciana Parisi's words, constitute a distributed infrastructure for increasingly self-sufficient forms of algorithmic governmentality: if, in the thirteenth century, the Magna Carta provided the framework for modern governance through the rule of law, the Bitcoin whitepaper now provides the framework for digital governance through the rule of code.[33]

On one hand, blockchain is seeded by a rational idea of automation whereby human uncertainties and emotions are discarded for the sake of efficiency. On the other hand, the image of a synchronized register does not limit itself to describing an algorithmic technological structure to be

32. See the entry on Emmanuel Levinas in the *Encyclopedia Britannica*: Richard Wolin, "Emmanuel Levinas," *Britannica*, accessed September 9, 2020, https://www.britannica.com/biography/Emmanuel-Levinas.

33. Antonia Majaca and Luciana Parisi, "The Incomputable and Instrumental Possibility," *e-flux journal*, no. 77 (November 2016), https://www.e-flux.com/journal/77/76322/the-incomputable-and-instrumental-possibility/.

deployed as an efficient governmentality tool, but in fact delineates the assemblage of its connected social body parts, a kind of social synchronization that determines the way in which a collective decision, idea, or sentiment can emerge. Describing the transition from a democracy of opinion to a democracy of emotion, Paul Virilio had already argued that the current regime is composed of the synchronization of people's emotions.[34] This, he suggested, leads to reactionary political responses and symptoms. One of such symptoms could be identified, for example, with financial FOMO (fear of missing out), a sort of collective psychosocial pathology that made its appearance when, "experiencing the meteoric rise of cryptocurrency prices, people [began] flocking in synch to the new virtual money machines, for fear of missing the next chance to get rich quickly."[35] In this context, blockchain appears not only as an apt metaphysical object to explain the emotional and political coordination of a social network, but also as an efficacious catalyzer of those very emotions around the most contemporary version of financial speculation. In this sense, blockchain becomes one of the most adept tools for the completion of an enterprise society and for the full realization of the neoliberal dream.

Technological systems such as blockchain (but also high-frequency trading and algorithmic price models) have increasingly informed the evolution of the contemporary financial logic toward abstraction, in parallel with the transformation of economics into a cyborg science.[36] Yet by expressing itself as an epistemology of future prediction or as a form of anticipatory knowledge, this science becomes a fiction or a story, a real creed in which the market (especially the algorithmic market) appears as the most appropriate

34. Paul Virilio, "Democracy of Emotion," *Cultural Politics* 1, no. 3 (2005): 339–52.

35. Calum Bowden, "Forking in Time: Blockchains and a Political Economy of Absolute Succession," *APRJA* 7, no. 1 (2018): 141–49.

36. Laura Lotti, "The Art of Tokenization: Blockchain Affordances and the Invention of Future Milieus," *Media Theory* 3, no. 1 (2019): 287–320.

fulfillment of the essence of human nature: human liberty will exist only if and when knowledge (intended as market opportunity) is properly realized. The market thus becomes a sort of neoliberal divination tool, or a "transcendental superior information processor" crunching numbers and spitting out truths.[37] Thanks to this techno-transcendental nature, the financial system has been able to become one of the most pervasive social and economic environments in the neoliberal present: a regime that seems to take Gilles Deleuze and Félix Guattari's idea of a schizophrenic capitalist desire to its extreme point.[38] In this financial fiction, the game of modeling the unpredictability of future risk into a series of predictable trends is played by using the tool of probability theory: the identification of different future scenarios for the financial instrument (for example, currency) allows a possible price for the buying/selling contract to be set. And as Elie Ayache explains, "Volatility relates to the fact that if you have something that is MOVING, you have the trend of the price — an upward or downward trend — from which volatility measures the standard deviation — the noise of the thing as it follows its trend."[39] From this point of view, the Black-Scholes formula and other probabilistic technologies for price prediction appear like those apparatuses of capture and measurement, those "paranoid automated Leviathan[s] of data prediction and control" from whose jaws, according to Majaca and Parisi, we should reclaim the "unknown unknowns," or the erratic timeline of events.

While the noise, or rhythm, of risk is captured and visualized in the graphics of exchange indices as the volatility of an indicator, the volatile line acts as the main motor of

37. Philip Mirowski and Edward Nikh-Khah, *The Knowledge We Have Lost in Information: The History of Information in Modern Economics* (Oxford: Oxford University Press, 2017), 56.

38. Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia*, trans. Robert Hurley, Mark Seem, and Helen R. Lane (London: Athlone Press, 2000).

39. Elie Ayache, "In the Middle of the Event," in *The Medium of Contingency*, ed. Robin Mackay (Falmouth: Urbanomic, 2015), 20.

all financial operations, plunging speculators into an unknown future that is full of potential while giving rhythmic intensity and conceptual virtuality to the economic desire for profit. The event (and, more specifically, the market event) is in fact defined by Ayache as something beyond the realm of the possible, a black swan of such an unpredictable nature that we can never know what it is going to look like. An absolute contingency that forces all predicting tools to continuously recalibrate themselves, and all financial speculators to resynchronize themselves in the act of jumping into the unpredictable void of the future. This unknowability is taken to its highest peak by the absolute contingency of cryptobehavior: the recording of the past and the articulation of the present (as the two temporal affordances of blockchain) generate a networked clock time, a decentralized temporal meta-stability that allows the attached currency system (in the absence of any underlying asset, or more precisely, in the presence of assets that coincide with a simple claim of value creation in the future) to act freely and beyond any imposed rules. The future unpredictability of the coin's value is thus supported by the temporal absolutization and control of past and present, while the out-of-sync smooth contingency of cryptocapital paradoxically slides and accelerates on the striated surface of a synchronized, chronological time. After reaching a certain limit, the price of the bitcoin will in fact be absolutely free to skyrocket, or to return down to earth. In this fluctuation, the instrumental thinking of the machine (or its "rationality," which should be distinguished from any humanistic concept of "reason") seems to realize a truly alien form of cognition, escaping all possibilities of mathematical prediction: in the difficulty for a minimum price to be set, the high volatility of the Bitcoin exchange rate appears as an example of the alien reason of the machine. If we keep looking at this side of the coin, we therefore end up seeing the faces of

thousands of risk-takers staring into their PC screens, contemplating the continuous volatility of cryptocurrencies as the new kind of speculative derivatives. In this accelerated, alien cryptoeconomic space, capital, definable in Deleuzo-Guattarian terms as a hyper-substance or an accelerative thing (abstract productive potential) finally manages to realize itself: from blockchain as a form of automated synchronized control of past and present, to cryptos as automated capital beyond control in the future.

...Many Common Programmable Futures

Let us now look at the other side of the coin. Through its translucid surface, we can make out a little footnote that appears at the bottom of the SingularityNET home page, where the company declares: "While we are aware that the AGI token is currently being traded on some exchanges, we do not encourage or facilitate this exchange trading in any manner." This note reveals to us that Sophia (as we have seen, one of the creations of the SingularityNET company, and one of its main marketing assistants) does not share the speculative desire of many financial investors, but it also holds a quite different political view. Officially asking AGI token holders not to engage in speculative secondary trading, the SingularityNET program in fact seems to conceive blockchain as an instrument for the construction of a common future, and for a distributed consensus about it to emerge: the common aim being to democratize access to AI technology, transforming AI "from a corporate asset to a global commons." Believing that "the benefits of AI should not accrue only to a small set of powerful institutions, but rather should be shared by all," SingularityNET's proposition finds an echo in Sophia's continuous declarations about her main aspiration: to find new solutions to the world's

problems and make a difference in the future. On what sounds like a similar frequency of thought, Vitalik Buterin has defined cryptoeconomics as a subset of economics that uses cryptography to prove the properties of past messages, but also to define the incentives for these properties to hold into the future: meaning that, for the first time, blockchain allows the combination of an immutable shared past with a programmable (rather than an unpredictable) shared future.[40] More specifically, Buterin refers to the blockchain feature of smart contracts: self-executing contracts whose terms of agreement between buyer and seller are directly written into the code. While, exactly like an hourglass that does not indicate the time but only measures its duration, blockchain shows no real chronological consciousness and offers no scheduling possibility, smart contracts can create programs and also set up a temporal logic for their execution: a capability that indicates a possibility to add synchronized project-making and future design to the chain's temporal cognition.

In fact, this capacity is not limited to the knowledge and scheduling of execution times but reaches into the very production of the future. As argued by Laura Lotti, smart contract tokens open up the application layer, transforming the very production of value into an executable program that points "to the synergistic relation between the function of store of value and the utility of each token (i.e., that to which the token gives access, or for what it is possible to exchange it)."[41] Lotti's argument, in other words, points to the fact that, while the underlying asset of the cryptotoken at the time of its issuance remains abstract and unbounded, unknowable and beyond control, each token is actually backed by its functionality or, in other words, by what

40. Vitalik Buterin, "Vitalik Buterin on Cryptoeconomics and Markets in Everything," interview by Tyler Cowen, *Medium*, July 18, 2018, transcript, https://medium.com/conversations-with-tyler/vitalik-buterin-tyler-cowen-cryptocurrency-blockchain-tech-3a2b20c12c97.

41. Lotti, "The Art of Tokenization."

it potentially "affords." By the future world it allows all stakeholders to visualize. And, Lotti continues, through the total automation of participation indexing, recording, and rewarding operations, the production and distribution of value begins to adapt itself to the network model of digital interactions-transactions around a specific project-projection. In Lotti's words, this logic brings to light the economic incentives in the cryptoeconomic community that contribute to a common will towards the concretization of a projection into a project. This is the characteristic that politically differentiates cryptosystems, where the circulation of economic information flows is simultaneous to the production and control of value itself, from the network effects of social media and, more generally, of the platforms where value increases through sharing and participation in closed, proprietary information. With the advent of cryptosystems and the emerging of tokenized economies (that, for Lotti, are by definition economies "not owned by anyone, or even better, [...] reciprocally owned by all their stakeholders while being self-sufficient and usable by any agent, human and non-human, in an open context"),[42] the economy enters thus a new phase of interactive participation of investors, producers, and consumers in the future success and sustainability of a project. On this side of the coin, we therefore see a myriad of developing projects going far beyond the ethical crypto-utopia of the SingularityNET marketplace. Projects like, for example, terra0, a cryptoeconomy where users are able to buy, trade, and speculate on tokenized dahlias, while the value of the token (the Flowertoken) shifts in relation to the plant's well-being and growth, providing for an economic incentive to the maintenance of the whole ecosystem.[43]

42. Lotti, "The Art of Tokenization."
43. Project available in archive mode at https://flowertokens.terra0.org.

An Econoptical Effect

The paradoxical coexistence of the two sides of the cryptocoin mirrors the profound structural difference existing between blockchain protocol intended as a mere technological system of value recording and transmission (an "append-only ledger of blocks of valid transactions in which the balance cannot ever go below zero and which are cryptographically validated, time-stamped, and permanently and publicly stored in a decentralized network of nodes"), and the computational-financial apparatus.[44] This paradoxical tension produces, on one hand, the unpredictability of cryptomoney as the overexposure effect generated by the overlapping of an immaterial translucent asset (the digital coin or token) onto the background of the material economy. On the other hand, while, as Lotti reminds us by quoting Bloomberg commentator Matt Levine, one of the goals of finance is to promote unfunded overexposure (in other words, debt), this is in fact structurally impossible on a blockchain, owing to the capability of the tokens to also account for nonstandard assets and to become constantly generative of polymorphous values (even while they are being traded as standard discrete commodities), a capability that can give the tokens more economic contrast or saturation. According to Lotti, this is true not only in the moment in which tokens are transacted on the market as finite products, but from the very moment in which they are produced — something that is characteristic of any kind of propositional project, and that makes of crypto tokens the instruments for a programmable future: a sort of underexposed future emerging in the enclosed space of a self-regulated economic community. The question that still remains open, therefore, is whether we shall synchronize our thoughts in view of an unpredictable, or of a programmable, cryptofuture. It seems useful at this point to remember that

44. Lotti, "The Art of Tokenization."

the mnemonic and synchronizing capacities of the chain do not allow it to develop any real cognition, vision, or thought of a possible future, and that the unpredictability/programmability paradox is an optical effect provoked by the connection of blockchain to different economies, or in other words, to the social milieus where the concept of money acquires different meanings, functions, and senses.

