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### An Improbable Science Fiction

#### I

A subject yet to be further explored is the question of science fiction (SF) in Flusser's work. The philosopher wrote many philosophical SF tales, such as "A vaca" and "Chamando a Terra," especially in his Brazilian phase. But despite that, he did not theorize much about the matter, with a few notable exceptions: a brief passage of *The History of the Devil*, the short essay "O bicho de sete cabeças" ("The seven-headed beast," in a loose translation)—a part of his "Bichos" series from the column *Posto Zero*—and the conference paper "Science Fiction" he delivered to the Vienna TV Club in 1988. In a letter to his friend poet Dora Ferreira da Silva, Flusser talks about his SF tales: "I am writing this letter somewhat extracurricularly, to raise a single subject, that of my science fiction. I do not remember if you know about this aspect of my activity and if I have ever read you one of such my essays. In the time of the 'History of the Devil,' I used to write a lot of fantastic stories that always had some scientific pretext, but an, let us say, opposite 'message.' I never thought of publishing them, either because they were too emotional, or because they were more 'études' and sketches than anything else. A single one was published in *Estadão* ('A vaca') [*The Cow*], without obviously having had a significant reaction (December 15, 1974. My transl.).

But if we adopt Suvin's (1979: 61) idea that utopia is the "sociopolitical subgenre of science fiction," and if we further keep in mind that Flusser is an author who has flirted with utopia, could not SF furnish an analytical framework applicable to his oeuvre as a whole, rather than to only a few specific texts? The post-industrial, telematic society he envisioned is, among other things, work-free. In a passage of the Bochum Lectures, Flusser (2014: 199-200) talks about the unemployed as avant-garde, paraphrasing almost exactly discourses from the characters in the opening scene of his countryman Karel Čapek's SF play *R.U.R. (Rossum's Universal Robots)*. Both speak of a return to Paradise, a release from the curse of hard work God cast on us, through the wonders of technology. SF becomes theory. In this passage, when Flusser says that we do not have to work for our daily bread and butter, for they are produced almost automatically, and we have mountains of bread and butter, he seems to echo Marcuse's conviction that the state of productivity reached in the 1960s was adequate to feed the entire world's population and abolish hunger and shortage. The utopia of man being liberated from work is also present in Čapek's *War with the Nents* and Flusser's "Pedifesto." Bernardo (2008) has already pointed out the thematic affinities between

Flusser and Čapek. There are stylistic parallels as well: the apocryphal/satirical style adopted by Flusser in many of his fictions resemble what we find in Čapek. Flusser once said his style of thinking was satirical. And, as Suvin (1979: 54) has pointed out, satire is the obverse of the utopian construction: “Utopia explicates what satire implicates, and vice versa.”

As a feature of the 20<sup>th</sup> century, SF was part of Flusser’s circumstance. The Czechoslovakia of his childhood and youth, as Pawley (1999: 10) writes, “was one of Europe’s most cosmopolitan and avant-garde centres of art, industry and design.” The years Flusser lived in Brazil coincided with the so-called Golden Age of SF, but also with the Cold War, the space race, and the threat of the nuclear war, themes that motivated Stanley Kubrick’s *2001: A Space Odyssey* and *Dr. Strangelove*.

In demanding a better SF, one that could be more than pulp entertainment and actually promote scientific debate, Flusser puts the genre in crisis (“criteria” and “criticism” have the same etymology). But not only that. Flusser envisioned SF as scientific fiction, that is, as fiction within the scientific methods, science acknowledging fiction as a strategy. SF serves as another opportunity for Flusser to talk about his idea of gray zones between science, technics, and art (Flusser 1989). Here the influence of Vaihinger’s *Philosophy of ‘As if’* makes itself noticed. As Felinto (2018: 54) stated, “...the idea of fiction as an epistemological instrument is so central in Flusser that it allows us to speak, in fact, of a *philosophy of fiction*.” (my transl.)

In this essay, I would like to approach texts in which the philosopher criticizes/theorizes SF, namely *The History of the Devil*, “O bicho de sete cabeças,” and “Science Fiction,” and explore some philosophic and scientific insights dormant in them.

## II

In Brazil, “ficção científica” stands for science fiction and, after 2011, when the *Philosophy of ‘As if’* was translated to Portuguese, also for scientific fiction [*wissenschaftlichen Fiktion*]. Could this be a reason for Flusser to transit between science fiction and fiction in science?

