The philosophical disability of reason

Evald Ilyenkov's critique of machinic intelligence

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Present theories of computation and artificial intelligence often claim that philosophy should either discard its principal modes of gnoseology (that is, its theories of knowledge and cognition) and anthropomorphic genesis, or declare philosophical speculation obsolete altogether, since it fails to provide any precise knowledge regarding the most significant contemporary scientific and technological concerns. If post-structuralism doubted the power of philosophy because of its proximity to the sciences and their own discrete discourses, contemporary 'post-philosophies', by contrast, refuse philosophy because of its insufficient knowledge of science and technology.[1]

Two principal contemporary post-philosophical tendencies stand out in this regard. The first is found in cognitivist theories, which posit philosophy as an obsolete cognitive practice, a quasi-mythological narrative that produces fictitious non-scientific notions such as transcendentality, metaphysics, idea, dialectics, the universal or truth. This tendency can be represented by the likes of Thomas Metzinger and Marvin Minsky, as well as cybernetic scholars who argue that mathematical logic should supersede a dialectical one. Others, like the media engineer and theorist Benjamin Bratton, simply describe the sensorics of machinic intelligence without even trying to consider this in relation to any broader context of the humanities.[2]

Another tendency is more subtle and interesting. It posits algorithimic creativity itself as a philosophical procedure. Reclaiming philosophical thought, it confines it mainly to the body of computation. It states that reason itself has drastically changed its intentionality, epistemology and motives with modern scientific and technical breakthroughs. Here, in the works of Luciana Parisi and Reza Negarestani, among others, we come across a series of elaborate standpoints for reconstituting the tasks of philosophy after and as a result of computation.

In this article I intend to consider the premises of thought grounded in computation theory (Negarestani, Parisi) in order to show how in a similar situation – when, in the Soviet 1960s, cybernetic studies were claimed as *the* new philosophical discipline – a communist thought, exemplified here by the writings of Evald Ilyenkov, developed its own militant postulates of what reason is, and why its algorithmic emulation would be impossible.

Reason as functionality

In their recent writings, both Negarestani and Parisi search within the mind, human as it is, for a *function* that would be 'non-human', and which would have no cognitive continuity with the dimension of mind and thought inscribed in human experience, consciousness, history or mortality. Such treatment of the inhumanness of thought, and accompanying theories of autonomous autopoetic intelligence,[3] is not concerned with expanding the human mind towards something cognitively supreme, but rather insists on an entire reconsideration of mind as an inhuman capacity.[4] Referring to Alan Turing, for example, Negarestani argues that there is nothing in the human that could not be abstracted and computationally realised.[5] Not only is a human able to become other in the long run of evolution, but it is able to regard its historical human-ness as other than human.[6]

For Negarestani, mind should thus become first and foremost an exertion of *functions*. Consequently, it is possible to find an appropriate algorithmisation for concept formation, or thought's intentionality, as well as for the application of any meaning. The senses, percep-

tion and intentionality, which were hitherto considered inaccessible to machinic intelligence, can now also be inscribed into the machine and algorithimic computation. Indeed, such functionalism, Negarestani insists, was already present in the philosophical tradition in works by Plato, the Stoics, Hegel, Kant, Sellars, and so on.

Negarestani blames modern continental philosophy precisely for what created philosophy – doubt and the articulation of the incapacities of human reason in the face of the Absolute. Indeed, philosophy, throughout its history from Kant to Derrida, has often emphasised the limits of mind in its striving towards the Absolute and the unthinkable horizons of the ineffable. For Negarestani, however, the ineffability of thought is not about its complexity, in a way which questions the instrumentalisation and optimisation of thought, and therefore chooses to become unthinkable; it is simply mind's failure. As Negarestani argues, philosophy in its critique of metaphysics has only ended in limiting thought with 'arguments about various *disabilities*'.[7] According to this view, what makes human thought significant can thus be realised by different individuating discrete properties, inputs, outputs and realisers. Consequently, it is precisely with 'algorithmic intelligence' that a truly productive speculation and thinking can begin.

In her various writings, Luciana Parisi goes even further and disavows the stereotype according to which cybernetics is confined to mere computation.[8] This stereotype has traditionaly been a motivation for doubting the thinking potentialities of computation on the part of philosophy and the humanities in general. However, the principal condition of computation, Parisi insists, is much more complex and is based on the premise of *the incomputable*; a term borrowed by Parisi from the media theorist Gregory Chaitin. The principal presumption in this apology for computation is that, according to Parisi, unlike the cybernetics of the 1950s (first-order cybernetics), which was based on prearranged units, second-order cybernetics (and all the more so, present forms of automation) has changed: it can precisely analyse and compare. As Parisi argues, 'automation can be dynamic and not dependent on a prescribed set of calculables'. Such is the case with algorithms for the second generation of cybernetics, where things 'can run their course with no apriori prior set of rules determining them'.[9] The

principal proof for this, according to Parisi, is that, in any computational process, output is greater than input and not necessarily tied to it: 'Between input and output entropic transformation of data occurs. This number of incomputable is infinite'. Incomputability (and generally the algorithimic mode of thought) 'is not simply a break from reason, but reason expanded beyond its limits to involve the processing of maximally unknown parts that have no teleological finality'.[10]

In this new alien mode of thought, as opposed to the old, 'organic' and critical one, incomputable infinities proliferate within (and simultaneously with) the computability of algorithms, and are able to change initial conditions. These incomputable infinities, not prescribed by any input, can express ends that do not match the finality of organic thought. What is 'new' here is that 'in this dynamic processing of infinities, results are not contained in the logical premises of the system'.[11] Incomputability as the crucial function of reason (which is in fact nothing but the probability of contingency, I would argue) has entered the automated infrastructure of cognition as a new *episteme* and is termed by Parisi a 'soft' thought. This new soft thought – the thought generated by 'undecidable propositions within logic' – aligns, according to Parisi, with Goedel's conception of infinity far better than does a so-called organic, critical thought, which is predictable in its provisions of logic.[12]