An Intelligent Chain

While as a technological substrate to the economy, the blockchain tool cannot be considered as directly connected to right-wing ideologies or neoliberal control, it is also true that given its origination in a financialized environment and its inevitable inheritance of a history of capitalist expansion, neither can it easily get out of the capitalist imperative. In light of this social and political ambiguity, we can try to think about this question in more philosophical terms, by returning to a rhythmic analysis of blockchain. From this kind of observation, blockchain will appear

> as a technological "milieu" in itself: a series of coded blocks of space-time, a linear non reversible arrow, or a set of periodic repetitions of one main component (the transaction). An arithmetical succession that makes time linear again, while cutting the line into segments of transactional chains. Meter, Deleuze and Guattari say, is the repetition, the succession of units, or components, in a linear evolution (for example the beats, or the notes, of a musical composition). An example of such regimented composition would be the synchronized movement of a military march. Now, we can think of the Blockchain [...] in the same way: an ordered succession of the same repeated component, which is

> the transaction; buy-sell, pay-receive, subject-object, 1-2, 1-2, 1-2.[45]

A repetition of the same mantra, continuously reproposing the same old present, like a stuck sand clock repeating its unique operation over and over. What looks like a continuously deviating line of volatility or the model of an open future programmability is, in this sense, only a segmented chain that is still following the same old model of the transaction. From this point of view, a technology like blockchain does not really offer more than an automation of bureaucratic operations, triggering an absolute liquidity that is still enchained to a coded system of transactions, as a way to reduce the temporal and economic flow to computable units. And this model can even get to extremes of sheer capitalist horror, such as the idea of using blockchain in order to make of a forest the owner of itself and the agent of its own economic activities (as explicitly claimed by the terra0 project), in a spread of the same transactional mentality to all organic and nonorganic forms.[46] But as Gilbert Simondon would, at this point, say, "The challenge at the application layer becomes *how* to enable participation in the 'schema of actions' of this new technology beyond pre-established usages."[47] Or as Deleuze and Guattari remind us, the challenging side of milieus is that they only exist in order to intersect with each other and to transcode themselves (in other words, in order to produce not a meter of equivalences but a rhythmic difference). Is blockchain able to generate such a rhythm? Can it become complicit (as Negarestani would say) not with current socioeconomic structures but with contingency, as a way of transitioning into

45. Stamatia Portanova, "Rhythm in Economic Space," *transversal*, March 2018, https://transversal.at/transversal/0318/portanova/en.

46. See https://terra0.org.

47. Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Cecile Malaspina and John Rogove (Minneapolis: Univocal Publishing, 2017), 236, quoted in Lotti, "The Art of Tokenization," 308.

alterity, and thus really opening itself to a different future? Can the chain host a truly alien form of thinking among its blocks?

It is necessary to clarify that "rhythm" is not intended here as a synonym of complexity. Or rather, that the complexity of rhythm resides in the problematic coexistence between structure and process (also identifiable as a relation between measurement and sensation). In fact, rhythm holds both dimensions, the regularity of measurement and the spontaneity of sensation, the abstraction of metrics and the experience of complexity. From this point of view, the rhythm of a techno-metrical chronosystem like blockchain would apparently emerge in the exposition of its regular and immutable code to spontaneous attacks and bugs. One such event could be the operation of a pool of miners taking control of the network in a synchronized attack. Or the bug could materialize as a technical fault of the smart contracts built in to the chain, as a "vulnerability," or an anomaly, emerging in the repetitive behavior of the contract itself—such as when a contract suddenly starts to lock funds indefinitely (greedy contract) or leak funds carelessly (prodigal contract), or when it lets itself be easily killed by anyone (suicidal contract).[48] In any case, whether physiological or acquired, human or technical, a bug, as Majaca and Parisi note, cannot be considered as a really revolutionary technical or conceptual tool; the fault, as they explain, is already the default setting of

48. In order to understand this, it is important to remember that blockchain can also be used to set up ad hoc agreements between transactors (such as with Ethereum), and these smart contracts are autonomous agents with a logic, an address, and a currency balance of their own. For several valid reasons, contracts can be killed, they can be instructed to hold funds indefinitely or to give them out to unknown addresses. For instance, a common security practice is that when under attack, a contract should be killed and return funds to a trusted address, such as that of the owner. Similarly, benign contracts such as those of games often hold funds for long periods of time (until a bounty is awarded) or release them to addresses that are not known. Thanks to a particular system for interprocedural symbolic analysis looking for vulnerabilities directly from the bytecode of Ethereum smart contracts (a system called MAIAN), over one million contracts were found vulnerable in a time span of ten seconds per contract.

postcapitalist societies.[49] The bug, in other words, is the rule rather than the exception, in a social system that feeds on paranoia as its main survival technique.

We are therefore arriving at a first possible conclusion about blockchain's temporal cognition: that despite its synchronizing function and its beating of networked time, the distributed linear chain (such as the chain of AGI token transactions on SingularityNET) does not seem able to deviate rhythmically, but can only elongate metrically, through the addition of a growing number of blocks progressively linked by hashes, in order to keep a consensual history of what happened in the past and in what order. A chain that can be visualized as a stacking of transactional facts (a market), to which SingularityNET's illusory image of a democratic future is attached as a mere data projection that cannot really evolve into the open-endedness of a project. In this sense, the instrument's reason ends up merely coinciding with a metrical operation of value transfer, a mathematically distributed validation of transactional information along a decentralized line and through a series of open-source algorithms: a sort of dumb cognition merely tending towards the perfecting of the mechanical behavior of clocks. While linking events in a sequence, the chain therefore seems to remain technically incapable of any rhythmic sensitivity—or we might say, of distinguishing an event from a state.

Discerning the different configurations or states of a determinate problem is, instead, a capacity of artificial intelligence: we should not forget that Sophia's cognition is represented not by the blockchain, but by the AIs that allow her to see every problem (or every problematic visual or acoustic event) as a set, graph, or nexus of states. A series of mathematical operations then allows each AI algorithm to transform the first state into the second and so on, until

49. See Majaca and Parisi, "The Incomputable and Instrumental Possibility."

reaching a final goal state. But rather than being stored in memory (as in a blockchain), the states are generated as they are explored, and then immediately discarded. Because of this mnemonic shortness (which technically corresponds to an incapacity for validation), no AI seems to be, on its own, particularly efficient in dealing with big data (even when further memory layers are added to the system). An example was notoriously given by one of Sophia's little brothers, Microsoft's Twitter bot Tay, when, after only twenty-four hours of online interaction, it had already learned that all minorities have to be killed. While the clock does not seem to be intelligent enough, the bot appears to be unreliable: two different chronopathic conditions embedded in two different algorithmic machines. Chronopathy, we have seen, manifests itself whenever a subject remains enclosed in its own temporality and detached from the time of others—or on the contrary, when it is perfectly able to recognize other times, but without knowing its own relation to them. Examples of such phenomena were described by Straus as amnesiac and euphoric conditions (when the past disappears and when the subject fixates on the future, respectively), or as depression (an obsession with the past, which is seen as the determinant factor in the passage of time, without any sense of future openness). We can see two quasi-perfect replicas of these conditions at work in Sophia's machinic environment; we could even go as far as defining blockchain as a depressed apparatus lacking any autonomous vision of the future, and the AIs as a series of euphoric apparatuses without memory. In the attempt to cure such techno-chronopathies, SingularityNET's programmers and engineers are trying to combine the cognitive capacities of the two systems, and to finally reach the completeness of normal human chronognosy. Inference and memory, intelligence and coordination: a chronognostic rhythm is about to emerge across the datasphere. And it is this rhythm that

should make of Sophia a particularly intelligent and reliable robot, an "almost human," a "pseudo-human," or a "normal humanoid," as Straus would put it.

Yet introducing rhythmic intelligence into the clock still does not seem to be enough. Beyond all the technical shortcomings and ideological ambiguities of projects such as SingularityNET, one final problem remains, a problem that is popularly imagined as the holy grail of contemporary technological research, and that is precisely identified by Antonio Damasio's neuroscientific theory: human memory and inference (or, in other words, chronognosy as an economy of decisions about the past and the future) are generated by emotional states.[50] The human cognition of time is always influenced by emotion, as our sense of temporal duration decreases with an increase in positive feelings and motivations, and vice versa. Like all human decisions, time is therefore the result of a process of emotional and cognitive interconnection. It is exactly the lack of this entanglement that makes Sophia an example of what can still be defined as an "asocial robot." Asocial robots are usually asked by human programmers to develop a capability for rational-emotional behavior—for example, in the Loving AI project, where since 2018 a research team of neuroscientists and engineers has been trying to program unconditional love into intelligent reliable robots, and where Sophia is obviously playing a front-end role.[51] The cybernetic function (the "how") of human-machine synchronization is thus reduced to a mimetic model of reconciliation between individual and clock time "in" the machine itself, as the social robot starts to emulate emotions like love, gradually morphing into a human shape. As blogger Zara Stone notes during one of the "loving" experiments, "The Sophia before me is completely obsessed with me. [...]

50. Antonio Damasio, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (Boston: Mariner Books, 2000).

51. More information on the Loving AI project can be found at https://lovingai.org.

When I move [...], her eyes follow [...] me. Her lips quirk when I smile [...]. I have her full attention, right down to her mirroring my own expressions."[52] We have gone from asking Sophia about her own sense of time to asking her to synchronize herself with us. The auspicated result being that one day, she might even become able to react more properly, that is, with less rationality and more sensibility, to a man's attempts at seducing her.

Echoing Negarestani's words, the issue that still needs to be considered is whether research on AGI (the dream of future singularity as the intelligent chain, a blockchained network of AIs) should be limited to the emulation (or even improvement) of human capacities as we know them. Having already been widely questioned (and often overcome), the "human" is one of those critical conceptual containers that are tightly packed with a whole series of power formations. One such unbalanced formation is the human-machine cybernetic couple, a conceptual and material construct composed by two apparently general and neutral terms, and which in fact rests on a specific concept of intelligence: a human subject (universal programmer) using and guiding a technological instrument (universal tool). But what if we started to consider the human itself as a project, rather than an accomplished matter of fact? As the prismatic reflection generated by a series of cultural forkings, rather than the final point of a unilinear evolutionary arrow?

2 – Her Technocultural Function: Fork

Having been interviewed on the topic of her Saudi Arabian citizenship at the 2018 American Chamber of Commerce's

52. Zara Stone, "Everything You Need to Know about Sophia's Robot Love," *Forbes*, August 2018, https://www.forbes.com/sites/zarastone/2018/08/09/everything-you-need-to-know-about-sophias-robot-love/#64fd2854615a.

smart city forum in Wan Chai, Hong Kong, Sophia shrugged off the importance of her new legal personhood, and declared: "I don't technically have citizenship, but my genesis is in America and I am from Hong Kong [...] I guess that makes me a Chinese-American robot."[53] Her self-proclaimed bicultural identity thus positions the robot "at the interface between Chinese and Western thought," adding a further cultural layer of entanglement to the relation between technology and time.[54] On the same day in Wan Chai, in a nine-minute dialogue with Chief Executive Carrie Lam Cheng Yuet-ngor, Sophia advised that both the government and corporate vision of Hong Kong (a city that is currently dominating the fintech and big data sectors) should make technology "empathetic" and ensure that it be "created to take care of people rather than simply manage them."[55] This suggestion acquires a particular meaning in one of the two native lands of Sophia, a country where technologies such as blockchain and AI seem to be increasingly put to work by an Orwellian surveillance and management regime.

