

Konrad Wojnowski

Telematic Freedom and Information Paradox¹

Flusser's philosophical project is devoted to rethinking freedom in the age of programs. "Freedom is, among other ideals, the most beautiful. It is synonymous with dignity", states Flusser in *The History of the Devil* (2014a: 97). However, this value – the noblest of all – has its flip side and its biblical equivalent is Wrath. It is the case because you cannot "possess freedom", you can only orient yourself towards it by the act of revolt which is inherently destructive. Flusser claims that – among other sins – it was the Devil who gave humankind Wrath so that sinful humans can struggle against and break the seemingly unbreakable chains of nature, or in other words fight for their own freedom. Out of human wrath directed against "the natural" (the given, the undisputable, the apparent) science emerged and allowed the mind to "become the owner of physical reality" (98). But there was a cruel irony to this triumph: as science evolved, human wrath grew stronger and stronger, giving birth to scientific nihilism, which no longer positioned science as a medium in the quest for fighting for freedom. Science became a mere formalist method. But out of this techno-scientific nihilism a new, emancipated worldview emerged. Science destroyed its object of study, abolished the old-fashioned objective reality governed by unchangeable laws of nature and reformulated the universe as an infinite set of programs. From this moment on freedom was thinkable only in this new "programmatic" horizon.

In my text, I would like to elaborate on this story in detail. I want to examine how Flusser conceptualized freedom and how his approach was indebted to the language of 20th-century science, particularly to information theory and thermodynamics. I argue that Flusser used the concept of information rather loosely, in a double and contradictory sense: at the same time as entropy and negentropy. However, this initial inconsistency – which is also present in scientific literature on information – allowed him to speak about freedom in the context of technological progress in a complex and non-reductionist way. Flusser adopted ideas from the scientific discourse to actualize his own notion of freedom, but rejected the rigors of scientific formalism. In this way he entered into a productive dialogue with the likes of Claude Shannon, Jacques Monod, or Léon Brillouin, but not did not subjugate his thought to any unequivocal and incontestable idea. On the one hand, throughout his writings Flusser remained highly sceptical of

¹ This research was financed with funds awarded by NCN (National Science Center, project number: UMO-2016/21/D/HS2/02415).

techno-scientific progress, which according to him led humanity under the rule of stupidity. On the other, he consistently looked for ways to turn scientific and technological discourses against themselves. For Flusser, science was not a monolithic, closed system of knowledge, which has not changed since Descartes, Newton or Laplace. On the contrary, it underwent a series of significant revolutions in the 19th and 20th centuries, and Flusser was aware of their importance not only for science itself, but for humanities as well. One of these essential breakthroughs was the advent of statistical and probabilistic methods of describing, calculating, and understanding physical reality. And this development, achieved first by Ludwig Boltzmann through his reformulation of entropy in statistical terms, opened up new fields of possibility for expressing the problem of human freedom. The advent of probability theory and statistics in various fields of science was connected with a perspective shift in understanding the nature of reality, or as Flusser once commented, saying “farewell to it” (*Abschied von der Realität*²). The new probabilistic methods enabled scientists to describe uncertainty and unpredictability of physical processes. Playing with probabilities no longer remained in the domain of irrational guessing, but rather became a pursuit worthy of a learned mind. It also meant that science, which at least since Max Planck’s discovery of quanta has parted with Newtonian determinism, found a way to conceptualize and calculate freedom as a physical trait.

This perspective of non-Newtonian, “post-modern” science became indispensable for Flusser to reformulate freedom, so it would fit his late project of telematic society, which was defined in “scientific” and “technological” terms as a social system that produces information. But in this highly computerized society of the future the human’s role as the main producer of information will become endangered. When a person dissolves from “subject to project” in relational networks and effectively becomes a “hub” (*homo nexus*), we can no longer rely only on personal freedoms. For that reason we need to understand our situation and adapt our idea of freedom to these new circumstances. Flusser expressed this need for “new freedom” directly in *Does Writing Have a Future?*: “A newer concept of freedom will replace the historical one (or there won’t be one), and instead of causal and teleological explanations, there will be functional ones (should it be necessary to explain anything)” (2011a: 123). He approached this task by shifting contexts: instead of focusing on the fate of “free will” in the computer age he asked how can we produce (new) information freely. Since subject is a lost cause, and we cannot think without supporting machines anymore, we must focus on securing our freedom on an infrastructural level by constructing free communication networks. In my text I will follow the path that leads Flusser to such conclusion and closely analyse how his views on freedom were indebted to science. I