In her *Contagious Architecture*, Parisi considers 'autopoiesis' and the incomputable nature of algorithmic proliferation at even greater length. Here she manages to show that the autonomy of incomputable algorithmic probabilities is not simply an abstraction extracted from reality, in the vein of, for example, Felix Guattari's asygnifying semiology.[13] The autonomy of algorithmic propabilities has lost its epistemic bond with abstract logic and meta-semiology. By contrast, Guattari's abstract logic and meta-semiology – even when they happen to be *detached from reality*, and despite forming contingent and autopoietic series, extracted from reality – retain a correlation with that reality. In other words, Guattari's asygnifying semiology still preserves a certain connection with reality even in the act of its disjunction from reality (the signified). Here, abstraction as the act of detachment and autonomisation from reality is evident and explicit. By contrast, in the case of algorithmic probabilities, the very act of disjunction from reality is lost and redund-

ant. The generative realm of algorithms is pure creativity without any analogy, or *any act of detachment* from reality. Parisi is therefore right when she says that the incomputable loops of algorithmisation can engender 'realia', which have no connectivity whatsoever with the organic world, life, human being, 'organic' thought, and so on.
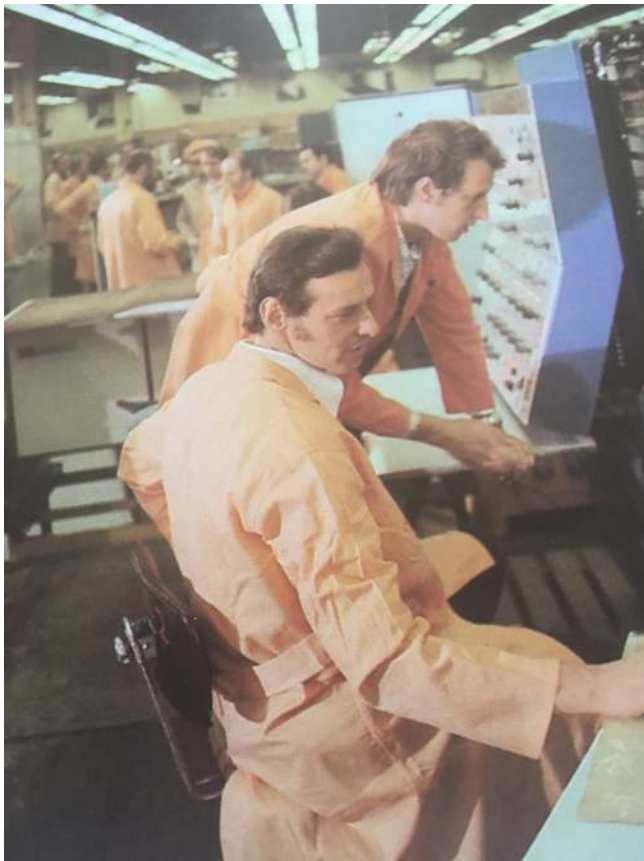
To put this another way, what is created in algorithmic design is not an alternative picture of the world, or a gesture of denial of this world, or a transformation of it; it is just a soft or liquid chain of objecthoods engendered almost *ex nihilo*. It is worth noting, then, that the immanence of abstract units in Guattari cannot be smoothly translated into the type of immanence of algorithimic generativity that Parisi describes, because Guattari's mathematical, virtual and semiological abstractions continue to be logical essences.[14] (That is to say, Guattari's alternative semiology and its distinctive terminology – rhizome instead of structure, abstract machines instead of phonocentric enunciation, asygnifying diagrammes instead of signification chains – still presuppose references to the realm of logic.) The algorithmic realm, conversely, is a set of directives, prescriptions, functions and feedbacks; its functional role is epistemically something other than logic and abstraction. This is

why Parisi constantly reiterates the extent to which *prehension* and *pre-emptiveness* are important for this mode of production. In this case, what is created in algorithmic generativity precedes any world, or any word and reflection on it. Such pre-emption randomly abducts the potentialities of a world, which could have been eventually formalised by logic a posteriori. The semantic potentialities are pre-emptively abducted, withdrawn and algorithmised, before any reflection on the world, life and reality takes place. The proper case of such pre-emption is the agency of incomputable algorithms, in so far as they create bubbles of self-sufficient creative redundancies. In order for this quasi-creative 'vicious' infinity to acquire any creative sense, one has therefore to defy human subjectivity and reason, as these self-generative algorithmic immanences precisely *cannot be* creativities for human imagination and reason.[15]

Parisi's focus on the randomness of final outcomes and outputs – outcomes and outputs which are not projected in inputs – might remind one of, for example, Deleuze's treatment of the event, or his poetics of the throw of dice. Yet for Parisi the incomputable, despite being infinite, should remain completely discrete and countable, even when it is only a potentiality. In *Contagious Architecture*, she seeks to demonstrate how the incomputability of algorithms is nevertheless a discrete unity and 'always corresponds to a quantity'.[16] The incomputable is not, then, 'the unthinkable'. It does not imply any stoppage of 'the machine' or its fatal error, as is the case with Deleuze's speculations concerning a halt inscribed in the machine.[17] The incomputable is simply the still unapplied options of data which have a chance to be generated without being prescribed in the input. Arguably, the fact that computables potentially contain incomputable infinities, which are even immanent to the computables, does not, then, make that very 'incomputable' a confirmation of a philosophical paradox. Parisi's 'incomputable' does not exceed the *discreteness* of reversible, incompressible data. 'The incomputable' is simply the potential data not yet engaged, but implied as the capacity of the algorithmic input to generate unpredicted infinite chains of data, which, despite not being prescribed, can still emerge contingently and autopoetically and be at work, potentially or actually.