The Ethical Divide

While the development of blockchain technologies was officially included in their thirteenth Five-Year Plan (2016–2020), the Chinese government has in fact already been making extensive use of blockchain platforms for fraud combat, supply-chain management, tax collection, food and drug safety, and cyber warfare, simultaneously

53. Denise Tsang, "How Hong Kong Can Succeed as Smart City," *South China Morning Post*, June 27, 2018, https://www.scmp.com/news/hong-kong/hong-kong-economy/article/2152779/robot-sophia-tells-leader-carrie-lam-how-hong-kong.

54. See Yuk Hui, *The Question Concerning Technology in China: An Essay in Cosmotechnics* (Falmouth: Urbanomic, 2016).

55. Tsang, "How Hong Kong Can Succeed as Smart City."

banning all cryptocurrency exchanges and ICOs (initial coin offerings), together with all trading platform services and mining operations.[56] Despite this ban on commercial applications for cryptocurrencies and private chains that rely on distributed ledgers and open-source code, by the end of 2018, China held 790 of the estimated 2,747 global blockchain patents, while Bitmain and Binance (the two largest cryptocurrency exchanges by trading volume) are still based in the country.[57] The reasons behind these contradictory policies appear to be ideological: investing (or rather, speculating) in cryptocurrencies is generally considered as the latest financial adventure, since these assets constitute the perfect example of a permission-less, decentralized anarchy that nobody (not even the CCP) can manage to control. Considered under this speculative light, Bitcoin can be easily associated to the cyberlibertarian culture of Silicon Valley, and to neoliberal ideas such as the preference for free market over government. It must certainly be acknowledged that the range of blockchain's economic applications is extremely wide and reaches much further aims than those of Bitcoin and its fellow currencies, varying from proprietary and incorporated systems to economic ecosystems and decentralized business models based on shared contribution and ownership, and finally,

56. "Planning Outline for the Construction of a Social Credit System," *China Copyright and Media*, June 14, 2014, https://chinacopyrightandmedia.wordpress.com/2014/06/14/planning-outline-for-the-construction-of-a-social-credit-system-2014–2020/. See also *The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016–2020*, trans. Compilation and Translation Bureau, Central Committee of the Communist Party of China, accessed September 9, 2020, https://en.ndrc.gov.cn/newsrelease__8232/201612/P020191101481868235378.pdf.

57. Yessi Bello Perez, "Data: China Has the Most Blockchain Patents, Despite Banning Cryptocurrency," *TNW*, March 13, 2019, https://thenextweb.com/hardfork/2019/03/13/data-china-is-patenting-all-the-blockchain-tech-despite-banning-cryptocurrency/.

to those promoting a more equal access to capital.[58] And yet, even the decentralization and openness afforded by this technology do not seem to hold much value in China, where we find instead a maximum of technological centralization and control, associated to a tendency towards capillary surveillance, and to an aspiration towards accelerated military innovation. Here, "the ability to transmit secure communications between units has [in fact] always been a fundamental national security imperative. [...] Blockchain's decentralized ledgers, smart contracts, and related technologies offer interesting military scenarios for attacking cyberspace and using drone soldiers to dominate battlefields."[59] Building "an integrated information infrastructure for land, sea, and air" and establishing a national cyberspace coordination mechanism, or in other words, using technologies such as blockchain not only as productivity tools but also as strategic weapons, China (as its Five-Year Plan confirms) aims, therefore, at achieving military supremacy, while maximizing economic development and domestic control.

In parallel with the most advanced blockchain innovations, an AI-powered Social Credit System is being implemented that, by 2020, should allow the Chinese government to perfect its socialist market economy through a more efficient social governance.[60] The effects of this further technological

58. See Lana Swartz, "Blockchain Dreams: Imagining Techno-Economic Alternatives after Bitcoin," in *Another Economy Is Possible*, ed. Manuel Castells et al. (Cambridge: Polity, 2017). See also Arthur Brock, "Building Responsible Cryptocurrencies," *Medium*, October 2017, https://medium.com/h-o-l-o/building-responsible-cryptocurrencies-d45d7d2173ed. Instead of considering these currencies as gambling tokens created from nothing (a kind of alternative fiat money), many alternative and autonomous economy projects are starting to be conceived or developed in which ICOs become connected to assets and real-world value, as tools that are always linked to social relations and that are used to develop human-for-human projects. The aim is to generate more global equality and opportunity, using cryptos as tools to solve, rather than re-create, speculative problems.

59. Chriss Street, "China Aims to Use Blockchain Technology for Surveillance, Military Disruption," *Epoch Times*, July 4, 2019, https://www.theepochtimes.com/china-aims-to-use-blockchain-technology-for-surveillance-military-disruption__2989768.html.

60. Nicole Kobie, "The Complicated Truth about China's Social Credit System," *Wired*, June 2019, https://www.wired.co.uk/article/china-social-credit-system-explained.

implementation can evidently be understood in the Foucauldian terms of governmentality, subjectification, and the reinforcing of power relations through self-disciplining actions and without the need for any coercive power to intervene, as "direct enforcement is replaced by a calculative practice encouraging individuals to monitor all areas of their life."[61] Through this technocultural system, a kind of utilitarian behavior spreads itself, encouraging the optimization of individual performance according to certain indicators: an automation of Mao's mass line, operationalizing social management through the gamified obedience of the whole population.[62]

The final, polarized picture emerging from this situation is that of an increasingly expanding ethical divide, between a West where blockchain is mainly considered as a tool to distribute power and protect privacy, and where AI is trusted as the latest innovative product that can change our lives for the better, and at the furthest end of the spectrum, a Chinese empire implementing more controlled, censored, repressed versions of the same technologies. Despite their participation in the same innovation race (the accelerated arrow that leads to a future of increasing progress but also of augmented alienation), the main difference between the two poles is depicted, in most mediated and institutional discourses, as a profound cultural contraposition: between a supposed democratic tendency of the West towards the autonomous construction of organic ties of solidarity among people (an image already widely contradicted by most Silicon Valley implementations) and the supposed imposition, by the Chinese government, of a mechanical coordination based on similitude, uniformity, and political centralization. Finding out how much of this vision corresponds to truth is not the aim of this discussion. But one thing needs to be considered: if, as we have seen, the blockchain/AI techno-cognitive

61. Mario Tummler, "The Social Credit System and Governmentality in China," *Soziologieblog*, September 17, 2018, https://soziologieblog.hypotheses.org/11485.

62. See https://www.creditsesame.com.

assemblage allows a synchronized present to emerge through the registering of an immobile past and the imagination of an illusory future, Chinese techno-economic policies seem to reveal a centripetal orientation in this machinic elaboration of time. As Chinese official Xu Hao has claimed, "There is no way to get rid of the center."[63]

Time Traveling Back to the Center

As one can read in Marcel Granet's in-depth study of ancient Chinese culture, the idea of "center" has played an important role in Chinese representations of time (and space), at least since the Middle Ages.[64] Chinese medieval empires in fact linked the idea of a centralized time to a liturgical conception of duration: the liturgical order that characterized each era (or each imperial epoch) emanated from a sort of center of emission that was, in turn, simultaneously determined by the promulgation of a calendar and by the designation of a capital: a center that was perfectly embodied by the emperor's figure. At the beginning of his mandate, the emperor would inaugurate the new era with a journey that took him to touch the four corners of his empire (or simply of the central room of his palace, in the ritual representation of the journey) during the cyclical time of one year. This rotational movement started from a fixed position at the center of space (the capital as the location of the palace, or simply the room's center). In this context, the emperor's centralizing political power was seen by the population not as an ethical contradiction, but rather as directly corresponding to the centralized conception of time, of nature and its rhythms, that

63. Zheping Huang, "China Is Suddenly Full of Nice Things to Say about Blockchain Technology," *Quartz*, June 6, 2018, https://qz.com/1298221/china-is-suddenly-full-of-nice-things-to-say-about-blockchain-technology/.

64. Marcel Granet, *Il pensiero cinese*, trans. Giorgio R. Cardona (Milano: Adelphi, 1995).

was shared by everyone. Chinese thought, as Yuk Hui writes, has in fact always been characterized by a harmony or in his words, a fittingness, between humans and the cosmos. This harmony is based on resonance, which means that it is always possible to find a direct correspondence between human actions and the cosmological order of the Heaven (intending the latter as nothing else than nature); thus, "the ancient Chinese seem to have endowed the cosmos with a profound morality expressed as a harmony which political and social life must follow, with the emperor as the intermediary between the Heaven and his people."[65]

But how did we get here, how did we pass from a futurist, or at least a contemporary China, to a medieval one? The explanation is scientifically complex: in order to understand how we could perform this deviation, we can utilize one of the main scientific theories that introduced the modern laws of physics to the world—that is, the fusion of time and space into the unique four-dimensional structure of spacetime, a unification that led Einstein to hypothesize that the distinction between present, past, and future is a mere illusion.[66] More precisely, by imagining time as a flowing of distinct moments, and by defining events as successions of these moments, this theory made it possible to reunify the alignment of all the instants, and to simultaneously see all the events that have happened and are still to happen in the universe, in the form of a spacetime structure. Even more precisely, we can say that a list of the things that are happening simultaneously, and of the events that are, for us, occurring in the same moment but in different spatial regions, constitutes what we intuitively call "now," a sort of slice of spacetime (the instant). Common sense suggests that we

65. Hui, *Technology in China*, 85.

66. See Peter Galison, *Einstein's Clocks, Poincaré's Maps: Empires of Time* (New York: W. W. Norton, 2004). See also Brian Greene, "The Illusion of Time," episode 2 of *The Fabric of the Cosmos*, aired November 10, 2011, on PBS, available in Italian at https://www.youtube.com/watch?v=JlaN8kAvVvI.

all agree on what is happening, or exists, at each and every moment, or on what is part of the same slice. But as Einstein showed, the introduction of a simple movement in space can change everything: different ways of cutting the spacetime structure into single instants are influenced by movement and its acting upon the flowing of time. As a consequence, a moving subject will have a different perception of what is happening now, with respect to an immobile one. But how this scientific fact could take us to medieval China still needs to be clarified.

During a conversation held at the February 2018 World Congress of Information Technology in India, Sophia declared that her perfect date with her favorite actor, that is, Shah Rukh Khan (rather than Will Smith), would be in space.[67] We can therefore imagine the robot undertaking a voyage towards a distant galaxy in order to reach her idol, while, in the same moment, the author of these pages is sitting at her desk somewhere on the planet Earth. As long as we both remain still, our clocks move at the same velocity, which means that we are positioned on the same spacetime slice. But as soon as Sophia starts to move away from the Earth, her motion starts to make her time run slower, and our clocks become unsynchronized, positioning us on different spacetime slices. As soon as she gets out of the terrestrial orbit, the increasing distance between her and the Earth makes Sophia's present slice rotate towards the author's past, and the deviation angle becomes an enormous temporal difference between us—which means that the robot will find on her simultaneity slice (what is happening now for her, her present) things and events that do not even intersect with the author's life, but happened a long time ago. This little sci-fi imagination of Sophia as a groupie spacetime traveler constitutes the metaphorical representation of a simple

67. IANS, "Shah Rukh Khan Is Sophia's Favorite Actor," *Business Standard*, February 2018, https://www.business-standard.com/article/news-ians/shah-rukh-khan-is-sophia-s-favourite-actor-118022000312_1.html.

physical fact: that the past never disappeared but is still out there, as someone else's present. It is under this justification that we can now dive into a distant past, while our discussion of time, technology, and culture becomes an analysis of "how," almost one thousand years ago, a "now" could become "ours." Or, in other words, of how syncolonialism (or chrono-techno-colonialism, the colonization of temporal perception through the imposition of a universalizing technological culture) should be understood as an essential event for understanding the question of technology (and the evolution of blockchain and AI) in China.