Vaihinger’s book is a systematic investigation of the fictitious as an auxiliary means of gaining knowledge. The author asks himself how can we draw correct conclusions despite working with consciously fake representations, resisting a widespread prejudice against fiction in research. Fiction, to him, is not an obstacle to the real, but the opposite. Many fields of knowledge operate with *scientific fictions*. These means are employed in full consciousness of their fictionality, and this is the difference between fiction and hypothesis. Hypotheses are to be confirmed, while fictions are put aside once they have served their purpose. Fictions are bridges to thinking, but not to reality. In their turn, *semi-fictions* are provisional concepts destined to be later replaced or corrected.

The artificial classification is an example of semi-fiction, while the atom is an example of fiction. According to Vaihinger, scientific fiction did not have great significance in ancient Greek science, for Greeks did not have a term for “fiction” that differentiated it from the hypothesis. Among the Romans, however, we already find the *fictio iuris*, the legal fiction. But the self-conscious scientific fiction is essentially a modern thing, stated Vaihinger, as it is a consequence of the fact that man has understood that thought does not reflect being and through the false we can get to the truth. The expression “as if,” according to the philosopher, summarizes scientific fiction, because it expresses a comparison (“as”) with a non-existent situation (“if”).

SF and utopia can also be understood in terms of comparison. To Suvin (1979), SF is the literature of cognitive estrangement. It presents us a radically or significantly different world, a *novum*, which must be at the same time perceived as not impossible within the cognitive standards of the author’s times. Developed with totalizing, scientific rigor, the fictional hypothesis it takes off from leads to estrangement (Viktor Shklovsky’s *ostranenie*). “A representation which estranges is one which allows us to recognize its subject, but at the same time makes it seem unfamiliar,” wrote Brecht in his *Short Organon for the Theatre* (apud Suvin 1979: 6). Estrangement, according to Suvin, becomes the formal structure of the genre, but it must be accompanied by cognition, for estrangement alone is found in myth, for example. Even though in many cases we cannot test the premises of SF tales, we can confront them with the already existing body of knowledge or proceed with mental experiments (Suvin 1979: 66).

SF differentiates itself both from the supernatural/metaphysical and naturalism/empiricism. It is, then, “...a literary genre whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main formal device is an imaginative framework alternative to the author’s empirical environment.” (Suvin 1979: 7-8) It is about a secular, materialistic vision of the universe, opposed to any magical, mystical, supernatural or fantastic one (Tavares 2018). It is a consequence of the disenchanted world (*entzauberte Welt*) of science, capitalism, and modern times, for modern science proclaimed the universe does not possess a human meaning—a profaning affirmation, a questioning of divine will and the universe’s aim. Man is not on his knees anymore, but on his feet.

To Suvin (1979), the novelty of the *novum*—his term for a plausible innovation of science fiction—is totalizing, for it entails a change in the whole universe of the narrative. Also, the *novum* is related to the historical environment of authors and readers, for what is perceived as new changes with time. To Jameson (2021: 175), the author of SF is in a position of divine creation far beyond anything Aristotle could have imagined, for they are committed to the invention of a whole universe, a whole ontology, a whole other world.

In this fiction of cognitive estrangement, to look at the other is to look at ourselves (Suvin 1979: 5), also the case with *Vampyroteuthis infernalis*. The alien is a mirror for ourselves, the country of utopia is a reflection of our own land. The new reality introduced by the novum can only be understood in terms of a difference from our reality. SF is unique in lying in the reader's oscillation between both "realities," according to Suvin (1979: 71). In the beginning, it was common for the novum to be brought by means of travel to a different, distant *space*, an island... Then, with time, *time* begins to be explored (Suvin 1979: 73).

Even though the history of SF usually begins with Mary Shelley's *Frankenstein* or H.G. Wells' *The Time Machine*, the roots of the genre are to be encountered in the fantastic trips of the ancient Greek novel. Roberts (2018) is one of these authors who believe this history begins much earlier. He associates SF and religion, contending that there is almost no room for SF during the Middle Ages, when the Catholic Church was dominant, but that in the Renaissance, this began to change. SF flourished in the feverish cultural climate of the Reformation. Protestant nations provided relatively more freedom for speculation that could be considered contrary to Biblical revelation. SF, according to Roberts, would be determined by the dialectic between Protestant and Catholic imaginaries.