In fact, this disjunction between input and output, as generating incomputable infinities within the network,

was already revealed by Warren McCulloch and Walter Pitts in the early 1940s. When trying to deduce 'how we know what we know', they suggested getting information about the inside of the brain in order to emulate the neural diagram of how perception evolves. As Slava Gerovich relates, McCulloch and Pitts constructed for this an artificial neural network that could represent logical function, and where, conversely, any logical function could be translated into a neural network. By this they wanted to prove that knowledge has a neural construction and that any logical function can be implemented in formal neural networks. In a nutshell, they sought to deduce the brain's input, the 'black box' (the imprint of facts about external world inside the brain), from its outputs (our perception). Yet, the epistemological ambition of their project failed. As Gerovich writes, McCulloch and Pitts were thus forced to acknowledge that 'from the perceptions retrieved from one's memory, it was not possible to deduce the "facts" that caused those perception'.[18] Nonetheless, McCulloch and Pitts continued to deny this failure. Instead, they simply contended that 'the limitations of their formal model of the brain confirmed fundamental limitations of our knowledge of the world'. Meanwhile the only discovery obtained through the experiment was that 'even if we cannot know the world, the nervous system can at least compute infinite numbers as a universal logical machine'.[19]

We see in this experiment how the epistemological failure to compute knowledge and cognition, i.e., the incommensurable incomputability of thought (the inability to compute input from output), was ultimately ignored and simply superseded by the capacity to produce infinite and contingently produced data at the output *irrespective of input*; this infinitely produced autopoetic data is the very *incomputable* described by Parisi, and it is nothing but infinite number potentially circulated and emitted by the neural network.

Reason's disability

As Paolo Virno points out in his *Multitude Between Innovation and Negation*, a human being, unlike animals, is destined to *neoteny*;[20] that is, the retention of protective capacities for surviving in natural environments – a condition in which the existence of the human species is grounded. This insurmountable neoteny of the human species provides the motivation to produce a second nature – culture, language and intelligent and technological worlds – as the form of inherent incapacity and weakness of the human as an animal. From this perspectice, a human being, then, is a deficient species unable to adapt to its natural environment within and by means of its own morphology of species being. A consequence of such disability is the demand for thought to be general and to evolve in concert and dependence with others, in common. Hence, the young Marx's idea that communism cannot but be a necessity for nature inhabited by a deficient human species, unable to integrate into nature by means of merely its own morphology. In this case, a projection of the universality of human existence is a necessity deriving from the phylogenetic weakness of a human being, rather than, as it is often read, a pretension to power.[21]

In his text, 'Where does the Mind Come from', Soviet philosopher Evald Ilyenkov recalls how Alexander Suvorov (a pupil at the Zagorsk Internat for the blind and deaf,[22] who later graduated from Moscow University and defended his PhD dissertation in psychology) was giving a speech before students and was asked the following question: 'Your case contradicts the old premise of materialism, according to which all that gets into mind is necessarily developed and provided by senses. If your senses are damaged, if you can not hear or see, how could your mind develop?' The question was transmitted to Suvorov via dactile alphabet, and he answered into the microphone: 'and why do you think that we do not hear and see? We are not blind and deaf, we see and hear by the eyes of all our friends, all people, all humankind'.[23]

We see in this example an argument for the early Marx's idea that the human emerges only after privatisation and selfhood are surpassed in favour of generic being or *Gatungswesen* – which is often translated as species-being but which, in fact, implies the condition of the *non-self being* producing the potentiality for the generic. (I will return in a moment to the ways in which, I think, this category of the *non-self being* is connected with the speculative tools of generalisation as against formal abstraction.) Ilyenkov's example of the deaf and blind thinker who sees, hears and even thinks via an other's sense, brains and thinking provides an example of how in fact the gravest deficiency enables development of thought through socially-based, mutual activity:

in this case, the lack in the self entails, for Ilyenkov, the necessity for the other-self, and hence establishes the principle of an other-determined non-self being that grounds the generic being.

Evald Ilyenkov developed his own philosophical gnoseology from the late 1960s when the discoveries of quantum physics and cybernetics were much occupying the minds of a Soviet intelligentsia, and were promising, like today, to resolve numerous issues concerning sociality, politics and ontology. Since his arguments dispute the pretension of 'post-philosophies' either to dismiss philosophy or to promote post-philosophical premises as the 'new' or proper philosophy, they acquire, I want to argue, a new relevance today, in the light of contemporary tensions between critical theory across the humanities and the new post-philosophic theories that have sought to ground themselves in the hard sciences or in cybernetics.

In the Soviet 1960s and 1970s a new generation of mathematical logicians and cybernetic scholars – some from neurophysiology and some from linguistics and economics – tried to endow cybernetic discoveries with the political stakes of Marxist philosophy.[24] The main strategic method for claiming cybernetic theory and informatics as philosophy was in positing systemic theory and computation as dialectical procedures; cybernetics had to acquire, that is, a broader philosophical conceptualisation than simply being an applied field of computation. Veniamin Pushkin and Arkady Ursul in their *Informatics, Cybernetics, Intellect* (*Informatika, Kibernetika, Intellekt*, 1979) discuss the attempt of cybernetic scholars, in this vein, to claim information as the attribute of matter, as its principal reflection (*otrajenie*) and not simply matter's systemic feature among many other features. In this effort one can clearly discern, in the context of a Soviet academia for which only philosophy could have a proper social and ideological influence, the striving to endow cybernetic research with philosophical authority. If Dmitry Pospelov and Modest Gaaze-Rappoport's book *From the Amoeba to a Robot* (1987),[25] for example, was only a study of systemic isomorphism between biophysics, neurophysiology, robotics and social psychology – between reflexological behaviour and the systematisation and modeling of information – Pushkin and Ursul's book already attempts to inscribe informatics (or a theory of cybernetics) into a broader field of philosophical

gnoseology.

In fact, despite stating that philosophy and cybernetics have different goals of generalisation, Pushkin and Ursul nonetheless argue very strongly in favor of positing cybernetics as an epistemic part of Marxist ideology and materialist dialectics. In this respect, they make three convincing points to counter the taboo against considering algorithmic intelligence as a form of thinking reason.