² In an unpublished text available in Flusser Archiv.

begin my argument by focusing on *Post-History* – a book that belongs to the “middle period” in Flusser’s thought – because I am convinced that the concept of “program” marks a crucial point in his philosophy, especially concerning his views on freedom. “Programming” – computers, societies, and lives – became the key feature of the 20th century that redefined the Western culture and any attempt at formulating political ideas, utopias, and systems of thought had to face this challenge. After all, the philosopher’s task was none other than to build a convincing program for existence that would allow humans to navigate in the world.

Freedom in the age of programs

In one of many grand narratives about the history of mankind, sketched by Flusser in a brief manner in *Post-History*, we can find a synthetic story of the Western civilization written from the perspective of freedom (2013: 19-22). On only three pages Flusser argues that there are three fundamental ways of structuring (governing) existence, which also dictate three basic ways of understanding freedom. The first “model” is destiny, which supports the religious, teleological worldview. “Destiny hypothesis” states that human endeavours have meaning only within a wider context of “God’s plan”. As does every other plan, the divine one also has an aim. It is intentional and purpose-oriented – it projects human psychology on the divine creature which supposedly created the universe to achieve its (known or unknown) goals. In the context of Christianity the Judgement Day is the aim which history steadily approaches. It is when all souls will be brought before God and judged for their deeds. In the end of all times God will restore moral equilibrium, disrupted by Satan in the Garden of Eden. According to this worldview every human deed is being counted and receives a meaning as part of a story that has a dramatic ending. “Destiny” as operative term used to orient our existence is the product of a book – it is a projection of a literary (narrative) rule onto the “real” existences of the believers. In this finalistic image of human existence the question of freedom is posed in the terms of “free will”. The question is as follows: “Can man oppose his destiny with free will, and if so, to what extent can he do this?” (2013: 20). This kind of freedom can also be understood in literary terms: to what extent – as a reader – am I free to interpret and concretize an already-written book?

This finalistic worldview has been complemented in modern times by an alternative, “causal” narrative. Flusser associates this novelty with the invention of modern science and its strictly deterministic understanding of nature. According to this image “every event is the effect of specific causes, which are in turn causes of specific effects” (2013: 19). This image is even more

repressive than the older one, because in this case every human conduct is subordinated to strict laws of Nature. In the mechanical world of Newton freedom can be defined only as subjective fallacy – given the impenetrable complexity of deterministic processes, freedom emerges as a state of subjective uncertainty and lack of knowledge. What is personally experienced as freedom of choice, in truth follows objective chain-like processes of cause and effect that started long before the “subject” was born. Meanwhile, god as artist-creator gets relegated to a far less noble position of a clockmaker-designer.

Fortunately, this terribly pessimistic view on freedom, typical of early science, received a substantial update during the 20th century. For Flusser, probabilistic and statistical formalizations, which became predominant in every field of science, gave birth to a different way of understanding reality and human existence, namely the “programmatic perspective”. In this new worldview chains of cause and effect “appear only as statistical probabilities” (2011a: 141). Flusser was not the only one to note the importance of this revolutions. “Probabilistic” reinventions of the scientific method have also been observed and described in detail by science historians, although their more systematic and thorough findings appeared much later than Flusser’s somewhat early intuitions (Gigerenzer 1990, Hacking 1990). Moreover, Flusser was one of the very few philosophers who consciously strived to draw philosophical conclusions from this new state of affairs. He was convinced that this breakthrough, which allowed science to speak about reality in terms of probabilities and information, demanded a philosophical shift of approach to the world: reality itself had to be rendered as an emergent effect of programs (or games). On many occasions Flusser emphasized that the new advancements in science should have been followed by a new anthropology which would redefine man as an improbable “product of chance” and draw conclusions from this new state of knowledge (1989: 25).