At the beginning of the 20<sup>th</sup> century, the incipient genre of SF was seen, especially by academia, as inferior, subliterature. Its narratives were considered unchallenging, its themes predetermined, and icons and meanings repetitive (Alexandre 2018). Jameson (2021) also talks about the repudiation of SF by high culture, its stigmatization as stereotyped. However, according to him, the dynamics of the genre are not that of high culture. SF stories emerge from the world of pulp magazines and commercial culture. Thus, they cannot be read as Literature, with the same criteria. To Suvin (1979), it is odd that scholars refuse to study so-called paraliterature (low, plebian, popular literature), for a discipline that does not take into account about 90% of what constitutes its domain may suffer from blindness or distorted vision. Paraliterature demands attention for it is read, according to Suvin, and SF is one of its best-read genres. However, Suvin concedes that 90% or 95% of SF is perishable, unidimensional, and poor.

The imaginary<sup>1</sup> that followed the development of technology often built utopic or dystopic scenarios. Some believed technology would lead man to complete freedom and mastery over nature, while others saw an apocalyptic future of technocratic control, domination, and totalitarianism, as in Orwell's *1984* and its panoptic society. Berardi (2019a) contrasted the optimistic euphoria

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<sup>1</sup> I employ "imaginary" as a noun (*l'imaginaire*) in a lato sensu way to denote the product of the imagination of a society—images, representations, myths. An ensemble of symbols, projections, hopes, and dreams.

of Italian Futurists and our melancholy regarding the future, a hundred years after Marinetti's manifesto. The first half of the 20<sup>th</sup> century was an epoch of a great belief in a perfect future. While the capitalist side of the world believed in the invisible hand of the market, the communist side believed in the power of the Hegelian-Marxist dialect process.<sup>2</sup> Now we no longer believe in the future in that same way, and, not only that, we do not *trust* it. We do not hope it will respond to the aspirations left by the modern age. The future does not equal progress anymore. To Berardi, the future as utopia and as dystopic reality parted ways in 1977.

SF also changed. In the first half of the century, it was utopian and positive, centered on the conquest of space. Later, the Americans landed on the Moon, and Earth's surface was completely scanned, causing a shift of focus: Now the conquest is not of outer, but of inner space, the mind, the soul—the temporal dimension (Berardi 2019a). SF from the late 20<sup>th</sup> century is dystopic, incorporating the punk attitude in cyberpunk and its subgenres. To Berardi, we are now able to see distant spaces, but not distant times, because we cannot imagine them anymore. Baudrillard (1991) wrote that the “good old” SF imaginary is probably dead because we shifted from productive, productivist, energy and force-based simulacra, and their materialization in the machine and the production system—which would have forged the imaginary of SF—, to simulation simulacra, based on information, models and the cybernetic game, and perhaps we do not yet possess an imaginary that corresponds to this category. According to the French author, the distance between the real and the imaginary decreases as we change from SF to the implosive era of models because models are themselves anticipation of the real. An inversion occurs: the real becomes the alibi for the model. In this sense, SF is nowhere and everywhere.

Despite the emergence of science, myths and the imaginary did not disappear. We do not live scientifically; actually, it is the opposite: reason is just one aspect of human life. And the world of science and technology is no differently affected by this side of man. When we cross the boundaries set to us, when we commit the sacrilege of occupying God's position, for example becoming creators instead of creatures, we are living science's great myth, that of Prometheus, punished for his *hubris*. The rebellion of the machines, the reversal of the lord–slave relation, a classical locus in SF (Warrick 1980), revives the myth of Chronos, who dethroned his father but was dethroned by his son. We are to machines what God is to us. Icarus' excessive curiosity led him to death. In Flusser's Prague, we find the Jewish legend of Golem. The creature, fashioned from clay to help

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<sup>2</sup> In the Soviet Union, according to SF writer and futurologist Stanislaw Lem (2019), future was not a subject people used to talk about because it had already been predicted in the form of the communist paradise. Cybernetics, in the USSR, was officially considered a science of lies. Lem avoided publishing some of his writings simply due to fear of the censorship.

humans, especially in hard work, becomes ungovernable and bad and has to be destroyed. According to Moles (1995), the nefarious consequences of phenomena such as nuclear power and the increase of longevity made the archetypal images of Dr. Frankenstein and the Golem impose themselves concerning the image of the scientist in the social imaginary.