First, cybernetics, along with the control and management of systems, presupposes self-development (*samorazvitie*) and self-regulation (*samoreguljazia*), becoming self-learning in computation and cybernetics. From this point of view, self-development (or self-regulation) of matter, and generally any form of self-regulated material immanence – for example, blood circulation – is *already* a mode of cybernetics; in as much as the autopoesis of biological organisms is considered isomorphic with the autopoesis of systems and networks. Consequently, if one assumes that development is synonymous with dialectics, then the cybernetic coding of various forms of development can also be considered dialectical.[26]

Second, if consciousness is no longer a psychic category in its Marxist conceptualisation, but is determined by material processes and social environment, then cybernetics can help to undermine the principal arguments concerning the supposed impossibility of automating consciousness and of translating it into an algorithmic modeling. This is because, in the long run of evolution, consciousness has developed into a socio-neural system. Consequently, if an individual is part of the social system, then the system can regulate or model consciousness as its product.[27]

Finally, cybernetics is able to undermine the main argument on the part of philosophy that mathematical logic and the hard sciences only engage an instrumental rationality (*Verstand*), rather than the complexity of reason (*Vernunft*). Pushkin argues that, in its dialectical connection with ratiocination, reason over time inevitably becomes formalised and hence develops into ratiocination; in this case ratiocination is merely a former reason; consequently, by denying ratiocination the right to count as thought we limit thought itself.[28]

It is such premises that the communist arguments developed by Ilyenkov in his four texts written on machinic intelligence and philosophy – the two pamphlets 'The Mystery of the Black Box' (1968) and 'The Notes of

the Bezumtsev' (1978), the didactic essay 'Machine and the Human: Cybernetics and Philosophy' (1966), and his seminal book *Lenin's Dialectics and Metaphysics of Positivism* (1980) – are intended to counter.

First, Ilyenkov argues, it is true that all biological internalities, blood circulation and digestion are self-regulated developing systems; but they cannot be regarded as dialectical only on the grounds of self-development. This is because dialectics implies a relation with the phenomena external to self-developing systems. Interestingly, Pushkin himself acknowledges that the autonomy of systemic self-regulation, on the one hand, and Pushkin's own emphasis on the priority of the human subject in navigating neural networks, on the other, don't go together. If dialectics implies a constant dis-identifying junction between the self and the non-self, then self-regulated systems and their self-developing autonomous immanences cannot be regarded as dialectical.

Second, even though Pushkin acknowledges the so-cial dimension of consciousness, he nevertheless treats it as an evolutionary development of the brain, that is, still determined by reflexes, and the source of which, despite all its social extentions, remains in the brain. By contrast, according to the Marxist interpretation of consciousness (for example, in Vygotsky's psychology, or in Ilyenkov's own dialectical logic), consciousness is non-individual, external and generic/general by definition, i.e., the brain has always been a secondary, applied organ, both for consciousness and language.

Third, reason and ratiocination do not form a unit guaranteeing a necessary transmission of one into another. Thinking does not necessarily entail ratiocinating formalisation, and rationalising formalisation might not necessarily lead to any new intuitive leap of a thinking mind. Consequently, even if ratiocination remains reason in its formalised variation, within this formalisation ratiocination qualitatively changes to the point where it is no longer a thought procedure and its automatic reversibility into thought is not possible.
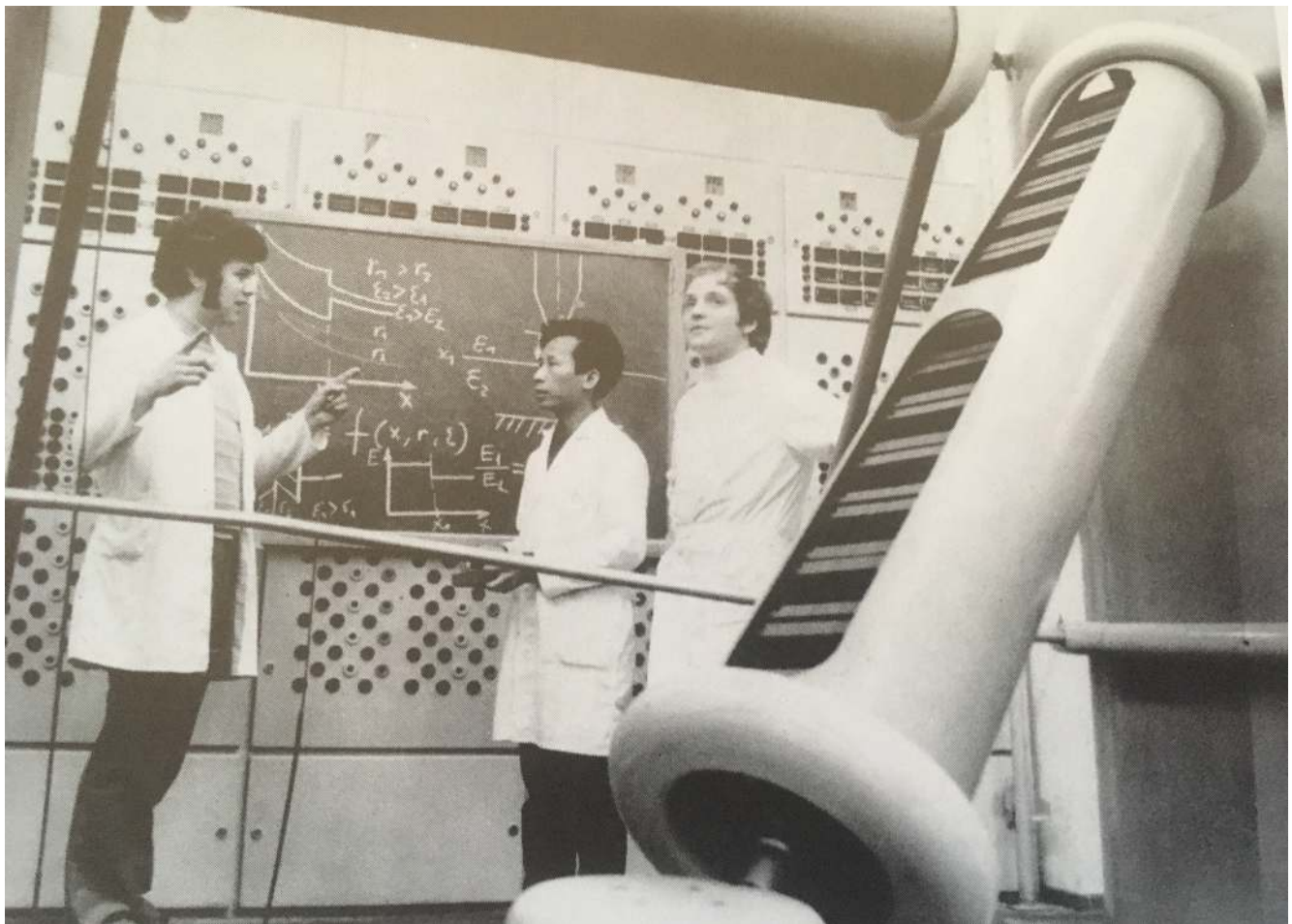
Even in his last book *Lenin's Dialectics and Metaphysics of Positivism* (1980),[29] Ilyenkov, referring in particular to Lenin's 1908 *Materialism and Empiriocriticism*, continued to reiterate his arguments as to why philosophy should not simply be identified with the hard sciences. As he argues, mere data cannot be cognised without gnoseological means of generalisation—and generalisation always entails dialectical contradiction. From this point of view, dialectical tension between the abstract and the concrete cannot be resolved via techno-naturalist isomorphisms; moreover, there can be no isomorphisms between cybernetic, biological, physical laws and their application to social life.