It should be noted that this new programmatic worldview devoured not only “reality”, but also all languages and meta-languages. From this moment virtually anything could be understood in terms of programs, including the aforementioned knowledge systems, that is religion (and destiny) and science (and its deterministic hypotheses). There is no way around this horizon of absolute immanence. Just as every equation can be transcribed into 1s and 0s and solved by Turing machine, similarly every attempt to formulate a different worldview can be seen as an attempt to program human existence. A program’s definition is equally simple and elegant as binary code. Program is “every system in which chance becomes necessity”, or, as explained later, a “game in which every virtuality, even the least probable, will be realized of necessity if the game will be played for a sufficiently long time” (2013: 22). Everything from “Big Bang” to “MS Word” can be described as a program, everything that “computes”, that is turns possibilities to outcomes. Matthew Fuller aptly recognized that “programs and meta-programs are never clearly

defined as distinct. The relation is simply one of scale, or of order. Words are wrapped round each other as a sequence of digestions” (2005: 56). Programs eat each other up in endless loops, so they do not form hierarchal pyramids, but cross- and interrelated networks.

Freedom: beyond the subjective

If the universe is a quantum computer, which constantly calculates itself (in qubits), then humanity’s programs are only extensions of the informational paradigm that is as old as the universe itself. But the scientific discovery of ubiquitous programming contradicts the humanistic ideal of free will and self-determination. Human beings – as evolution theory and genetics teaches us – are pre-programmed by their DNA code, and – as social constructivists argue – programming continues also on the level of social life. For example, there is no difference between sex (nature) and gender (culture), as both are effects of “games of chance”, both are neither cultural, nor natural; both are just programs. Programs thus pose a threat to human freedom, which can no longer be framed in anthropocentric terms. Flusser recognized this fact earlier, but from a different angle, in *On Doubt*. There, he presented “human” concepts like blood, class and – most notably – subjective freedom as completely compromised (by nationalisms, socialisms, and neoliberalism respectively) (2014b: 8) and claimed that any attempt at turning back the wheel of time would be futile and inauthentic. Dissolution of values is irreversible, therefore new values have to be invented, or at least the old ones should be redefined. For example, the idea of freedom of choice wears out in the age of global marketing and consumerism, because every decision on the market is preceded by the intake of advertisements, which work on the unconscious level and predetermine choices, whereas the consumer becomes a mass-produced model of subjectivity that has been designed (programmed) to choose “freely” on the market. The same rule applies to social media – to like or dislike content is a choice, but not freedom, because a user cannot rebel in any way against the apparatus. The rebellion (dislike) takes the form of a predetermined option within the virtual field of possible behaviours. It is inscribed within the program itself and thus cannot be free. Even more importantly, since we have become fully dependent on machines and technical images in almost every decision-making process, we cannot approach the concept of freedom as if we were independent in our choices (1989: 17). This grand cultural mistake led to a paradoxical situation – Silicon Valley, where libertarians openly cherish personal freedom, at the same time produces social infrastructures in which intersubjective freedom becomes difficult to express (their

algorithms serve the comfort of the individual user and not social dialogue). Furthermore, when humans are supported by machines, which make calculations for them and always prompt the right answer, choice becomes derivative and mechanical. So Flusser: “The computer mechanized freedom of choice [...]. Then, what is truly human is that we, in cooperation with other competent people and machines displaying artificial intelligence, work out the values so that they [computers] may make decisions. We have crept out past freedom of choice, if I may put it that way. The computer creates a new anthropology” (2003: 99). He suggested here that in the computer age we cannot express our freedom by making informed choices. These can be fully mechanized and automated. Choice becomes thus an artificial and growingly irritating substitute for freedom, and probably because of that returns now so obtrusively at the level of ideology. That is why Flusser – when he was writing about new synthetic knowledge – approached the problem of decision-making from the perspective of probabilistic science: to introduce the human interest “into the equation”. To make “human” decisions in computerized society meant, for him, playing with probabilities. And such play should be directed towards achieving “improbable” results, not the optimal ones (1989: 26). Computers will care for optimization, humans should care for “jazz” (or “chamber music”).