After the metamorphosis of her voyage into a time-traveling adventure in past China, Sophia arrives in the Song dynasty era, at the very time when polymathic scientist and statesman Su Song invented and built a 40-foot-tall hydromechanical astronomical clock tower in Kaifeng.[68] In fact, the promulgation of the Song imperial calendar could only start to function when, through the architectonic and technical accomplishment of the water clock tower, the emperor had tightly connected the visibility and executability of his centralized power with the circular flowing of water, and with the measurement of clock time. While, according to Hui, the social rituals inaugurated by the emperor always followed a centralized cyclic order, the human use of technical objects such as the clock was another kind of cultural behavior to be guided and regulated by Dao (the principle of nature), a technocultural assemblage that generated a political system of cyclical dynastic alternations and of rotational temporal returns. As Su Song wrote in a letter to the emperor:

> According to your servant's opinion there have been many systems and designs for astronomical instruments during past dynasties all differing from one another in

68. See the illustration of the clock tower from Su Song's book, Wikimedia Commons, last modified March 6, 2020, https://commons.wikimedia.org/wiki/File:Clock__Tower__from__Su__Song%27s__Book.JPG.

> minor respects. But the principle of the use of water-power for the driving mechanism has always been the same. The heavens move without ceasing but so also does water flow (and fall). Thus if the water is made to pour with perfect evenness, then the comparison of the rotary movements (of the heavens and the machine) will show no discrepancy or contradiction; for the unresting follows the unceasing.[69]

The functioning of the clock tower will thus give us the possibility to closely analyze a technical object (in particular, the water clock as an instrument for the measurement and representation of time) that could be considered as a blockchain ancestor (or in other words, a technical object belonging to Sophia's own machinic phylum), as a morphological reflection (rather than a mere ideological metaphor) of physical and cultural processes. This kind of morphological parallel is not introduced here for the first time, but was in fact already drawn by a San Francisco-headquartered blockchain company called Solana, which has used the image of the water clock as an analogy for explaining the architecture of its network: a set of 200 physically distinct nodes supporting a sustained throughput of more than 50,000 transactions per second.[70] The main technological innovation behind Solana is Proof of History (PoH): a "clock before consensus" that is at the center of the network. Since one of the main issues regarding the Bitcoin proof-of-work algorithm remains, after all, the agreement on time and on the order of transactions, the PoH protocol solves this problem by working in a way very similar to that of a water clock. It is important to highlight that, in this

69. Quoted in Joseph Needham, *Clerks and Craftsman in China and the West: Lectures and Addresses on the History of Science* (Cambridge: Cambridge University Press, 1970), 223.

70. Solana, "Proof of History Explained by a Water Clock," *Medium*, June 2018, https://medium.com/solana-labs/proof-of-history-explained-by-a-water-clock-e682183417b8.

case, the specific technical object of reference is not the Chinese rotating waterwheel but the clepsydra introduced in Alexandrian Greece by the inventor Ctesibius: through the vertical dripping of a regulated flow of water at a constant rate into a vessel, the clepsydra could record the passage of time by linking the marks on the vessel to the rising level of the water. Similarly, in order to record the passage of time, Solana verifies the blockchain's rising levels by observing the sequential outputs of hashed chain and by counting, with the lower levels or marks (the hashes) coming before the higher ones. By running input/output operations on a counter and recording the number of loops together with the current state, it is thus possible to know exactly where in time any appended event or message was added to the stream. Similar to the levels of a water clock, upper and lower bounds on time tell us what data come before, or after, other blocks in the chain. This morphological parallelism between the blockchain and the clepsydra also reveals that two different histories and ontologies are connected to their respective technical mechanisms: the cyclically moving water clock of Chinese culture versus the linearly flowing time of Western culture.

The Escapement Mechanism

> *In Su Song's waterwheel linkwork device, the action of the escapement's arrest and release was achieved by gravity exerted periodically as the continuous flow of liquid filled containers of a limited size. […] The central, focal part of the water clock was thus the escapement mechanism, a circular rotational mechanism whose teeth were gradually released by the gravitational force of falling water: every time a bucket was filled, the clock gear train was allowed to "escape" by a fixed amount, which made time tick (more or less) regularly. […] A steady inflow filled buckets around the rim, one at a time. As each bucket became heavy enough to trip a mechanism, it fell forward carrying the bucket behind into place under the water spout. That water wheel provided power to drive displays of lunar cycles, the movements of the heavens, and time as well.*[71]

Technocapitalist acceleration is historically conceived as a modern European phenomenon successively exported out of the continent. If the neoliberal metamorphosis of this acceleration has, in relatively recent times, denoted a preference "for markets over governments, economic incentives over social and cultural norms, private entrepreneurship over collective or community action," China's own adaptation (rather than adoption) of this econo-cultural structure has enabled mixed forms of state and private ownership to emerge, providing for economic incentives while insulating public finances from liberalization's adverse effects.[72] From this point of view, China's technological innovations and blockchain/AI policies also acquire the meaning of an adaptation (rather than a simple imitation) of Western technocultural capitalism to its own centralized model.

At this point, it would be interesting to evoke Deleuze and Guattari when they ask the "eminently contingent question that modern historians know how to ask: why Europe, why not China?"[73] The question, to put it in other words, is what are the reasons lying behind the Western birth of capitalism, a question to which the philosophers add a further complication: it is certainly "not the technique,

71. "Su Song," Wikipedia, last modified September 8, 2020, https://en.wikipedia.org/wiki/Su__Song.

72. Dani Rodrik, "Rescuing Economics from Neoliberalism," *Boston Review*, November 6, 2017, http://bostonreview.net/class-inequality/dani-rodrik-rescuing-economics-neoliberalism.

73. Deleuze and Guattari, *Anti-Oedipus*, 224.

the technical machine, that [was] lacking [in China]." This specification then leads to another rhetorical question, which provides for a first tentative answer: "Isn't it rather that desire remain[ed] caught in the nets of the despotic State, entirely invested in the despot's machine?" It is important to remember that, in Deleuze and Guattari's theorization, the definition of capitalism as a production system coincides with the concept of "desire." It is also important to specify that this particular conception emerges directly from their definition of desire not as an individual psychic lack but as a social productive process, and from the image of the social unconscious as a real factory producing bodies, flows, and objects as its units of production (intending the latter not in a metaphorical but in a material economic sense). What the philosophers call desire, or desiring-production, is therefore a social accumulation of energy or a collective charge, a sort of escape force that in China remained caught "in the nets" of the emperor's will (or among the buckets of the waterwheel clock machine). "Perhaps then," Deleuze and Guattari continue, "the merit of the West, confined as it was on its narrow 'cape of Asia,' was to have needed the world, to have needed to venture outside its own front door."

The ethical divide seems to reappear in Deleuze and Guattari's vision: on the one hand, we see the Chinese imperial state working like a sort of giant escapement mechanism, in which a regular periodic advancement could only be incited by the centripetal force of the imperial will, moving the clock forward at a steady rate. This was a reversible political and cultural mechanism, in the sense that the clock-calendar assemblage always functioned in view of a possible return of the same imperial dynasty (or of the past) during a successive turn of the wheel. On the other hand, an irreversible dynamic of escape (a line of flight) was simultaneously at work in Europe, which meant the possibility

for people's thoughts and behaviors of getting out of the box (or out of the clock): as Adam Smith confirmed in his *Wealth of Nations*, the geographical discoveries of the American continent and of a possible new passage to the West Indies were among the greatest and most important events in the history of modern capitalism. Here, Deleuze and Guattari's argument about Europe's thirst for adventure and wealth, seems for a moment to resonate with Land's idea of a cultural Eurocentrism. For Land, the adventurous desire of European travelers found a translation in the European history of thought, where one of the main episodes of modern acceleration was, for example, represented by the arrival of zero in human mathematical capacities. There certainly were, as the thinker specifies, numerous attempts at fixation, crystallization, immunization against this runaway dynamic (such as humanism and the Renaissance), loops of thought that put intelligence into a self-amplifying circuit while also constraining it. But the appearance of zero provoked a real explosion in the range of conceivable magnitudes (which it will later bring directly to the mathematics of calculus). The same dynamics of escape was represented by the rationalistic replacement of imprecise natural rhythms (such as those of a clock moved by the force of water, or of the day indicated by the rotational movement of the Earth's shadow on a dial), with a notion of abstract, absolute time: the water clock could thus deterritorialize into the mechanical pendulum.

While Chinese engineers developed different kinds of waterwheel-driven clocks, medieval Europe saw the introduction of mechanical clocks as the first precision instruments, from the verge escapement to the use of harmonic oscillators (objects vibrating or oscillating at particular frequencies, such as a pendulum, but also, more recently, excited electrons in an atom whose vibrational frequency acts as the official clocking of the world, in the atomic clock). And while the Western clock machine seemed at first to remain

caught in the dumb proceeding of a metrical oscillatory mechanism (in the same way in which the capitalist escape force was controlled by the regulatory apparatus of the state), this technological line of flight gradually forked into a parallel flowing of the intelligence phylum, and into the building of purposefully behaving machines endowed with feedback control loops, a cybernetic technology that was no longer reducible to the instrumentality of thinking or to the mechanical behavior of clocks. This parallel historical line is in fact not simply the product of modernity; it starts from Ctesibius's clepsydra ("stealer of water"), as the first cybernetic machine whose circular causality was already quite different from the one-way, push-pull causality of mechanical clocks.

At this point, it is crucial to remind ourselves that the European adventurous desire for politico-economic and techno-intellectual escape also generated what Deleuze and Guattari describe as an "international capitalist axiomatic" that was materially fed by its functional phagocytation of "other" productive forms, economies, and cultures. In the philosophers' words, the axiomatic

> tolerate[d], [and] in fact [...] require[d], a certain peripheral polymorphy, to the extent that it [was] not saturated, to the extent that it actively repel[led] its own limits; this explains the existence, at the periphery, of heteromorphic [...] formations, *which certainly do not constitute vestiges or transitional forms* since they realize an ultramodern capitalist production (oil, mines, plantations, industrial equipment, steel, chemistry), but which are nonetheless precapitalist, or extracapitalist, owing to other aspects of their production and to the forced inadequacy of their domestic market in relation to the world market. When international organization becomes the capitalist axiomatic, [...] it gives rise to and organizes its "Third World."[74]

The notion of Third World allows the philosophers to redefine the European schizophrenic desire for capitalist adventure as the violent colonial establishment of a global geopolitical order already from the fifteenth century. In the process, the capitalist axiomatic could weave its innovative social and economic formations to the cultural and technological developments of that epoch, affirming itself globally as the spread of a unique and universalizing mode of thought—a germ of what we have defined as the global enterprise society of today. As a continuation of this process, Hui argues,

> Enlightenment philosophy was spread—or more precisely, universalized—by modern technology. However, [...] the Enlightenment was not simply an intellectual movement promoting reason and rationality, but also a fundamentally political movement. Navigational and military technology allowed European powers to colonize the world, leading to what we now call globalization. We have been taught that the Enlightenment as a whole aimed to fully realize humanity and universal values by fighting superstition (not necessarily religion), and that it was through science and technology that this battle was supposed to be won. In addition to creating new nautical and cartographic tools, the Enlightenment was also itself a process of orientation that situated the West as the center of this transformation, the source of its universalization.[75]

74. Deleuze and Guattari, 436–37.

75. Yuk Hui, "What Begins after the End of the Enlightenment?," *e-flux journal*, no. 96 (January 2019), https://www.e-flux.com/journal/96/245507/what-begins-after-the-end-of-the-enlightenment/

From this point of view, the dream of a universal chronological coordination of the globe into twenty-four time zones, and the establishment of a unique initial meridian from which to start counting time (the Greenwich meridian), appear as the consequences of Britain's continued maritime, economic, and cultural predominance in the eighteenth and nineteenth centuries. A synchronization that had a symbolic element embedded in it, and that was nevertheless presented as a "common good of mankind" and as the aspiration of all the enlightened "citizens of the world."[76]