The context in which Ilyenkov was writing the above-mentioned texts was one of anxiety that philosophical gnoseology might well be superceded by intelligence programs and computational algorithms. Indeed, by the time of his pamphlet, 'The Notes of Bezumtsev', in 1978, numerous leading bureaucratic positions in Soviet academic philosophy and the humanities were occupied by former physicists, engineers and scientists.[30] Importantly, Ilyenkov's concern was thus not grounded in any obscurantist refusal of research into artificial intelligence, which for him was an indispensible technical complement to thought; but in his fears that dialectics as the principal philosophical method indispensible for a *communist* society was being displaced by positivist, discrete methods of quantification that were more applicable to the society of bureaucratic capitalism.

'The Notes of Bezumtsev' are written on behalf of a parodic character, a PhD of 'any' sciences, who is bored by all existing scientific fields, and who, in search of a new discipline, decides to combine canine expertise with cinematic theory (kino) to construct a new meta-theory of kinologia (*kinologia*). The science of kinologia would generalise not only dogs but those who generalise dogs in relation to another discipline: cinema. Ultimately, Ilyenkov's fictional pseudo-scientist lists several academicians he intends to collaborate with, which happen to be the distorted names of some of the most renowned Soviet cyberneticians of the 1970s: Victor Glushkov and Mikhail Rutkevich.[31] The main character's name in the pamphlet is Upriamzev (the obstinate); a direct reference to Boris Ukrainzev, an engineer and constructor who took charge of the Philosophy Institute of Academy of Sciences in 1974. As Andrei Maidansky writes in his foreword to *Ily-*

enkov's Philosophy and Contemporaneity, Ukrainzev took up a career in philosophy after holding several party positions, including as head of one of the ideological sectors of the CPSU Central Committee. Having become the director of the Philosophy Institute, Ukrainzev founded and headed there the section devoted to the philosophical problems of cybernetics. According to Maidansky, 'for Ilyenkov appointing Ukrainzev as the Philosophy Institute director had devastating consequences. Ukrainzev was an embodiment of all Ilyenkov hated – ideological dictatorship combined with militant philosophic ignorance, justified by the newest achievements of contemporary science'.[32]

Similarly, in *The Mystery of Black Box*,[33] a pamphlet published in 1968, Ilyenkov created a technocratic dystopia in which there is a total supercession of reason and thought by machinic intelligence. The text is readable as seeking to reveal those parameters of dialectical logic that cannot be hijacked by algorithmic ratiocination. *The Mystery of Black Box* touches, in this way, upon some of the most crucial issues which are at stake today, I would argue, in the inquiry concerning what reason is. What are those components of human reason that cannot be emulated by any machinic intelligence? Is machinic intelligence able to become a sovereign autonomous autopoetic Subject, the epistemic nature of which is different from the human mode of speculation, or does it remain a complement of human reason? In other words, precisely those questions that Negarestani and Parisi claim to answer in their recent texts.

In the story told in Ilyenkov's 1968 pamphlet, a cybernetic scholar Adam Adamich decides that the human brain possesses no essential differences from machinic computation. Being sure that a machine has more chances to augment its intelligence than the very slowly developing mind of man, he invents an artificial intelligence intended to accelerate thinking processes. It emulates thinking more efficiently than the human brain. All those arguments about the qualitative difference of human intelligence from machinic intelligence, as represented by such categories as reason, will, the ideal or the sublime, are rejected by Adam Adamich as so much obsolete mythology; a mythology which was once mistaken for philosophy. The machine of augmented intelligence created by the scholar gradually proliferates into a broader neural system, allowing each machine to acquire

the capacity to autonomously implement self-learning and self-improvement.

A problem however arises when one of the most advanced machines – 'a thinking ear' – reaches its ultimate goal: it 'learns' to hear everything on the planet; but since there are no sounds in the cosmos, its further perfection becomes unnecessary, whereas the algorithm of amelioration inscribed in its coding incessantly instigates the machine to develop further. This situation creates a contradiction: perfection is an unending capacity of an artificial intelligence, but there is no need in it. Eventually, in order to resolve such contradiction, the neural system establishes the authority of a 'Black Box': a meta-intelligence machine, which simply neutralises all contradictions, and in which all excessive data can vanish when not needed. Thus, when any other machine starts glitching because of contradiction, the Black Box immediately neutralises the problem. The Black Box becomes, in other words, a device to ingress and devour the excesses of algorithms and data that were not logically necessary, but that had to proliferate as a consequence of the infinite capacity of algorithmic outputs – quite similar, that is, to *the incomputable* as described by Parisi.

In *The Mystery of Black Box*, ultimately, the inventor of the system, Adam Adamich, is blamed for excessive thinking; the machines decapitate him and substitute his head with a device for data memorising. The didactic conclusion is that the perfection of computation has been reached, but the infinity of production that was inscribed in the machine became unnecessary. So, paradoxically, infinity, when it stops being a category of thinking and dialectics, and is regarded as a mere flow of data, cannot manifest its true nature, which should be dialectical and contradictory. In the search for the guaranteed limit to infinity, machines reach the condition of the absolute end of thought, which coincides with the permanent blankness of the Black Box.