### III

Is there real science in SF? In Aristotle's *Poetics* (1451a-51b) we find that fiction does not work with truth, but with verisimilitude: "It is, moreover, evident from what has been said, that it is not the function of the poet to relate what has happened, but what may happen—what is possible according to the law of probability or necessity." Since what matters is internal coherence, it is very common to see SF stories built upon a correct syllogism, but parting from false premises.

To Northrop Frye (2017), while a first mental level, the consciousness or perceptiveness of the world, produces everyday conversation, and a second, practical level, culminates in the applied sciences and arts, literature is related to a third mental level, imagination, which would harmonize consciousness and practical skill, first and second levels. According to this literary theorist, the language of imagination has the power to build possible models of human experience. Science cannot be distinguished from art by the mental processes that operate in them, but this does not mean both are the same. They differ essentially in language. Furthermore, science is characterized by its continuous progress, while in literature this does not make sense. To the author, the faculty of imagination is also essential in science, but here every imaginative effort has to undergo a test of feasibility, whereas literature dispenses with such tests. The world of imagination, to Frye, would be that of unborn or embryonic beliefs. Imagination would have the power of detachment, which allows us to take things out of the reach of action and belief, and the capacity to considerably expand the dimension of human experience.

To Suvin (1979), SF should not be judged in terms of science, future, or others. It should not commit to scientific vulgarization or technological prognostication. Only in the so-called hard SF must the narrative's thesis conform to real possibility, to possibility in the author's world, according to the scientific paradigms of that epoch. Although futurological foresight is a legitimate secondary function of the genre, we must not forget that it is secondary. We cannot confuse art and pragmatic truth, fact and fiction. Emphasizing the futurological function of SF tends to make us slaves of the ideology of the day, for Suvin, since futurology reflects the prejudices and aspirations of the times. The problem with extrapolation, according to Suvin, is that we tend to extrapolate a few isolated elements against a background that remains the same in the future, while we

know reality is constituted by a crisscrossing of developments. Trying to anticipate the future of society only demonstrates the incapacity of hard sciences to deal with human problems (Suvin 1979: 77). The cognitive value of SF would lie in its analogy with the present much more than in its predictions.

As highlighted by Paura and Colăcel (2019), although SF has anticipated, for example, cyberspace, geostationary satellites, and technological unemployment, it does not always get the future right: much more than predicting the future, SF offers the audience an opportunity to look at the way we like to think humanity will face the future: “...The great achievement of SF has been its ability to anticipate how audiences are prone to interpret the promises of technological progress. Its appeal lies in the possibility of foreshadowing the long-term consequences of technological knowledge and social developments (rather than in being ‘accurately predictive’)” (2019: 9).

In an epoch in which technological changes occur at a dizzying pace, FC seems to act as an absorber of our daily future shock (Jameson 2021: 444-5). To Jameson, the emergence of SF is a symptom of a mutation in our relationship with historical time. SF would have been born precisely when the historical novel goes into decay, turning itself to the fantasies about the future, what is possible and conceivable in a near future. However, to the author, the relationship between SF and the future is more complex than that: the most characteristic SF does not try to seriously imagine our real future, but actually, its multiple simulated futures serve the function of transforming our present into the past of something yet to come. SF would be the exploration of all the limitations imposed by history. In this sense, it would be a unique method of apprehension of the present as history. SF’s deepest vocation would be to demonstrate our inherent incapacity to imagine the future. Going towards the unknown, it would be irrevocably attached to the familiar and turn into the contemplation of our own limits. Just like utopia’s final function would be to reveal our constitutive incapacity to imagine utopia. Unimaginable, such a utopia would reflect an anthropomorphic projection of our own society and its parochial obsessions. Our position is inescapably situated, states Jameson.

However, life imitates art. Warrick (1980) writes that imagination and invention interact with each other, mirroring possibilities. There are cases recorded both of writers and artists who were impressed by fairs and exhibitions of machines and robots and then created SF from this experience as well as of scientists and engineers who, after reading SF works, were inspired to build automatons from real life. The best way to think of this relationship would be as one of mutual influence. At the time of World War II, Asimov, Heinlein, and De Camp worked on a secret US Navy military project, and recently the American and French defense departments were recruiting

writers of the genre (Paura & Colăcel 2019). Lem is an example of an SF writer who later in his life decided to dedicate himself only to futurology and essay writing.