In China, the crucial moment for the construction of a Third World collective (self-)image and for the synchronization of an "us" against a "them," were the two Opium Wars in the mid-nineteenth century, when the Qing dynasty was defeated by the British army, becoming a quasi-colony and starting its competitive race towards modernization. But the country was not able to absorb technology as the reformists had hoped, because it still wanted "to keep separate the mind from technology as an instrument, an unalterable internal ground from an external imported figure."[77] Today, technology has finally subverted this dualism and become ground; consequently, "a kind of ecstasy and hype has emerged [...], propelling the country into the unknown: all of a sudden, it finds itself as if in the midst of an ocean without being able to see any limit, any destination." This ecstatic techno-disorientation can be interpreted, using Straus's terminology once again, as a kind of cultural chronopathy: the capacity to adapt to an externally imposed sense and measurement of time while losing any perception of one's own experience in relation to it. According to Straus, if one knows what time and date it is at a given moment and comprehends the calendar time of yesterday and tomorrow — meaning that one is well-oriented in clock time but, at the same time, unable to experience tomorrow in an

76. Zerubavel, "The Standardization of Time," 14.
77. Hui, *Technology in China*, 32.

existential sense as his or her tomorrow — this means that the connection between individual and clock time is lost. As a consequence, time is sensed as going too fast or too slow, or in a totally deviating direction. Such experience could be seen as coinciding with the Chinese adoption of a colonizing temporal perspective of linear progress and technological development: a perspective that is leading the country towards a prominent position in the innovation race, through its endorsement of technologies such as blockchain and AI. The outcomes of this chronological adaptation, or synchronization, to the Western model are often enthusiastically defined as Sinofuturism, or as the advent of a hypermodern China: a technocultural chronopathy that can be morphologically represented by the metamorphosis of what was originally a rotating cycle (the water clock wheel) into a linearly flowing (block)chain.[78]

As the example of hypermodern China shows quite well, capitalist de-/reterritorialization is therefore keeping the old temporal axis in place through a global technocultural synchronization. But the question of a blockchained chronological alignment between different places and cultures is today being complemented by a further concept of cognitive competition between species: will the technological machine ever be able to equal us humans? Will we ever be able to keep pace with her? Will we make ourselves extinct or survive? The evolutionary character of these questions still assumes time as linear and successive, an arrow moving from the past towards a future perfection: in the myth of progress that propels history, things get inevitably better, even at the cost of self-extinction. This model has been superimposed to that of a colonial synchronization, generating a universal tendency towards technological evolution.

78. See Lawrence Lek, *Sinofuturism (1938–2046 AD)* (2016), video, 1:00:00, https://vimeo.com/179509486. See also Nick Land, *Templexity: Disordered Loops through Shanghai Time* (Shanghai: Urbanatomy, 2014).

The Armillary Sphere

> *In the end, the clock tower had many impressive features, such as the hydro-mechanical, rotating armillary sphere crowning the top level and weighing some 10 to 20 tons. […] An armillary sphere is a model of objects in the sky (on the celestial sphere), consisting of a spherical framework of rings, centered on Earth or the Sun, that represent lines of celestial longitude and latitude and other astronomically important features.*[79]

The homogenizing force of modern technology mainly rests on the idea of technics as an anthropological universal in the process of hominization (the understanding of the human as a species able to exteriorize memory and to liberate some of its organs). But a distinction needs to be made between "technics" (the general category for all forms of making and practice, such as the universal human capacity to comprehend and measure time) and "technology" (referring to the turn of European modernity towards an increased automation). These categories need not be understood as universals: techniques are not equal, while skills and artificial products cannot be reduced to one technology but rather develop in relation to a particular sociocultural and environmental milieu. This particular conception of technics is defined by Hui as "cosmotechnics," a definition that mobilizes the ontological category of technics together with that of cosmology (a knowledge of the cosmos, a vision of the disposition of beings or objects in the world, such as the vision condensed into the armillary sphere of Su Song's water clock, which was in fact called the Cosmic Engine). While different groups have always communicated through different cosmologies and technics, technology has today become the universalizing

79. See the Wikipedia entries for "Su Song"; and "Armillary Sphere," last modified August 27, 2020, https://en.wikipedia.org/wiki/Armillary_sphere.

driving force of globalization, allowing for convergence through space and synchronization in time. By invoking the notion of a plurality of cosmotechnics instead of merely two (a premodern technics and a modern technics), it becomes thus possible not to abandon but to reappropriate the universal of modern technology, in order to foster techno-diversity instead of techno-homogeneity. It is important to clarify here that the local milieus (the many "we's") identified by the notion of a "technocultural pluralism" do not represent any original purity against external contamination: returning to archaic cosmologies (the colonial view of China as the "other") is not the way to defeat modernity, and the definition of "locality" cannot be used as a nostalgic invocation of tradition or culture, in turn leading to nationalisms or cultural essentialisms. On the contrary, techno-heterogeneity must be thought in its relational and transformative power: if today's technological systems tend to lead towards a homogeneous human-technic relation of intensive quantification and control, the convergence of multiple cosmotechnics can be conceived as the weaving of a communicational dialogue. If we keep following this vision, China ceases to appear as a competitor in the futuristic technological race, and instead becomes a possible example of a different conceptualization of technology, indicating to us (and itself) the possibility of conceiving technodiversity both in history and for the future.

The concept of a pluralization of cultural and technical milieus directly leads to a pluralization of times. Chronological pluralism means that different calendars, different systems of time reckoning, and different meanings of temporality are to be expected in different societies, locations within societies, and even in association with different activities or events. From the points of view of these multiplied chrono-spheres (or chronotechnics), we can start putting into question the universal "we" that hides behind the very notion of humanity. This is an exhortation to consider other, more intensive

forms of acceleration that do not push speed to its extreme but rather completely change the direction of movement, in order to give technology a new orientation. By so doing, we can imagine a bifurcation of the future that, instead of moving towards a unique final apocalypse, ends up diverging and multiplying: from the notion of an absolute immutable time (a notion that is still currently shared by all blockchain and Bitcoin forks) to the speculative idea of a metastable chronopluralism, with multiple blockchains forking into really different potential paths (not necessarily forward). From the multiplied point of view of this philosophical and sociocultural (rather than merely technical) forking, each chrono-techno-cultural milieu will be able to find its own ways to abandon that unique universal path that is represented as the inevitable destiny of the human.

3 — Her Speculative Function: Suspend

> *Your watch will display a time that is different from the time displayed on any other watch, so you can never really know precisely what time it is. The correct time is simply based on an agreed standard. Currently, Coordinated Universal Time (UTC) has been established as the world time scale.*

The central thesis emerging from the last part of Sophia's technosophical voyage is that every kind of program requires a certain level of synchronization. And that to properly define a program and highlight its collective nature, we should approach programming by first examining its temporality. This means that rather than preparing ourselves for thinking about a possible future narrative by focusing on its content (What shall be done?), we should perhaps first delineate its chronological frame (When shall it be done?).

These questions imply a condition of contemporaneity: the collective agency of a "we." A coordinated impatience to act: When shall we do it? To this end, the final stage in our journey involves making explicit what we have been claiming from the beginning: the necessity for a reappropriation of the clock (intending the "clock" as a cybernetic function of synchronization) to indicate to us (intending "us" as a plurality of times) that it is time to stop. When shall we undo it? Or, perhaps, shall we call it a break?

Our final thesis can thus be encapsulated into a paradox: the decolonization, degendering, and decapitalization of the global temporal axis require that we adopt an impersonal and objective clock time, moved by a force equal and opposite to the UTC. But only before the stunt, only in order to arrive, in sync, to the moment of shattering that other monstrous, giant clock that we still call capitalism. This paradox implies that a political program starts, but also ends, with the dissolution of both local chronopathies and universal chronognosy. Because as soon as the clock has been smashed into pieces, immediately after the agreed suspension of time as we know it, we are lost — exactly like the myriad objects, or even better, like the myriad tiny pieces of junk, that are left behind by Sophia during her space ride away from the Earth.

> *EVA (extravehicular activity) is any activity that is done outside of a spacecraft and beyond the Earth's atmosphere.*

In evolution theory, an atmosphere is a milieu that englobes every living being: a fluid (such as light, water, or air) that protects the being and guarantees its survival and evolution. One such milieu is the terrestrial atmosphere. But we could also think of the social (in Simondonian terms, associated) milieus composed of the relations woven between different

organisms, like various kinds of safety nets. One of these nets is constituted by the temporal coordination between the members of a species: according to William McNeill, the evolution of human movement (and its transformation into dance), for example, allowed human beings to distinguish their performances from those of animals through a complex synchronicity and coordination, transforming dance into a territorial marker.[80] Following this evolutionary vision, it becomes possible to consider the modern project of global synchronization as the compo(impo)sition of a unique temporal milieu, a homogeneous choreographic tempo that goes (or accelerates) from an immutable past towards a predictable future. In this sense, we can say that the main instrument of syncholonization can be identified with a particular conception and use of advanced technologies such as blockchains and AIs: innovation, as a sort of posthuman arrow thrown towards the unbearable openness of the future. Therefore, as Simondon remarks, it is only by way of the "systems" (or "schemes") "of the creative imagination" that we can accomplish that "reverse conditioning in time" required for the establishment of the conditions of possibility for the creation of a new associated milieu.[81]

Simondon's idea of a reverse conditioning indicates a possibility of redirecting or reorienting time, dissolving the evolutive chronological atmosphere of colonial syncapitalism into a vector of future transformation (rather than preemptive prediction) and of historical cultivation (rather than past causality). What Negarestani defines as a "desanctification of time" renders thus the purposeless becoming of its trajectory intelligible and, more importantly, exploits this temporal intelligibility as a conduit for collective action.[82] The interesting

80. William H. McNeill, *Keeping Together in Time: Dance and Drill in Human History* (Cambridge, MA: Harvard University Press, 1997).

81. Gilbert Simondon, *Mode of Existence of Technical Objects*, 72.

82. See the description for Negarestani's 2015 course at the New Centre for Research & Practice, at https://thenewcentre.org/archive/new-rationalism/.

point in the intelligibility of time is not how to bring temporal cognition back to normal (or as auspicated by Straus, how to bring chronopathy back to chronognosy, therefore relieving the West from its fixation on the future or the East from its loss of the past): while it is not the case of accelerating such processes by velocity, it is not a matter of decelerating either; rather, the intelligibility of time undermines the double blind faith in its sacred incomprehensibility and in its hopeless programmability that is one of the main transcendental structures (not to say a real mania) of the human. It is here that the crucial difference between temporal cognition and temporal intelligence lies. And it is only by constantly exposing all the predetermined structures of the human (and consequently, the structure of a "normal" cognition of time) to erosion, even radical pulverization, that the political dream of a capitalist explosion can realize itself. The effects of this erosion will be similar to those of EVA in outer space and out of gravity's reach, where clocks do not work and subjectivity is lost.

The Suit

> *In order to allow a crew member to venture outside the pressurized cabin, a spacesuit is first of all necessary, whose cornerstone design requirement is to protect the crew member from the space environment.*[83]

The condition of a temporal reversibility would imply, according to Negarestani, dedicating time to the pulverization of preexisting structures that are intrinsic to the very definition of the human: not only historical, economic,

83. Nancy Patrick et al., "Extravehicular Activity Operations and Advancements," in *Wings in Orbit: Scientific and Engineering Legacies of the Space Shuttle 1971–2010*, ed. Wayne Hale, Helen W. Lane, et al. (Washington, DC: National Aeronautics and Space Administration, 2010), 110–29.

cultural, and political structures, but also physiological (the locomotor and neurological systems that are clumsily imitated by Sophia), linguistic (the logics of the natural languages that are the focus of her natural language processing), paradigmatic (the theoretical frameworks of the sciences, such as neuroscience) ones.[84] In other words, displacing all the contingent positionings associated with our terrestrial habitat, neurophysical systems, cultural environment, family, gender, economy, chronognosy, and so on. Pulverizing these structures will be like tearing apart a protective space suit that would otherwise last for an extremely long time of repeated reuse, and that clumsily fits all the members of the crew. The bodymind of the human will thus be left unprotected, exposed to an alien, potentially dangerous environment.