Despite the fact that *The Mystery of Black Box* was written in the late 1960s in the very different context of Soviet academia, the principal technical remedies in the augmentation of mind that it features are actually very similar to those found in current theories of computation. These might be summarised as follows:

1. A capacity for self-perfection, acceleration and self–learning by the machine.

2. The *discrete* character of algorithmic tasks and the evic-

tion of any blurred, contradictory inputs, which might block the output.

3. The infinity of those discrete data.

4. The total division of activities and hence of labour, as a consequence of the extreme discreteness of algorithmisation.

5. The autonomy and autopoeisis of machinic intelligence.

While doubt and contradiction (or the 'disability of philosophy') diminish the efficiency of reason and make it powerless in post-philosophical theories of mind or of the brain, for Ilyenkov it is precisely these traits that construct thought. The mind's 'disability' is inscribed into the mind's ability. This disability is surpassed not by means of an augmented storage of knowledge or of cognised data and thought's functionality. Rather, it is an awareness of the disability of human reason in its treatment of the contradictions of reality that is able to redeem such disability. Moreover, thought's inevitable disability, perishability and its bond with human neoteny – that is, the retention of protective capacities for surviving in natural environments, as a condition in which the existence of the human species is grounded – does not contradict its quest for the Absolute.[34]

As Ilyenkov often repeats, philosophical and dialectical phenomena are spiral-like or snowball-like – constantly on the move and hence indiscrete as selves. The common good, labour, reason or culture are, as such, not autopoetic, but realise themselves as '*other-determined non-selves'*. Autopoiesis implies that the organism remains the self, even in the surrounding of an environmental outside and in exchange with it, whereas the above-listed phenomena – common good, labour, reason, culture – presuppose one's positing as non-selves. 'The other self' in this case is not simply an outside of the self, but the formative principle of the self as of the non-self, of non-identity. From this perspective, it is impossible to algorithmicise thought, since thinking is not confined to the moves in a neural network, or within the brain alone, but evolves externally including the body with its senses, its involvement in activity, engagement in sociality, and other human beings of all generations and locations. Consequently, if one were to emulate an artificial intelligence or thought digitally, one would have to create an entire machinic civilisation (one that would, additionally, be completely autonomous and independ-

ent from the human one).[35] At the same time, the very idea of programing a human consciousness or a thought as input is unimplementable, since there is not a single moment when a human being and her reason would have a stable and discrete programmatic interface that could be used as an input. As Ilyenkov argues, if there is any *function* of thought, it is in surpassing that function. As such, even if computation inscribes within itself *the in-computable* as its autopoetic potentiality, it would not be able to pre-empt the concrete paths for dealing with contradiction, as the requirement of algorithmic logic is in either solving or neutralising the paradox, rather than in extrapolating it.[36] As Boris Groys puts it, the sovereignty of thinking procedure is possible only when it is defunctionalised and miscommunicated. Moreover, a truly interesting (artistic) computer would be the one that 'always produces the same result – for example zero – for any and all computations, or that always produces different results for the same computational process'.[37]

Techniques of dialectical othering

Why, in the face of claims to displace philosophy by cybernetic research, should the necessity of dialectical method, specifically, be insisted upon, at least so far as the political ontology of communism is concerned?[38] To start with, for Ilyenkov, dialectics is a specific tool of generalisation (as against formal abstraction) that does not simply distill an invariant from the breadth of empirical reality, but has to bring together mind and body, thing and concept, the concrete and the abstract. Mind and body can exist in equivocality and parallelism – as in Spinoza – or be chained in semiologic series regardless of any topological gaps and divergences. For example, in post-structuralism and Guattarian semiology, the convergence of the conceptual and the sensual/material was implemented through providing one plane of representation for the signifier and the signified. And this was done through a mere dismissal of any semiological incongruence between them: so that the combining of a thing and a sign could take place performatively and not semantically, i.e., without their semantic fusion and overlapping. In dialectical logic, conversely, a thing has to acquire a noumenal dimension too, i.e., it must be generalised in the mode of a 'notion' as well; and, vice versa, the notion (noumen) should have the opportunity to be embedded

and revealed in reality, activity and thinghood.

This is central to Ilyenkov's argument: when a notion is abstracted from things, then things become abstract too. Interpenetration is indispensable therefore, simply because a thing without notion, without generalisation, without being reflected *how it is reflected*, has no proper being. As such, the interpenetration of concept and thing is necessary to surpass such abstraction. Interpenetration between thing and notion can only be implemented by dialectical procedure. Thus, generalisation is a mode of abstraction in which a notion is never torn from reality or thinghood, but maintains a bond with it.

The paradox of unifying mind and matter by means of dialectical procedure is to be found in the fact that only dis-identifying othering can thus lead to generalisation. One can unify and converge thing and concept not by virtue of identification of one with another, but by virtue of each identity being other than itself – the thing being other than itself in its noumenal aspect, and the notion being other than itself in its material concretisation. It is such constant *self-resigning othering* that entails positing both thing and concept in general terms. This is the reason why the thing and its signification cannot be codified and quantified. Such obsession with dialectical monism is in fact a sort of communist absolutism for Ilyenkov, as only (communist) non-monetised and non-privatised economics could provide the above-mentioned mode of convergence of being and thinking. Only in a non-monetised economy are both things and notions incommensurable, non-quantifiable, generalisable. Conversely, the monetary form of commodified things entails and requires formalised, abstract and discrete quantification of things and their signifiers. Philosophy as such becomes a constant labour of non-quantifiable dialectical generalisation, as against numerical quantification and abstraction, which always remains discrete, reversible data and never transcends to an irreversible quality.

What Ilyenkov shows in his earlier (and most celebrated) book, *Dialectics of the Abstract and the Concrete* (1960), is that dialectical logic is not found in mere extraction of logic from the living sphere. Instead, this logic is only found and located *within* the *incommensurable* living sphere of activity. Yet this does not mean that the sum of real phenomena should coincide with the logical essence of those phenomena. This is because Marx's

dialectical logic is qualitative; it presupposes the irreversibility of quality in the dialectical procedure – an approach that differs from the naturalistic non-reducibility and non-compressibility of scientific and empirical data. Non-dialectical logic produces abstract identifications via metaphysical distillation. Dialectical logic abstracts and generalises, but does so by manifesting the living essence of the thing, of the phenomenon, the law of its existence.