## IV

Flusser believed most SF we find in bookstores and cinemas is frustrating, deceiving, because it has little science: it only exacerbates tendencies already observable in our present or imagines worlds that are still too similar to ours. In *The History of the Devil*, he wrote: “It is pitiful the lack of imagination of ‘science-fiction’ authors. They find on Mars organisms that are obviously carbon-based, and project in the screens of our movie theaters such vulgar phenomena as eyes, claws, and trunks. I suggest to these authors to imagine a silicon-based life” (Flusser 1965: 45-6. My transl.). To Flusser, chemistry has offered ground more fertile for imagination. The kind of SF that only exacerbates tendencies already observable uses what Alves (2002) calls *exploratory imagination*, that of the chess player or the futurologist, in which the present establishes the limit of possibilities for the future. On the other hand, what Alves calls *creative imagination* is that of the inventor of the chess game. Exploratory imagination can be measured and evaluated in an objective way, while creative imagination cannot, although it is far more important.

In France, years after the publishing of *The History of the Devil*, Flusser got to know Louis Bec, who imagined not a silicon, but a sulfur-based life-form, with his Sulfanogrades. Bec situated his artistic work in a gray zone with science—Biology, particularly—, and proposed the idea of a fabulatory epistemology (*épistémologie fabulatoire*), which “...introduces in the bosom of scientific methodologies a bit of imagination, postulating that knowledge cannot develop itself validly without the operative presence of an ‘exacting phantasy’” (Bec 2005: 69. My transl.).

What would be the medicine for SF authors’ poor imagination? The answer can be found in “O bicho de sete cabeças.” The title is a Brazilian idiom that means a very challenging problem, perhaps unsolvable, probably alluding to the Hydra of Lerna or the dog Cerberus. However, Flusser’s point is not the fantastic, but the scientifically possible. He states that truly interesting fiction (informative, he writes, in a cybernetic sense) features the *possible, yet improbable*. The improbable is related to information theory and the banality/originality dialectic, for Flusser understands information as an unlikely configuration of elements (Flusser n.d., “Antecedentes clássicos da visão informática?”). In this sense, the value of a message is linked to how unexpected, unpredictable, original it is (Moles 1978).

Flusser writes that a seven-headed animal is much more biologically conceivable and explainable than, for instance, a cat with the head of a dog, a chimera that would put the whole

construct of Biology in crisis, whilst polycephaly is a real phenomenon in nature. If an animal with two heads is rare, one with seven heads is ultrarare. With his distinctive sense of humor, Flusser writes that he can even imagine someone taking their seven-headed pet for a walk in Augusta Street, in São Paulo. "...Only an 'exacting' fantasy can be fertile. To imagine not impossible things, but possible ones, although highly improbable, is to have fantasy. That is why we can distinguish two types of "science fiction": the impossible type, which is poor and boring, and the possible yet improbable type, which is interesting and stimulating. ... The minority that belongs to the second type is a window for us to see the seven-headed beast which is our future" (Flusser 1972. My transl.).

This last sentence is polysemic and can be interpreted in two ways: i) our future will be a very challenging problem (Brazilian idiom), or ii) our future may turn out to be a concretization of an improbable virtuality. Both meanings work. We have reasons to fear the future because of the economic and environmental crises (global warming, overpopulation, pandemics), and concerning the second interpretation, the most relevant and informative scenarios are the improbable ones, for they inform us better. Flusser seeks an answer for the question of SF in the science of his time—information theory.

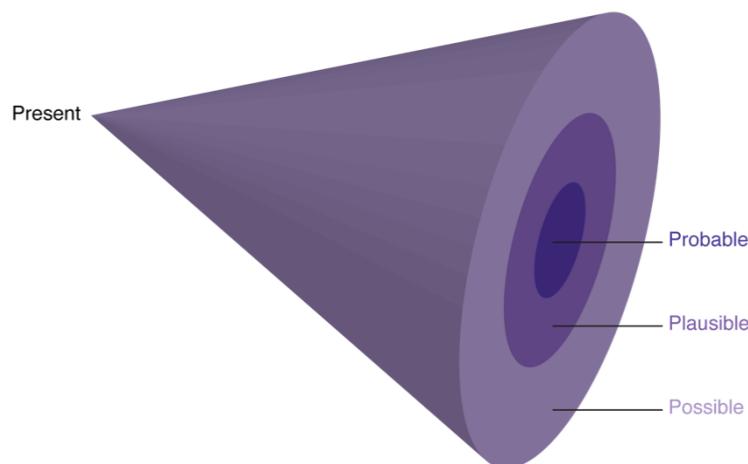


Figure 1 – “PPPP” Cone<sup>3</sup>

Exacting fantasy (*fantasia essata*) is a recurrent expression in Flusser’s essays, which he attributes to Leonardo. It means the ability to unite imagination and rigor, a kind of fantasy informed by reason. In Leonardo, art and science, polarized as they are in modern times, antagonists, still articulate