As I have already said, Flusser addressed his concerns about the freedom of rational thought in one of his earlier texts, namely *On Doubt*, which is dedicated to criticizing Descartes’ *cogito*. I will shortly present his views on this subject to show how they resonate in his later philosophy. As is commonly known, the poor *cogito* – a philosophical invention which laid foundations under the Enlightenment project – served as a *piñata* during many feasts for critical thought in the 20th century. Jacques Lacan, for instance, numerous times denigrated the dangerous illusions of *cogito*, while he “crossed out” the transcendental subject through Freudian psychoanalysis. Michel Foucault in *Madness and Civilization* accused Descartes of constructing *cogito* on the basis of an arbitrary exclusion of every form of madness from the realm of rationality. Even Slavoj Žižek felt the urge to return to *cogito* once again, this time criticizing it in the name of feminist movements for its desexualisation of the subject. Flusser had a similar attitude towards the harmfulness of Descartes’ ideas, but he focused his deconstruction solely on the Cartesian method that allowed the philosopher to “invent” *cogito* in the first place, namely on doubt.

Flusser was interested in doubt less in the context of the subject formation, but more as a fundamental method of scientific inquiry and – at the same time – an existential *Einstellung* of the Moderns. He understood Cartesian doubt as a means for gaining freedom, that is, for rebelling against the narrow walls of theological systems of knowledge. Cartesian (and modern) doubt differed substantially from its religious variant, because the first one was by nature dialectic and productive, whereas the latter had to lead the doubter to even more zealous faith. A scientist

doubts to reinstate the truth, which – importantly – will later become dubious thanks to some other scientist, etc. To rephrase it in Flusser’s terms: scientific doubt harvests new information from the world – it tears former knowledge to pieces and rearranges it once again, so that we can learn something new. And Flusser affirms such endeavours. But Descartes – and here Flusser begins his critique – doubted in everything only to assure himself that it is him who doubts. This meant that the “point of doubt” – namely the subject – was fixated beyond any doubt. This is also how modern science was grounded – its effectiveness relied on the hubris of the scientist who had to believe in himself. Everything may fall under suspicion – from the subject’s belief system to the world as a whole – but the “I” stands alone, undisturbed. This is the basic, narcissist assumption of the “enlightened” modern mind, which grounds scientific objectivity. This view was largely contested in the 20th century by science itself as it realized its performative nature.

What is exceptional in Flusser’s approach to Descartes is that although he criticized his basic tenet, he did not throw the baby out with the bathwater. His critique of modernity and of the enlightened mind allowed him to remain within the spectrum of modernity. He radicalized Descartes’ method and turned it against itself: “Our description of the intellect allows us to doubt the affirmative ‘I think’, and to substitute it by the affirmative ‘thoughts occur’” (2014b: 22). He thus proposed that we should also doubt the doubting subject to decentralize it eventually. The “I” of the subject fell under suspicion and was announced an illusion, or – more specifically – an emergent product of complex neuronal network that is run by different programs (genetic, cultural, psychological, etc.). Radical doubt announces the transition from subject to project. Flusser exposed subjectivity as a type of program and followed the footsteps of yoga, neurosciences, and Husserlian phenomenology, which through eidetic reduction debunked “I” as an “abstract hook” for the mind.

On Doubt marks a crucial point in Flusser’s philosophy and contains key insights to understanding his basic premises. It is here that he doubted the “I” and rejected it as a satisfying ground for his own philosophy and thereby for his understanding of freedom that inevitably had to transcend the problem of free will. But at the same time Flusser did not doubt the doubt itself, but rather he radicalized it to the point where thought also became an emergent product of networks. This is how existentialist communicology was born and the problem of freedom had to be reframed in the context of webs and media. *On Doubt* also reveals Flusser’s ideas on the purpose of science and of thought in general. As Anke Finger, Rainer Guldin, and Gustavo Bernardo accurately notice: “Flusser, in contrast, demands that we protect doubt and insists that the intellect does not serve as an instrument to control chaos, but rather as ‘a hymn to that which cannot be controlled’” (2011: 29). Doubt and the doubting science serve freedom not because

they allows us to master the physical world, but because they shatter our certainties about the world which are the true shackles for the mind, as ultimately they get in the way of producing new information. It is not enough to construct safe technological environments that save us from work, predict future events, and separate us from every hazard. These can only guarantee boredom and sloth. What is more, gaining independence from nature is necessarily bound with becoming dependent on technology. Thus only radical doubt that can undermine and update every program may be a reliable tool for freedom.