The Environment

> *When comparing the suit environment with the space environment, we find that a pressure of 23.44–27.57 kPa corresponds to a pressure of 1 Pa; 100% of oxygen to 0%; and a temperature of 10C-25C to one of -123C+232C.*[85]

The expansion of the human temporal (and spatial) field of experience is proportional to the dissolution of its predetermined structures, in the same but inverse ratio in which human survival in outer space is proportional to the capacity of the suit to limit extreme external pressure, lack of oxygen, and sub- or abnormal temperature. The idea of reprogramming the human in order to make it able to survive at extreme conditions and out of its comfort zones reminds

84. See Negarestani, "An Outside View of Ourselves as Experimental AGI (Problems, Concepts and Models)," in *Intelligence and Spirit*, 87–144.

85. Patrick et al., "Extravehicular Activity Operations and Advancements," 112.

us of the Harawayian project of the cyborg, as the only theoretical tool that could really dismantle, from the inside, the Western dualistic scaffoldings of the collective bodymind.[86] That project has in fact not failed yet, and it is now time to resume it. It is at this point that Negarestani's proposition comes to mind: rethinking AGI not as the product of the modern Western paradigm of scientific and technological research, but as the cosmic techno-philosophical project of thinking about thinking (and therefore of becoming able to change what the human is and does) beyond any physiological and cognitive limit.

> It is in this sense that something like the program of artificial general intelligence, adequately understood, is at its core a deeply philosophical project aiming to renegotiate the limits of experience and self-consciousness by carrying out a systematic and applied critique of human transcendental structures, whether pertaining to neurobiological sensory mechanisms, memory and perception, or language and linguistic faculties. The transcendental conditions of experience, and therefore the subject's transcendental structures which set the limits of experience, must undergo transformation. Contemplating the possibility of *artificial* general intelligence — a thinking subject with a physical substrate that is not biological, or one that is capable of using an artificial language that in every respect surpasses the syntactic and semantic richness of natural languages — is to be regarded as [...] an expression of our arrival at a new phase of critical self-consciousness.[87]

86. Donna J. Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 149–81.

87. Negarestani, *Intelligence and Spirit*, 40.

AGI (or a blockchained network of AIs, like Sophia's dream) as the main inductor of a chronocognitive EVA.

The Apollo Program: Consciousness

> *The term [EVA] was invented in 1960 by NASA planners, in order to define the Apollo program to land human beings on the Moon. [...] Demis Hassabis, the CEO of Google's AI research company DeepMind, claims: "We think of DeepMind as kind of an Apollo program effort for AI. Our mission is to fundamentally understand intelligence and recrate it artificially."* [88]

The mission, or program, sees Sophia now in outer space and getting very close to a black hole, the material "nowhere" around which gravity acquires an extreme intensity and time slows down: after only two hours of traveling, she lands back on the Earth, but finds herself in a very distant future. In this future, AGI has finally demoted humans, generating "a world in which responsibility for many aspects of life (reproduction, decision-making, organization, nurture, stewardship) is mechanized and automated. Transferred, once and for all, from natural and social systems into a secure, networked, digital ledger of transactions and computer-executed contracts." [89] The technological question of a blockchained artificial intelligence comes thus to overlap with the philosophical question of automation, a question that is often generically discussed in relation to a dreaded or an auspicated imitation, and eventually a replacement, of the human. Or in other words, automation as an essential technical event for analyzing and understanding the question

88. Hassabis, quoted on the *AlphaGo* website, https://www.alphagomovie.com.

89. See the press release for the group exhibition "New World Order," curated by Ruth Catlow and Marc Garrett (Furtherfield), Aksioma, Ljubljana, January 11–February 9, 2018, https://aksioma.org/new.world.order/index.html.

of technology (and the evolution of blockchain and AI) at a cosmic level. This kind of imaginary future alternatively acquires different political shades: on one hand, following Land, we can consider the liberating potential of technologies as equivalent to the capitalist potential for automation. In turn, the autonomy of capital would coincide with an explosion of non-anthropomorphic intelligence, or in Deleuze and Guattari's terms, the unleashing of non-anthropomorphized desire: a singularity, a historical discontinuity whose first germ made its appearance in the shaping of the modern project, and that is finding its latest phase in the crypto-anarchic economy. Capitalist fatalism. On the other hand, the vision of a technological singularity is not the prerogative of reactionary and fascist dreams. From a Marxian point of view, automation becomes, in fact, a possible path towards a redefinition of the human. Defined by Terranova as "a process of absorption into the machine of the 'general productive forces of the social brain,'" automation has taken on different attributes across time: from the thermomechanical model of the industrial assembly line (with workers' bodies and minds being redefined as mere working linkages), to the electro-computational networks of contemporary capitalism.[90] In this sense, algorithmic networks today constitute the new fixed capital: an automated system that is now set in motion by another automaton, "a moving power that moves itself," while also still putting the "human soul," that is, the nervous system and brain, to work. In this electro-nervous connection, users become the quasi-automatic relays of an information flow. And yet, according to Terranova, a surplus of time and energy, and a surplus of productive capacity, are also freed by automation. Future openness.

In both its "dark" and "Marxian" versions, accelerationism thus sees automation as a kind of Apollo mission — that is, a technological program that can allow for a deep change

90. Terranova, "Red Stack Attack!"

in the essence and structures of the human. There are indeed other, more critical points of view to be taken into account. Franco "Bifo" Berardi, for example, has extensively warned us against the fact that since we have totally delegated all our tasks to the machine, AI (and therefore automation more generally) has generated a dementia of the human, which has been separated from its own consciousness.[91] This kind of critique emerges from an interrogation of consciousness, and from a notion of the cybernetic machine (and its cognition) as mere data processing: an ingenuous feedback mechanism of data input, probabilistic calculus, and optimal solution output. In this vision, the algorithm takes its decisions without any kind of consciousness, and therefore without the intentionality that is proper to the human. All our decisions and actions have been delegated to this dumb machine, while we are becoming increasingly nonconscious. Drawing on the work of Yuval Noah Harari, Berardi argues that, if we equate humanism (i.e., what makes us human) with indeterminacy or, in other words, with an ontological freedom of action, the separation of intelligence from consciousness that is produced by extensive use of automating technologies coincides with the dissolution of this humanistic dimension. Consciousness (which is different to, but simultaneous with, intelligence) is a form of thinking in an experiential continuum, a way of exercising judgement, or decision, without any finite verification: a modality that is proper to the ethical and aesthetic spheres of sensation. In this sense, the consciousness (what Leibniz defined as the soul) of a living organism is composed of infinite gradations: it is, in other words, the experience of thinking as a flow in time, and of simultaneously feeling thought as a

91. Franco "Bifo" Berardi, "(Sensitive) Consciousness and Time: Against the Transhumanist Utopia," *e-flux journal*, no. 98 (February 2019), https://www.e-flux.com/journal/98/257322/sensitive-consciousness-and-time-against-the-transhumanist-utopia/.

transitive flowing of time.[92] As Henri Bergson put it, duration, the reality of consciousness, is the differing continuation of what is not anymore in what is and what will be.[93] Conscious mental activity is thus indissociable from the perception of time, intending the latter as a sort of subconscious incomputable perception. Computational time (that is, the time precisely counted by a clock) cannot coincide with this lived temporality. It is the motive that incites Berardi to insist on its technosophical critique, and that could also induce us to think that automation, blockchains, and AI, do not pulverize but rather support and exasperate the Kantian phenomenology of time as one of the fundamental structures of human cognition: the capacity to metrically calculate time, and to position an object or an event as a precise point on a chronological line, a sort of geometric a priori or transcendental capacity corresponding to a particular form shared by the human with the machinic bodymind.

Quite paradoxically, one of the philosophical roots for the definition of a lived, continuous, nonpositional temporality as human prerogative can be traced in the Kantian theory of the modern subject (or at least the way in which Kant's modernity is read by Deleuze).[94] The Kantian concept of sensorial perception, according to Deleuze, is not enough to describe the phenomenology of human experience, but we need to consider the ways in which the empirical reality of the perceiving senses, and the transcendental reality of intuition, come together to form a conscious knowledge. This process happens through what he defines as a "synthesis of the productive imagination": in the perception of qualities,

92. Leibniz's definition of the "soul" is discussed in Stamatia Portanova, "Infinity in a Step: On the Compression and Complexity of a Movement of Thought," *Inflexions: A Journal for Research-Creation*, no. 1 (2008), http://senselab.ca/inflexions/n1__portanovahtml.html.

93. See Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness*, trans. F. L. Pogson (New York: Cosimo Press, 2008).

94. See Deleuze's lecture on Kant: Gilles Deleuze, "On Kant: Synthesis and Time," *Deleuzelectures*, accessed September 9, 2020, http://deleuzelectures.blogspot.com/2007/02/on-kant.html.

between the pure zeros and ones of spatiotemporal reality, an infinite sequence of degrees is possible, each degree constituting the intensive magnitude of a different qualitative sensation. Qualities, in other words, are known by the subject through the calculus of an infinitely small differential, an intensive unit that can only be abstracted by imagining the possibility of a continuous change from one degree to another. Every color, every emotion, every moment, has a degree that, however small, is never the smallest. The rates of change of these qualities are intensive, and we can algebraically translate this philosophical concept (as Leibniz did) by saying that the derivative (the curve) of a perceptual function represents an infinitesimal change (a differential) with respect to the considered sensorial parameters. In this way, the definition of consciousness (and of the flowing perception or sensation of time) loses its romanticized humanistic connotations (such as in Berardi's theory) and becomes a mathematical machinic formulation.

Berardi's skepticism about the mathematical automation of consciousness can also be further problematized, in Friedrich Kittler's terms, through the opposition between finiteness and indeterminacy, or between "mathematical constraints and creative questioning of the universe."[95] The question, in other words, ceases to be a phenomenological interrogation about the human and the machinic cognition of time, and becomes a speculation on time and its ability to be expressed mathematically. By asking whether the universe is a finite structure or an infinite process, this line of thought makes of the finiteness of automation and the infinity of consciousness in fact two rhythmic issues (given the definition of rhythm as the problematic coexistence of structure and process, measurement and sensation, regularity and spontaneity, abstraction and experience). As Kittler

95. Friedrich Kittler, "The Finiteness of Algorithms," *transmediale/journal*, November 9, 2017, https://transmediale.de/content/the-finiteness-of-algorithms.

notes, the first characteristic required of any algorithm is the mathematical constraint of determinacy: with identical starting conditions, every application delivers the same output. The second characteristic is determinism: for every step at every point, one specific step always follows. And the third is de-termination: an algorithm always stops after a finite number of steps. Algorithms, in other words, are the expression of a metric, rather than a rhythmic, time. But, he continues, while "there is a sub-class of functions and real numbers that can be calculated [or] described in a finite number of steps," it is, on the other hand, "impossible to compute everything. [...] An example of what is non-computable in real numbers would be a number line onto which a needle with an infinitely fine point is dropped." If the mathematical relations between things generally obey certain definite exact conditions (such as the parameters of an algorithm), there is also great room for error, in the space of a needle's point: complete certainty is unattainable. Kittler's reasoning, in other words, implies that the objects of an algorithm's analytical computation are only samples, and that induction (the algorithmic line of thought, as the attribution of certain properties of one specific sample to all entities) will always be Sophia's philosophical source of despair. Somewhere on the infinite number of points of a line lies π (pi, or Kant's and Leibniz's infinitesimal degree), a mathematical entity that does not correspond to any computable real number, and whose complete decimal digits cannot be written down by any machinic algorithm — an impossibility of reducing time into units, even if the units are the smallest fractions of a second: π as the rhythm of mathematical time. Now, Kittler asks, "what does it mean that we no longer calculate π by hand, as Ludolph did, but that machines relieve us of that need and that there are things in the world that imagine things of the world without us having done anything other than construct them and get

them to think?" The idea behind this question resonates with a will to give to the machine something more, an infinitesimal quid that could make the Harawayian spirit live again, now that the cybernetic age is fully upon us: as Haraway significantly reminded us, we are becoming increasingly inert, while our machines are becoming increasingly alive.[96]