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<sup>3</sup> Source: based on Dunne & Raby 2013: 5

themselves. Fantasy and science are integrated. Leonardo's art does not do without science, and his science does not do without his artistic ingenuity.

Suvin (1979: 75) also thought of SF in informational terms: “[SF] ... transmits aesthetic information in direct proportion to its relevance and aesthetic quality.” In a footnote, the author even details how this could be calculated: for if the information gained concerning a hypothesis may be thought of as the logarithm of the ratio of the *a posteriori* to the *a priori* probabilities, according to Colin Cherry, then the information gained from a work of literature would be the logarithm of the ratio of the existential possibilities imaginable and understandable *after reading* to those *before reading*. Information would be a function of the rearrangement of the reader's understanding of human relationships.

Flusser and Suvin seem to agree on how good SF should be. First, both define SF as the genre of the possible. But more than that, while Flusser stresses the importance of the improbable, Suvin (1979: 81) speaks in terms of the relevance of the novum, which, I believe, is the same. Not all possible things are relevant. The novum should be judged by the number of ideas it brings within itself while remaining coherent and historical. To Suvin (1979: 36), the genre should be judged from its masterpieces and should demand a higher level of cognition from its authors than from its readers. SF is educative literature, according to this scholar, and no other genre is a better bridge over the “two-cultures” abyss. SF would demand not only *scientia* but also *sapientia* of us.

## V

Is it possible to predict the future? This question, in a certain way related to SF, also raises a central problem for the philosophy of science. If the sun rises every day, it seems reasonable to think that we can predict that exactly ten years from now it will certainly rise. Our current knowledge about the matter indicates that one day the sun will die, but this shall happen only a few billion years from now. In the hard sciences, it is much easier to predict the future. The regularity of phenomena turns the scientist into a prophet. In fact, the harder the science, the more predictable are its objects (Alves 2002). But what allows us to predict? The accumulation of pieces of evidence leads us to notice regularities. Matter is repetition, and our faculty of knowledge is essentially the power of apprehending what is stable and regular in the flux of reality (Bergson 2006). However, when we enter the complex realms of life and culture, it gets much harder to foresee the future. The human world is marked by existential freedom.

Still, even the prediction of the hard sciences was questioned by Hume (1972). It is the problem of inductive knowledge. Consider this parable: A turkey is fed for 999 days. On the 1000<sup>th</sup>

day, the turkey waits for his portion of food, but instead it gets killed and served as dinner (Taleb 2008). Induction is the bridge between the visible and the invisible, the past and the future, the particular case and the universal rule (theory) (Alves 2002). It is at the core of modern science. However, induction is also an illusion. Jumping from some particular instances to generalization, from the past to the future, is not a logical conclusion. Experience speaks of the present and the past, but there cannot be an experience of the future. A series of corroborative facts is not necessarily evidence of something. Taleb called this problem “the Black Swan” because it was believed there were only white swans until the discovery of Australia. We must recognize, according to Hume, that faith and belief are behind inductive knowledge. Mostly, faith in a world whose natural laws remain the same. But nothing guarantees us that. Nothing ensures us that in the middle of a billiards game the balls will not stop behaving like expected, rolling in fantastical, “impossible” trajectories.

Karl Popper’s answer to Hume’s problem is falsification: we can never prove a scientific theory is right, yet we can prove it is incorrect. Although one can never verify a theory by accumulating pieces of evidence that corroborate it, one can refute it with a single experiment that attests to its wrongness. Thus, we cannot affirm that an event  $x$  is impossible in physical terms, for it is impossible only within science’s current state. To Popper, any event, no matter how peculiar, shall be compatible with our current or future state of science (Meillassoux 2015). To Meillassoux, however, Popper did not understand Hume’s problem very well, because he puts it in epistemological terms, while Hume’s problem is ontological. Popper speaks of the instability of theories, while Hume of the instability of nature’s laws. Popper does not doubt the stability of nature, that is, that the same experiments will produce, in the future, similar results. He moves within an imaginary of SF, that of a world in which science is still possible, while the problem Hume poses is that of what Meillassoux calls *extro-science fiction*, a fiction of a world outside science, where science is impossible, in which science cannot create theories or constitute objects of study because nature does not behave in an ordered fashion.