It is in this context that *Dialectics of the Abstract and the Concrete* presents a technique of dialectical othering – showing how the being of 'the self' is always 'the non-self' being – which, for Ilyenkov, implies a non-positivist method of speculation, indispensable for communism.[39] Ilyenkov finds a number of examples of such othering in Marx's political economy, thus demonstrating that Marx's analysis of political economy was – contrary to the idea that Marx's famous eleventh thesis on Feuerbach implied a simple detour away from philosophy in favour of social praxis – a model of dialectical logic and in fact itself a philosophical gnoseology. For example, as Ilyenkov emphasises, when Marx defines the logic of value,

he does not do so by extracting some unifying trait from various kinds of value, or by gathering all data about value and distilling one unifying trait out of this – as an algorithmic logic would suggest. Instead, to define the logic of value (as surplus value) he dismisses the realm of value theory altogether to discover its logic in the realm that has never been an exemplary part of value theory. This 'other' realm not related to value theory lay in raw reality and was a non-monetised exchange of one commodity for another one – of one mode of labour with another mode of labour. This non-monetised exchange was regarded as an exception in value theory. But precisely this exception was used by Marx as the specific condition from which to generalise the logic of value. In this case, Marx proved, according to Ilyenkov, that in order to understand surplus value, one had to leave aside the characteristics and functions of value as such, and depart from other phenomena, deeply rooted in raw exchange, in reality, not yet having any articulate signification. In this case, the generalised conceptual essence of one phenomenon (value) was found *in* or *via* another phenomenon (the exchange between various modes of

labour).[40] But such generalisation could have occured only precisely by searching for noumenal logic in the raw reality of trade, by discovering logic in living procedures rather than in already given abstract data about value.

Communism, mortality and reason

For Ilyenkov, dialectical logic as against algorithmic logic manifests a paradox of incommensurability: namely, that the universal (the absolute) and the quest for it in thought persists precisely due to the functional *indiscreteness* of human existence, and the essential *disabilities* of reason and of thought. In its genealogy, philosophy and its speculations on reason emerge with the eclipse of theocracies, of gods and any supernatural creatures. Precisely because the thinking body can no longer rely on God, or supernatural forces, it has to automatically posit its reason as non-individual, generic, universal, interhuman. In fact, the precarious human body-organism, which is described by Decartes in his *L'Homme* as like clockwork, is the disabled body without divine animation or support that clings to reason and thought as the only remedy that would posit it in a general sense.

In his 'Cogito and History of Madness', written around the same time as Ilyenkov's texts, Derrida argued that the Cartesian *cogito* could be interpreted not as the mere hegemony of rationality, but rather as the speculative courage to declare an awareness of mortality, on the one hand, and the capacity to confirm one's not yet being dead due to the still ongoing human labour of thought, on the other.[41] Cogito could be interpreted in this case not as 'I, the rational Subject, think, hence I exist', but as 'I am still not yet dead, and not quite sure about being sane or insane, as God can no longer confirm it; but it seems that, if I am still able to think, I am not yet dead, although constantly on the verge of it'. In fact, philosophical gnoseology since Socrates has never ceased to emphasise mortality as the crucial aspect of thought and reason. Mortality is the outcome of temporality's intensity and fatality without which human reason and its intentionality cannot be imagined. Plato's *Phaedo* as well as his *Apology of Socrates* locate the source of dialectical thought in the acceptance of death by a philosopher. Philosophical gnoseology as well as reason are constructed by human mortality in the attempt to speculatively surpass this mortality.[42] As Boris Groys argues, human reason, as against machinic intelligence, is formed because of the risk of death, or the fear and awareness of death.[43]

From the perspective of a communist thought that seeks to develop its own militant postulates of what reason is, as Ilyenkov argues, this is to say that human reason is not a sovereign power, it is a testimony to staying without any ontological support in neoteny in this world together with others. The necessity to develop wordliness and new secular cosmologies, which are philosophical and political, arises precisely from such weakness, groundlessness and the abandonment of the human – not from the strength of the inhuman, protected by supernatural forces, psychedelic phantasies or digital augmentations.

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Notes

1. Catherine Malabou in a recent lecture shrewdly emphasised the motives for the critique of philosophy in post-structuralist thought, where philosophy was critiqued precisely on the basis of its excessive overlaps with science or with the determinist transparency of theoretical discourse. Cognitivists, conversely, criticise philosophy precisely for its insufficient efficacity. Catherine Malabou, 'Is Science the Subject of Philosophy?', paper at the University of Westminster, 17 January 2019.

2. See Thomas Metzinger, *Being No One: Self-model Theory of Subjectivity* (Cambridge, MA: MIT Press, 2003); Marvin Minsky *The Society of Mind* (New York and London: Touchstone, 1988); Benjamin Bratton *The Stack* (Cambridge, MA: MIT Press, 2015).

3. Autopoiesis as a concept was introduced in 1972 by Chilean biologists Francisco Varela and Humberto Maturana and was meant to define the capacity of a system to self-reproduce and maintain itself. The term is applied broadly in cybernetics, system theory, architecture and sociology, and implies the capacity of non-human intelligences for self-organisation and self-learning without any intervention on the part of a human subject.

4. See the group monograph edited by Matteo Pasquinelli, *Alleys of Your Mind: Augmented Intelligence* (Luneburg: Meson Press, 2015).

5. Reza Negarestani, 'Revolution Backwards: Functional Realisation and Computational Implementation', in *Alleys of Your Mind*, ed. Pasquinelli, 139–157.

6. Ibid., 150.

7. Ibid., 147 (emphasis added).

8. See Luciana Parisi *Contagious Architecture: Computation, Aesthetics and Space* (Cambridge, MA: MIT Press, 2013).

9. Luciana Parisi 'Instrumental Reason, Algorithmic Capitalism and the Incomputable', in *Alleys of Your Mind*, ed. Pasquinelli, 125–138, 128.