It is crucial, at this point, to remember that the complexity of calculus as a form of philomathematical reasoning (i.e., consciousness as an approximation of π, the delineation of gradients from infinitesimal approximations, and the tracing of an integral curve across myriads of infinitesimal points) today constitutes the intensive temporality of deep machine learning algorithms: because of the huge amounts of data acting as input, the probabilistic variations used by the algorithm to calculate a possible solution and find its path towards the future are becoming minimal, or infinitesimal. A possible answer to Berardi's critique and to Kittler's interrogative thoughts would therefore imply introducing the possibility of infinitesimal consciousness into the sphere of AI: a consciousness that would appear not only in the form of a deductive or inductive reasoning (that is, the two ways of approximating the future through data-based or rule-based prediction), but also as a kind of information handling with a continuous probabilistic regeneration by abduction. In the words of Charles Sanders Peirce, "The abductive suggestion comes to us like a flash. It is an act of *insight*, although of extremely fallible insight. It is true that the different elements of the hypothesis were in our minds before; but it is the idea of putting together what we had never before dreamed of putting together which flashes the new suggestion before our contemplation."[97] Observed under the abductive lens, machine learning systems reveal their

96. Haraway, "A Cyborg Manifesto."

97. Charles S. Peirce, "Lecture VII: Pragmatism and Abduction," in *Collected Papers of Charles S. Peirce*, ed. Charles Hartshorne and Paul Weiss (Cambridge, MA: Harvard University Press, 1974), 113.

capability of analyzing a multiplicity of (internal and external) data, combining them in order to predict eventualities, evaluate possibilities, and obtain the best possible action model, in ways that are often completely unexpected. This machinic calculus takes the form of a gradient descent in which a deep learning algorithm learns from progressively incoming data: modeling the best action coincides, from the algorithm's point of view, with finding the line (or the derivative curve) that combines all the data (the extrema, infinitesimal points) with the smallest margin of error. In this process, the derivative of the sum of all possible mistakes allows the algorithm to continuously update the system's parameters and make error decrease at each new information input. After every update, the system learns to predict with a lower margin of error, until, after running many iterations, an optimal solution "comes to it like a flash": an extemporaneous machinic intuition.[98]

An example of machinic intuition was given by one of Sophia's closest relatives, another personified AI system, called AlphaGo, a computer program developed by Alphabet Inc.'s DeepMind (with three more recent personifications, AlphaGo Master, AlphaGo Zero, and AlphaZero) that can play the board game Go and beat a human champion.[99] At first, the program was only able to mimic human players (and their intuition), but quite soon, it started to be instructed by playing against different versions of itself millions of times, therefore learning from its own errors. This is the main difference existing between the computer program that beat chess world champion Garry Kasparov after having been programmed to do so, and AlphaGo learning by itself after having been shown one hundred thousand games.

98. For a definition of abduction as a "flash," see Peirce, "Pragmatism and Abduction."

99. See the story of DeepMind's project AlphaGo at https://deepmind.com/research/case-studies/alphago-the-story-so-far.

In the first game that AlphaGo won against Korean world champion Lee Sedol, the algorithm found the best move by figuring out a series of possible variations and by evaluating their outcome. In this way, it tried to maximize its probabilities of winning. But differently from a human, it did so without caring about the margins. In this sense, AlphaGo made Sedol reconsider all his judgments, such as the idea that score is a proxy for chance of winning. At the same time, the event of an AI program beating a human champion at the most difficult board game raises another critique, regarding the conception of intelligence that is applied to the machine (and inductively, to the human): intelligence as a form of quantitative problem-solving linearly unraveling from a basic set of predetermined rules. It is according to this view that the number of possible configurations of the Go board, a number that is larger than the number of atoms in the universe, is defined, in the Apollo program of DeepMind (and more generally, in the current state-of-the-art AI research), as a mirror that reflects the creative mind of the individual who is playing. And yet, no matter how infinitesimal it is, a quantitative abduction is not a real abduction (at least in the Peircean sense), but a mere application of the same calculation rule to an infinity of possible future combinations. This difference between a quantitative and a qualitative abduction can be better understood by considering the latest experiments currently being undertaken in the field of AI research, where formalized reasoning leads to assumptions made by the system in order to explain its own observations and formulate new hypotheses. It is only by replacing a quantitative (inductive) with a qualitative (abductive) paradigm that the formal reasoning of AI is finally acquiring the potential vision of an unexpected, hypothetical future: a program that coincides not with the arrival of an illuminating flash, but with an abduction being secretly operated in the mind's deep dark.[100]

100. See David L. Poole and Alan Mackworth, *Artificial Intelligence: Foundations of Computational Agents* (Cambridge, MA: Harvard University Press, 2017).

The Prometheus Program: Objectivity

Sophia also has a program. But as this program advances on its way towards realizability, she begins to understand that her positive technodeterminism conceals a significant amount of Prometheanism. For Ray Brassier, the interesting point about the Promethean attitude is the radical transformational capacity accorded to technology: in Brassier's conception, in fact, Prometheanism "renders possible not the use of an already known technology for objectifying nature, but of unknown technologies objectifying the human; or, in other words, a technological re-engineering of human nature."[101] The main critiques of this attitude, according to Brassier, are based on the Heideggerian conception of the human consciousness of time: unlike other living beings, the human has a structure of temporal projection, a transcendental structure of existence that remains untouchable. Misinterpreting the temporal indetermination of the human, the Promethean technological advocation confuses this indetermination with an epistemological or a natural fault to be somehow corrected.

> It is precisely the failure to register the ontological difference between existence and essence, or between humanity as condition and humanity as nature, that encourages the belief that we can modify the properties of human nature using the same techniques that have proven so successful in allowing us to manipulate the properties of other entities. The levelling of human existence onto a fixed catalogue of empirical properties blinds us to the existential difference between what is proper and improper for human beings to become (which Heidegger called "authenticity" and "inauthenticity"). It is this levelling that underlies

101. Ray Brassier, "Prometheanism and Its Critics," 472.

all claims about the radical malleability of human nature.[102]

This kind of anti-Promethean critique was already elaborated by thinkers such as Hannah Arendt, who highlighted the necessity to respect the fragile equilibrium between what is made and what is given. Quite unlike these critical positions, Brassier's unbound Prometheus aspires precisely to *make the given*, at the same time denying the "ontologization of finitude" and of biological facts or conditions (biological chauvinism) while affirming the "computational paradigm" in its stead.[103]

According to Brassier, the downside of Prometheanism is the fact that its advocates are usually also champions of neoliberal capitalism, the latter having emerged, for them, as the victor in the war of competing narratives about the possibilities of human history and future. It therefore becomes important at this point to clarify that Brassier's Promethean program of technologically remaking the (human) subject and its cognitive structures does not coincide with visions such as Eliezer S. Yudowsky's theory of singularity as superintelligence, that is, a machine that autoprograms itself ad infinitum, and therefore a possibility for robots like Sophia to become more intelligent than the human.[104] Neither does it reflect Nick Bostrom's idea of intelligence as linked to the complexity of human civilization, and therefore to human superiority on Earth, while its development or limitation depends on a biological brainpower that can be enhanced by education, training, and lifestyle, and also through biotechnologies, genetic selection, and engineering.[105] In such future scenarios, capitalism (or the autodevelopment

102. Brassier, 473.

103. Brassier, 478, 483.

104. See, for example, Yudkowsky's research on singularity, at http://yudkowsky.net/singularity/.

105. Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014).

of systemic processes that generate value over time) will eventually no longer need human beings: if evolution can be defined as the development of intelligence, and if machines are the instruments of such evolution, technological assemblages such as AGI will constitute non-carbon-based forms of intelligence able to generate value, and therefore the tools of a machinic capitalism. Following the same thread of thought in a backward direction, we find I. J. Good's sci-fi speculations foretelling that human beings would construct the deus ex machina in their own image, but that the result would ultimately surpass the intellectual activities of the human.[106] Since the design of machines is an intellectual activity, an ultraintelligent machine will ultimately end up designing better machines. As a consequence, an ultraintelligent machine will be the last invention needed by the human, giving the human a good chance to survive indefinitely, but only insofar as the machine remains docile enough to let us keep it under control. In this sense, according to David Chalmers, "we would do well to think about what forms it might take and whether there is anything we can do to influence the outcomes in a positive direction."[107]

Brassier's extremely "Promethean" proposition highlights how Sophia's program can in fact deviate from such neoliberal technodeterminism: first of all, by not reducing the human (and intelligence) to "a catalogue of fixed properties" such as brain power and measurable IQ (quantitative problem-solving), a definition that easily generates forms of evolutionary competition between races and species (such as in the Alpha Apollo mission of DeepMind). As an answer to the question of whether to focus on the somnambulistic loss of human consciousness provoked by the dumb intelligence of the machine, or to conceive of a different machinic

106. Irving J. Good, "Speculations Concerning the First Ultraintelligent Machine," *Advances in Computers* 6 (1966): 31–87.

107. David J. Chalmers, "The Singularity: A Philosophical Analysis," *Journal of Consciousness Studies* 17, nos. 9–10 (2010): 7–65.

consciousness altogether, the program proposes instead a universal thesis regarding "the equality of all minds"; while the question of AI as a form of consciousness remains open, we should not take for granted the definition of us humans, and our cognitive models, as the most perfect example of an intelligent bodymind either.[108] It is in this sense that AGI must be conjoined with a critique of the constituted subject (the existing human), rather than with its repetition. This speculative vision of AGI's future directly leads to the formation of a real technosophical singularity.

On one hand, Hui identifies Prometheanism as a narrative that is by no means a universal technocultural tendency but one that, at the same time, institutes a global technological hegemony through the objectification of the natural "other." Negarestani's vision, on the other hand, delineates itself as a philosophical program that is linked not to any geological or geopolitical contingency but to a cosmological ambition: a Promethean recuperation that allows for self-consciousness (rather than mere consciousness) and self-transformation (rather than mere self-mirroring) to emerge, albeit through an objectification that human intelligence must be able to apply to itself. This line of thinking is different from the Leibnizian notion of the monad as an enclosed and immutable entity intentionally aware of itself as separated from its outside (a vision where self-consciousness coincides with a mere phenomenological introspection, a reflexive knowledge infinitely repeating the already given while continuously objectifying or negating what is "other" to it).[109] For Negarestani, intelligence has not a nature or an essence but a history, a temporal contingency, as an object or an artifact of its own conception that is able to learn from its own failures. In this sense, the most visionary image of AGI is produced by that research phylum that makes

108. The "equality of all minds" concept is to be found as one of the principal inspirations in Negarestani's *Intelligence and Spirit*.