We cannot predict. The future deviates easily from the anticipated course, and the further into the future we look, the greater the chances of a mistake (Taleb 2008). We can predict nature’s behavior, but this kind of future is not that relevant to human life. To predict historical events, according to Popper, it is necessary to foresee technological innovations, which is impossible, otherwise, we would become the inventors of these innovations ourselves. It would be necessary to incorporate elements of this very future.

Once asked by a reporter what the literature of tomorrow would be, Bergson (2006) responded that, if he knew, he would write it himself. This anecdote is told in the essay “The Possible

and the Real” to illustrate the philosopher’s point: The possible does not have a virtual, dormant existence. Possibility does not precede reality. It is only retrospectively that things become possible, after they happen, and possibility is not less than reality, but actually is more—just like “nothing” is not less than being and disorder is not less than order. In order to think “nothing,” we must think things and then their absence, and disorder is just an undesired order. Bergson alerts us to a misunderstanding: while possible means literally “not impossible,” we take it for “preexistent as an idea.”

In the sphere of social thinking, Berardi (2019a) points out that possibility is different from virtuality or the notion of necessary, inevitable evolution. Possible and virtual are conceptually distinct. Possible belongs to the sphere of the thinkable. What we call impossible may be what we cannot see due to the modeling of our imaginary. Power, to this Italian thinker, consists of making some possibilities appear impossible—it is a *Gestalt*, working as a paradigm. Possibilities are not infinite, but multiple. They are only limited by the necessities and impossibilities of the present. Berardi (2019b) believes the present state of the world is always a vibrating concurrence of multiple possibilities. Power imposes the probable as if it were necessary. But the present does not contain the future in a linear way. The relation between today and tomorrow is not inevitable, and no deterministic projection of the future is certain.

## VI

Flusser (2015: 1) begins the conference paper “Science Fiction” by stating that the term suggests a gray zone between science and imagination, but that in such an intersection “...neither science nor fiction can, in fact, be taken seriously; and there would be a serious risk that the quality of both disciplines would be reduced to a common denominator.” What Flusser means, perhaps, is that the creator of such SF understood as gray zone would have to be at the same time a good scientist and a good fictionist. Or we can understand it in the sense that the science contained in SF is not taken seriously by scientists, and at the same time, SF is still seen as subliterature by literary critics and scholars. However, continues Flusser, echoing Vaihinger, today this opposition (science/fiction) does not work anymore because science does not do without fiction, and actually should be treated as a special case of fiction.

The majority of SF texts, Flusser says, are not really about science, but about art, and not really about fiction, but about extrapolations of trends already observable. This is disappointing, according to him, not because such mental exercises are uninteresting, but because under the label SF we expect to see texts “which set up fictitious scientific hypotheses to therefore be fictitious.”

(Flusser 2015: 1) A far greater imagination is at work in the texts of Einstein and Darwin, according to Flusser. SF should delve into science. Fiction is not about extrapolating trends. In a letter written to Milton Vargas only four days after the conference, Flusser says that he imagines the “pseudo-social organization of ants” must be much more fantastic than Skywalker (March 24, 1988).

To Flusser, science is a kind of fiction because its sentences can never arrive at truth, but only approach it more and more employing two strategies: i) falsification, in which statements are made appear progressively more probable, and ii) the measure of the improbability of sentences (“margin of error”), that allows working with imprecision (fuzziness). Both strategies work in the direction of the probable. Conversely, an epistemology that goes the opposite way is, to Flusser, thinkable. It is about producing statements that are more and more improbable, in an attempt to approach truth through a sort of *via negativa*. This strategy is not new among the traditions of the Gnostic Scholastics and the Talmud, where we can see the *reductio ad absurdum*. However, the SF texts produced through this methodology would have to obey the same discipline of scientific texts. That is why perhaps they are so rare, for they require from the author both rigor and desire to be improbable.