However, as doubting leads Flusser to transcending the notion of subjectivity and to reorienting his philosophy towards studying the intersubjective notion of communication, doubt must be secured at the level of communication. In other words, it must be made possible by the governing code and communication practices. In a reality where discourse is the prevalent form of exchanging and producing information, doubt becomes virtually impossible, because it is essentially a dialogic practice. To doubt is to dialogue with tradition, with yourself, and with others. Doubting aims at revealing something formerly unknown – to put it differently, something improbable. For someone convinced that the Sun revolves around the Earth, every different belief in this matter comes as a surprise and defies common sense. Doubt *ipso facto* introduces uncertainty into the message, it rises its entropy. This is also why it is not enough to refrain from choice, or decision-making, and resist political oppression passively. For instance, in *Does Writing Have a Future?* Flusser acknowledged the political potential of refraining oneself from action (famously depicted by Herman Melville in his short story *Bartleby, the Scrivener*), but at the same time he upgraded this standpoint significantly: “Freedom includes the ability to choose, and the necessity to choose shows a lack of freedom presenting itself as freedom. Two borderline cases disavow this: the one in which the choice is impossible because of inadequate criteria (such as incomprehensible quantities) and the one in which all alternatives have the same value (Buridan’s donkey). So not being able to choose is an important aspect of freedom as well. Leaving things to chance is about freedom” (2011a: 101). It is thus not enough to choose or to refrain from choice. We do not “prefer not to” just for the sake of such an act, because it would still be a political form of choice and it can be recognized and captured by the system of power as every other individual action or preference (as it was illustrated by the sad history of Occupy movements). Refraining from choice becomes meaningful only when we “leave things to chance” and introduce a random (environmental) factor. Freedom comes thus with openness to the unpredictable. Freedom comes with openness, which is not to be misunderstood as a psychological trait, but should be read as a systemic (non-individual) quality which characterizes networked or circular dialogues. Still, it is worth noting here that Flusser has never spoken against rationality or intentionality like most of the postmodern philosophers. Instead he offered a shift

of perspective from the individual to the social where the issue of technology can also be expressed.

Such statement can instantly alert someone overly suspicious and dedicated to liberal worldview. At first, securing freedom on the social level seems radically anti-humanist. However, the notion of chance comes into play here. On many occasions Flusser stressed his commitment to chance occurrences (accidents) which – and that is very important here – are possible only in not fully determined communication systems. Every unpredictable event proves the imperfectness of technical and social apparatuses, and more importantly is a source of new information. The more open and complex system, the harder it is to predict its future. It is thus in human interest to construct dialogical systems. This also explains why freedom is such a noble value – it is the only source of cultural and civilizational progress. A culture which fails to produce information and only reproduces it eventually disintegrates, because it cannot compensate for what is (irretrievably) lost (in transmission). To produce information is then the only way to temporarily evade the second law of thermodynamics, which states that all the universe tends towards equilibrium or, to be precise, towards disappearance of processes that may increase entropy and produce information. The end of time is equal to the impossibility of producing information in the universe. Before that happens, humanity's only purpose is to oppose this tendency: "human being is an entity that actively opposes the implacable tendency of the universe toward disinformation. Since the human being stretched out his hand to confront the lifeworld, to make it pause, he has been trying to imprint information on his surroundings. His answer to 'heat death' and to death *per se* is to inform" (2011b: 18). To undertake this noble task human beings need freedom as a source of information.

Freedom and information: the liberating paradox

Flusser's point of view on this matter was deeply indebted to Jacques Monod's book *Chance and Necessity*. Monod, who was a French biochemist, wrote this *quasi*-philosophical study to situate himself against his contemporaries who shared the view that science (by nature) strives at explaining reality in causal terms (which are compatible with teleological framework). In contrast to such philosophical position Monod argued that "teleonomy" (goal-directedness) is not in any sense a primary characteristic of the physical world, but a secondary trait that is a result (and not cause) of reproduction among the living organisms. "Purpose", "project", "cause", and "effect" are human notions which do not necessarily apply to physical processes, at least not to all of