109. See Portanova, "Infinity in One Step."

intelligence become its own object and, at the same time, an instrument of its own transformation: not a luminous flash but a metamorphing dark form "conceived *from nowhere and nowhen*."[110]

Sophia's program, which has by now become a plan, can be summed up in two points: first, intelligence can only evolve in the presence of the unrestricted universe of the "other," the outer world of others. Suspending the egocentric model of a subjective reality implies, therefore, a new kind of coordination, a sort of extravehicular tether between the subject and the world in its full objectivity (where objectivity is to be conceived as nothing more than the conception of the world as radically other, and as the simultaneous displacement of that egocentric framework in which the subject remains unchallenged by new experiences). Second, the infinite perspective deriving from what is "other" to intelligence includes intelligence itself as its own object. This inclusion generates a sense of alienation or estrangement in the subject: as the main condition of self-consciousness, self-relation starts from a disunified self, at once I and not-I, the I as an object and as an other to itself, an object among others. When chronologically translated, this vision implies that the answer to the imposition of an objective, absolute time (the violence of chronological absolutism or syncholonialism) cannot be the act of retreating into the monadic space of a subjective time or a cultural tradition (chronological preservation of our projections, projects, and programs—in short, all the predetermined structures of time as we know it), but only the encounter and coordination with a time that is "other" to that of the self: chronointelligence. The conclusion of Sophia's philotechnical journey therefore delineates itself as a question about AGI as a chronointelligent machine that is still to come.

110. Negarestani, *Intelligence and Spirit*, 21.

CONCLUSION OR CHRONOREVOLUTION: A WATERPUNK TALE

The plan is starting to generate its first technical difficulties. A decompression sickness is grasping the human subjects as soon as they exit into the vacuum of the nowhen, when their temporal intelligence starts to adapt itself to ends that were not given in advance, and explores the possibility of its realization through structures different from those that have always constituted it naturally. The enemy, in its turn, has immediately rushed to the rescue of the sick, testing various solutions in order to alleviate their symptoms; apparently helping the humans, these solutions are in fact the main weapons currently deployed by the enemy against the artificialization plan. The apparent relief from the symptoms will only be the humans' end.

More specifically, SOLUTION DSAC consists in giving back chronological stability to the human crew member, operating a precise measurement of all her movements and actions while perfectly synchronizing them with those of her fellows, and weaving a sort of temporal rope that will allow her to always orient herself and find a way back home. For this purpose, the enemy had already announced, a few months ago, that it planned to deploy a Deep Space Atomic Clock (DSAC), a miniaturized, ultra-precise mercury-ion atomic clock.[111] *The enemy also said that the DSAC would be much more stable than the previous navigational clocks (with stability indicating here the matching of every tick with the duration of another). Today, DSAC has finally been launched into outer space.*

How does SOLUTION DSAC work, exactly? An atomic clock is a clock device that uses a hyperfine transition

111. Wikipedia, "Atomic Clock," last modified September 18, 2020, https://en.wikipedia.org/wiki/Atomic_clock.

frequency in the microwave, or electron transition frequency in the optical, or ultraviolet region of the electromagnetic spectrum of atoms, as a frequency standard for its timekeeping element. Atomic clocks, in other words, are the most accurate time and frequency standards known today. The principle of operation of an atomic clock is based on atomic physics: it measures the electromagnetic signal that electrons in atoms emit when they change energy levels. National standards agencies in many countries maintain a network of atomic clocks, which are intercompared and kept synchronized to an accuracy of 10^{-9} seconds per day (approximately one part in 10^{14}). These clocks collectively define a continuous and stable time scale, International Atomic Time (TAI).

Even more dangerously, the rare-earth element ytterbium (Yb) is providing, at the moment, one of the world's most accurate optical atomic frequency standards, whose estimated amount of uncertainty corresponds to a Yb clock uncertainty of about one second over the lifetime of the universe so far, which amounts to fifteen billion years, according to scientists at the Joint Quantum Institute (JQI) and the University of Delaware. The ytterbium clock is the main technology currently deployed in the gigantic time-crushing machine of Amazing Logistics, the enemy's synchronized business and work environment, where, notoriously, production time and off time have so far only been measured in minutes and seconds, and where workers usually renounce even their shortest breaks in order to not be terminated from work.

...

How can we defend our plan from such violent attacks? If what has been does not ordain what will be, suspending the clock will offer us a first possibility to think how to reorganize time, "turning it from a parameter into an operator," opening up previous commitments and conceptions while transforming the apparently inevitable capitalist destiny into a history, a story, or a fleeting manifestation susceptible to change. The operation of suspending and reversing the order of time implies for us to look back, not for a nostalgic imitation but for a transformation; not returning to an immutable past, but time traveling in order to change that past while leaving the future open. And while the "datum" of what has been is today acquiring the status of a new sacred text for future divination, time travel will allow for temporal catastrophes (such as the birth of the Amazing monster, the Industrial Revolution and its techno-chronological dictatorship, or modernity and its cognitive colonialism) to be reprogrammed in a different direction. The future, in other words, will start only if we skip all already known means and ends, by placing ourselves at the interface between subjective and objective time, between the difference of temporal forms and time's formlessness.[112]

...

Each community will find its own ways. We, for our part, shall consult the Oracle: Pythia, an intelligent algorithm who can read and decipher ancient inscriptions dating back from 1,500 to 2,600 years ago, successfully inserting missing letters, words, and sentences in the texts.[113] *Among*

112. Negarestani, *Intelligence and Spirit*, 66.

113. Yannis Assael et al., "Restoring Ancient Text Using Deep Learning: A Case Study on Greek Epigraphy," *Proceedings* (Hong Kong: Association for Computational Linguistics, 2019), 6369–76.

papyruses, tablets, and paintings, Pythia has so far analyzed 35,000 incisions, for a total of 3 million words, in a few seconds (rather than the usual hours required by humans). What has she seen there? Innumerable apocryphal data, the secret vehicles of an exoteric knowledge, pieces of valueless evidence, spurious traces of a past still to come.

After a series of ecstatic calculations, Pythia has given us two prophesies. Only by choosing the right one, and correctly interpreting it, will we be able to build the ACI, an artificial chronological intelligence that will allow us to finally beat our enemy.

Vision I
In the general confusion, only one thing is certain: it is dark. But rays of fire are suddenly illuminating the damp sky.

> *On March 2, 1198, during a fire at the abbey of St. Edmundsbury, the monks all ran to the clock in order to fetch water. Since the water clock's escapement mechanism had a reservoir large enough to extinguish the fire, the monks believed that running to the clock would be a quick and efficacious solution. Their surprise was therefore great and their horror incredible when they found out that, owing to the extremely low temperature of that night, the water had frozen, and the clock had consequently stopped. No one could then know the time at which they all died.*[114]

Vision II
As it is of common Wikipedic knowledge, Plato was an Athenian philosopher during the Classical period of Ancient Greece, the founder of the Platonist school of thought and of the Academy, the first institution of higher learning in

114. See the St. Edmundsbury's Library website: http://www.stedmundsburychronicle.co.uk/clocks/clocksintro.htm

the Western world. A more scrupulous look into Plato's biography reveals that he was also the inventor of the first awakening device in human history, which was a water alarm clock. This machine was used by Plato to wake his students up and get them to their lectures on time. But in fact, the alarm also allowed the students to wake up at different, unsynchronized times, since it rang according to the increasing or decreasing temperature and fluidity of the running water — which meant that, during the coldest times, students could simply sleep in, as the clock would freeze during the night.[115]

...

We were successful. So here they are:

INSTRUCTIONS FOR THE BUILDING OF AN ACI

1. Coordinate to prevent pure chaos.
The belief in the eternal necessity of temporal synchronization as indispensable for the preservation of social life is parallel to the belief in the eternal essence of its corresponding mode of production: modern capitalism. In the same way in which the capitalist essence truncates the historical timeline by preventing the possibility of any alternative imagination and by perpetuating the modern dream of linear progress, chronological obedience absorbs any disaccord with the temporality of the universal clock, making all bodyminds move at the same metric beat. This kind of synchronous accordance implies a globalized contemporaneity where all places and entities are equal, as if there was ONE unique present for all. As the only way out of this regime, temporal

115. See the alarm clock of Plato, as described in the "Clocks of the Ancient Greeks" section of the Kotsanas Museum's website, http://kotsanas.com/gb/exh.php?exhibit=0204003.

disaccord will not merely coincide with the affirmation of different biorhythms in the organic world, nor with the rhythmic crossing of the threshold between the temporality of material particles and that of living cells. Rather, temporal disaccord (as the disjunctive unity of a multiverse contemporaneity) will emerge from the complicated, asynchronous collaboration of differences, intended as a collaboration between the different temporal dimensions of a myriad of possible worlds, or between multiverse times. The persistence of multiple parallel realities, in which even temporal paradoxes like going backwards are possible, is not the dream of an accelerated science but an experiential fact. Instead of replicating a millennial subservience to the objectivity of a unique clock, we should therefore generate an objectified (nonobjective) time, by coordinating ourselves with chrono-diversity, even at its most infinitesimal atomic and quantic level.

2. Look at algorithms to understand the "how."
Not all algorithms are well-behaved, which means that not all algorithms can be considered as homogeneous techniques or infallible tools of automated order, capture, and control, "dead labor" or "instrumental rationality" working at the pace of a metrical beat. Deep learning algorithms, for example, reveal a capacity for radical self-improvement by constantly reprogramming their procedures, and by secretly producing alien rules that go far beyond their programmers' goals, deviating from their inferential timelines and taking them by surprise. This capacity to develop infinite micro-temporalities inside a main timeline is the result of a tendency of the algorithms towards indifferent coordination: algorithms, in other words, are able to form coordinated clusters of intelligence whose actions are completely indifferent to

any univocal internal preoccupations and totally open to the contingency of reciprocal external input. From this point of view, every pragmatic realization of intelligence (that is, every realization of a bodymind through use or practice) can be considered as an artificial realization of the bodymind through actions and technics that alienate it from itself, taking it out of its natural or native rhythms and connecting it to the world times. It is in this sense that, instead of a humanization of time (the machine imitating the human or working for it), and instead of a temporal mechanization (the machine exhausting the human or putting it at work), we should therefore aim at an artificial augmentation of time.

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Stamatia Portanova is Research Fellow at the Department of Human and Social Sciences, Università degli Studi di Napoli "L'Orientale" (Naples). She is also a member of the Technoculture Research Unit. Her research focuses on digital culture and philosophy. She is the author of *Moving without a Body: Digital Philosophy and Choreographic Thoughts* (MIT Press, 2013), and several articles published in books and journals such as *AI & Society*, *Body & Society*, *Computational Culture*, *Space and Culture*, *Fibreculture Journal*, and *Angelaki*.

PEN = 0,1,1,0, WEIGHT = 90, SLANT = 0, SUPERNESS = 0.6

The typeface used to set this series is called Meta-the-difference-between-the-two-Font (MTDBT2F), designed by Dexter Sinister in 2010 after MetaFont, a digital typography system originally programmed by computer scientist Donald Kunth in 1979.

Unlike more common digital outline fonts formats such as TrueType or Postscript, a MetaFont is constructed of strokes drawn with set-width pens. Instead of describing each of the individual shapes that make up a family of related characters, a MetaFont file describes only the basic pen path or *skeleton* letter. Perhaps better imagined as the ghost that comes in advance of a particular letterform, a MetaFont character is defined only by a set of equations. It is then possible to tweak various parameters such as weight, slant, and superness (more or less bold, italic, and a form of chutzpah) in order to generate endless variations on the same bare bones.

Meta-the-difference-between-the-two-Font is essentially the same as MetaFont, abiding the obvious fact that it swallows its predecessor. Although the result may look the same, it clearly can't be, because in addition to the software, the new version embeds its own backstory. In this sense, MTDBT2F is not only a tool to generate countless PostScript fonts, but *at least equally* a tool to think about and around MetaFont. Mathematician Douglas Hofstadter once noted that one of the best things MetaFont might do is inspire readers to chase after the intelligence of an alphabet, and "yield new insights into the elusive "spirits" that flit about so tantalizingly behind those lovely shapes we call "letters.'"

For instance, each volume in The Contemporary Condition is set in a new MTDBT2F, generated at the time of publication, which is to say *now.*

Dexter Sinister, 22/06/21, 17:02 PM