10. Ibid., 133

11. Ibid.

12. Ibid., 134

13. Felix Guattari, *Machinic Unconscious*, trans. Taylor Adkins (Los Angeles: Semiotext(e), 2011).

14. Ibid.

15. Parisi *Contagious Architecture*, 38–62.

16. Ibid., 43.

17. Deleuze writes about the machine, and the halt as its symptom, in Gilles Deleuze and Felix Guattari, *Anti-Oedipus*, trans. Robert Hurley, Mark Seem and Helen R. Lane (Minneapolis: University of Minnesota Press, 2011). In particular, see the chapters entitled 'The Machines' and 'The Molecular Unconscious', 36–42, 283–296.

18. Slava Gerovich, *From Newspeak to Cyberspeak: A History of Soviet Cybernetics* (Cambridge, MA: MIT Press, 2004), 76

19. Ibid., 77.

20. Paolo Virno, *Multitude Between Innovation and Negation* (Los Angeles: Semiotext(e), 2008).

21. See Evald Ilyenkov, 'Where Does the Mind Come From', in *Philosophy and Culture* (Moscow: Political Literature Publishers, 1991), 30–43.

22. In 1963 the Soviet psychologists Alexander Mesheriakov and Ivan Sokoljanski founded the Zagorsk Internat for deaf and blind children. They relied on the psychological school of Alexey Leontiev – a disciple of Lev Vygotsky – and were supported theoretically by the Marxist philosopher Evald Ilyenkov. Mesheriakov and Sokoljanski developed the special tactile signal system of dactilologia, which was a developed extension of tiphlosurdopedagogics (a specific methodology for teaching the deaf-blind).

23. Ibid., 43

24. Veniamin Pushkin, one of the pioneers of Soviet cybernetic theory, very clearly shows how expansions in computation and digital engineering had to confirm their fidelity to materialist dialectics in the ideocratic Soviet society. With such adherence declared, one result was that the representatives of cybernetic theory largely supported the bureaucratic interface of Marxist dogmas, and even provided systemic tools to strengthen it. Philosophic gnoseology and Marxist cultural theory could then implicitly be considered redundant. Slava Gerovich provides interesting evidence in his *From Newspeak to Cyberspeak: A History of Soviet Cybernetics* of how the representatives of philosophy of science and of mathematical logic – including Alexander Zinoviev, author of the 'Logic of Science' (1971), among others – ardently delved into the new field of cybernetic theory, but later, by the end of 1970s, having understood that the applied role of cybernetics was meant to subsume the role of philosophy as a supreme science, deserted the field. See Gerovich, *From Newspeak to Cyberspeak*, 275

25. Dmitry Pospelov and Modest Gaaze Rappoport, *From the Amoeba to a Robot* [*Ot Amiobi do Robota*] (Moscow: Nauka, 1987). [All translations from the Russian are, unless indicated otherwise, the author's own.]

26. Veniamin Pushkin and Arkady Ursul, *Informatics, Cybernetics, Intellect* (Kishinev: Shtiinza, 1989), 92.

27. Ibid., 181

28. Ibid., 145

29. Evald Ilyenkov *Lenin's Dialectics and the Metaphysics of Positivism (Leninskaya Dialektica i metaphizika pozitivizma)* (Moscow: Mir Philosophii, 2015). Available in English at https://www.marxists.org/archive/ilyenkov/works/positive/index.htm.

30. Evald Ilyenkov, 'The Notes of Bezumtsev', in *Evald Ilyenkov's Philosophy and Contemporaneity*, ed. Andrey Maidansky (Belgorod: Belgorod Publishers, 2016), 10–14

31. Victor Glushkov, a Soviet mathematician and one of the founders of Soviet computation, became a very frequent author in philosophy journals from the mid-1960s onwards. Mikhail Rutkevich, a physicist by specialisation, was appointed the Dean of the Philosophy faculty at the University of the Urals.

32. Andrey Maidansky, Foreword to *Evald Ilyenkov's Philosophy and Contemporaneity*, 10.

33. Evald Ilyenkov, 'The Mystery of Black Box. Sci-Fi Prelude', in *On the Idols and the Ideals* (*Ob Idolakh I Idealakh*) (Politizdat, 1968), 11–28. Online version: http://libelli.ru/works/idols/index.htm

34. See Evald Ilyenkov, 'Cosmology of the Spirit', trans. Giuliano Vivaldi, *Stasis Journal* 5:2. (2017), 164–90.

35. A. Arsenev, E. Ilyenkov and V. Davidov, 'Machine and Human: Cybernetics and Philosophy', in *Lenin's Theory of Reflection and Contemporary Science*, ed. F. Konstantinov (Moscow: Nauka 1966), 265–283.

36. Interestingly, Alexander Zinoviev, the author of the 'Logic of Science', who in his seminal work tried to construct the logical mathemes of various sciences and their lexicons and methodologies, incessantly reiterates in his book that mathematical logic has an applied, instrumental function and it cannot replace dialectical or philosophical procedures of reason.

37. Boris Groys, 'The Museum as a Cradle of Revolution', *E-flux* 106 (February 2020), available at: https://www.e-flux.com/journal/106/314487/the-museum-as-a-cradle-of-revolution/.

38. There would be an additional question concerning why philosophy could not reside in non-dialectical methods as well; for example, in a Spinozist method. But this would have to be the topic of another text.

39. Evald Ilyenkov, *The Dialectics of the Abstract and the Concrete in Scientific and Theoretical Thinking* (*Dialektika Abstraktnogo I konkretnovo v Nauchno-teoreticheskom Mishlenii*) (Moscow: Philosophy Institute of Academy of Sciences, 1960).

40. Ibid., 65–93.

41. Jacques Derrida, 'Cogito and the History of Madness', in *Writing and Difference*, trans. Alan Bass (London: Routledge, 1978), 31–63.

42. In a recent paper, Franco Berardi claims mortality and temporality as the main traits confirming the incommensurability of consciousness. 'Sensitive Consciousness and Time against Transhumanist Utopia', *E-flux* 98 (February 2019), available at: https://www.e-flux.com/journal/98/257322/sensitive-consciousness-and-time-against-the-transhumanist-utopia/

43. Boris Groys, 'The Museum as a Cradle of Revolution'.