Flusser ends by saying that on closer examination, what we described as SF is a portrayal of the creative act, which has always sought the improbable, and what we can expect of SF would be the same creative force that manifests itself in science, but in direction of the beautiful. To produce improbable sentences without ever losing sight of truth would be to contemplate the apparition of beauty in its true meaning, Flusser writes. According to the philosopher, this probably does not exist in literature. Rather synthetic images and computer algorithms may be the first manifestations of the first actual “SF.”

How to interpret this conference paper, somewhat prophetic, yet written in a terse style? As Hanff (2020) comments, it is odd that Flusser did not take time to translate and reevaluate this text, full of ideas that ask for further explanation. In it, Flusser remains critical of the “majority” of SF works, as in previous occasions. However, differently from “O bicho de sete cabeças,” here he assumes that what he understands by SF is a gray zone between science and imagination, that SF should be judged by its scientific content, an opinion that diverges from Suvin’s, for example. In this paper, SF and scientific fiction seem to have the same meaning. To Flusser, SF should delve into science and develop it using fiction.

Yet, Flusser insists once more on the improbable as a key. Here it is a key to an epistemology that goes in a direction opposite to regular science. However, this is not an easy thing to do, for it demands from the author be scientifically rigorous and pursue the improbable at the same

time. In the last paragraph, Flusser wrote that perhaps this is a task not for literature, but for synthetic images and computer algorithms. Perhaps it is no longer about *conceiving* (thinking through concepts—writing, historical, causal relations), but about *imagining* (thinking through images), despite imagination and conception being in a dialectical relation: texts can also be imaginative, and images can be conceptual. But technical images demand a new, techno-imagination. The technical image is scientific and post-alphabetic, for the apparatus that produces it depends on mathematical equations and scientific knowledge in order to function. The code of the technical image is zero-dimensional, it is made of calculi—calculus. Because it has no dimension, it must be projected, or concretized. This concretion does not have to be in two dimensions. Flusser believes we can create alternative worlds through the computation of punctiform elements.

Flusser’s theory of the technical image can be associated with structural thinking and method, which consist of understanding phenomena of reality as a combination of minimal elements (“atoms”). Simulation, or modeling, is nothing but an attempt to analyze through synthesis. In other words, the creation of a simulacrum combining the elements according to a code or structure (Moles 1995). It is about remaking the real to understand it. According to Moles, the usage of simulation and models characterizes the third scientific attitude, next to observation and experimentation. This third scientific attitude gained force with cybernetics. Since Plato, simulacra had a negative charge, for they were associated with the false, considered inferior to the real.

Computers allowed the emergence of more precise and quantitative predictions (like the Meadows Report<sup>4</sup>). We can now not only project the way our situation is most likely to develop, but also change the parameters and imagine alternative futures, planning interventions. We can imagine with exactitude the effects living on a planet with a different force of gravity would have in our bodies through simulation. An example is the covid-19 pandemic we are living. Nor is the past left unaffected: a computational model simulates how Titanic’s wreck must have happened, and we can see how our ancestors, hominids, must have looked by facial reconstruction of their skulls...

## VII

In “O bicho de sete cabeças” Flusser seems to be addressing himself to readers and writers of the literary genre of SF. He has in mind an idea of how good SF should be. This high-quality SF would serve the purpose of being more than a mere diversion—“turning something [*thought*] aside from

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<sup>4</sup> The book *The Limits to Growth* (1972) reports the findings of an international team of researchers at the M.I.T., led by Dennis Meadows, who conducted a study of the consequences of continued worldwide growth. The study used a computer model and showed that Earth cannot support present rates of growth much beyond the year 2100.

its course”<sup>5</sup>—, but a window for us to see the seven-headed beast which is our future. In “Science Fiction,” Flusser has a different view. Here “science fiction” has the meaning of a gray zone between science and imagination, which should be judged by its scientific content and is most likely to “materialize” through synthetic images and computers rather than texts.

Flusser opens our eyes to the importance of thinking (and thinking through) SF and scientific fiction. In Brazil, the *Philosophy of ‘As if’* was not translated until 2011 and remains unknown to many. Today, fiction is being employed in such unlikely fields as design, where it serves the purpose of talking about potential objects and services. “Design fiction is the deliberate use of diegetic prototypes to suspend disbelief about change.” (Sterling 2016: 95)

The findings of this essay must be contextualized and considered with Flusser’s own SF production and his work as a whole, especially his philosophy of science and the utopian principle present in his future-oriented philosophy.

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<sup>5</sup> See <https://www.lexico.com/definicion/diversion>

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