them. To rephrase Monod's standpoint in Flusserian terms we could say that these older notions of determinism belong to obsolete programs of teleological religion and classical science, both of which fall under the category of programs and are no longer universal. Teleonomy is still a very important and useful concept, but simply not an overarching one. This important belief supported Monod's other claim that stochastic (random) processes should also be viewed as potentially creative. Much to the outrage of his fellow scientists, he even went as far as to suggest that it was chance, and not necessity, that propels evolution forward, and may have incited the birth of life on Earth. Consequently – from this perspective – evolution should be understood as a partly random process in which change results from microscopic and non-deterministic quantum noise which disturbs – otherwise invariant – DNA reproduction. Monod stood up to the hegemony of (purpose-oriented) natural selection as the only viable explanation of evolution and he contested predominant, deterministic views by praising the role of random mutations as sparks of creativity. And again, not unlike Flusser in *On Doubt*, Monod strived to eradicate faulty anthropocentrism from the centre of scientific worldview. His appreciation of chance events (*quasi*-Lucretian in spirit) served this endeavour: “There is no scientific concept, in any of the sciences, more destructive of anthropocentrism than this one, and no other so rouses an instinctive protest from the intensely teleonomic creatures that we are” (1971: 113).

Monod's views on the nature of chance – given the range of possible approaches – were uncompromising. He did not believe, as was commonly assumed, that chance was simply a subjective illusion stemming from the observer's lack of knowledge about causal chains that operate beyond the reach of our senses. To illustrate this conservative interpretation of chance, Monod used the example of gambling with dice. In the case of dice our inability to predict the outcome stems from practical impossibility to follow microscopic events that cause the dice to land on, let's say, number 5. Because no one is precise enough to master this “game”, its results appear random to us. But this is only a matter of “appearances”, as randomness of such process is only illusory, contrary to what Monod called “absolute coincidence”, “which results from the intersection of two totally independent chains of events” (114). In the case of dice chance is orchestrated – it happens on purpose and is confined by well-known conditions. Probabilities in this case represent states of uncertain knowledge. In the second case the “accident” happens because more than two causally unrelated processes interfere. To illustrate such a case, let's imagine a following situation. An academic X works on a text concerning Flusser's philosophy and its applications for art practice. Incidentally, when he starts working, he is not (by any chance) familiar with the oeuvre of Guy Debord. But one day he meets his friend Y in a café. When Y leaves to the bathroom, X reaches for the book which Y has left on the table: it is a reader that includes Debord's remarks on *détournement*. X – out of complete boredom – “leaves

things to chance” and starts to read the text (partly because the battery of his mobile has run out). He finds it very enlightening and attempts to merge Flusser and Debord’s philosophies together. To write the text X has to think intentionally, but the ignition of this process happens by pure chance, because there can be no causal relation between X writing a text, his mobile running out of power, and Y feeling the urge to go to the bathroom. The creative spark was produced by an accidental event which was followed by a series of ideas which arose in the X’s head. These, in turn, can also be thought of as electric “accidents” in the complex neural network, which are only later reframed on the level on conscious experience as intentional inventions. Monod himself gives an example of pure chance that is closer to his field of study and shows that chance becomes even more important on the microscopic level: “Now, between the occurrences that can provoke or permit an error in the replication of the genetic message and its functional consequences there is also a complete independence. The functional effect depends upon the structure, upon the actual role of the modified protein, upon the interactions it ensures, upon the reactions it catalyzes – all things which have nothing to do with the mutational event itself nor with its immediate or remote causes, regardless of the nature, whether deterministic or not, of those causes” (1971: 114). Evolution is thus fuelled by events that are not causally related to the coding of DNA itself, and biological creativity is inseparably tied to unpredictability, or in other words it relies on something out-of-order to happen. In this context freedom is a measure of openness in a given system to such improbable events.³ Evolution is not free, because some agent is able to make informed choices, but – on the contrary – its freedom is secured by the fact that no one chooses at all. It is free, since it allows for mistakes to happen (and optimizes them later).

Monod’s idea was compatible with Claude E. Shannon’s classical *A Mathematical Theory of Information*. In the famous introduction to Shannon’s text, Warren Weaver directly expressed that the amount of information in a message is proportional to the “freedom of choice, in selecting message”, because “to be somewhat more definite, the amount of information is (...) measured as a logarithm of the number of available choices” (9). For Shannon and Weaver information – which was “measured with reference to the number of possible messages that could be sent in a given time using a given set of symbols” (Mahoney 1990: 549) – simply equalled with entropy. Entropy, a term first introduced in thermodynamics in the 19th century to describe the dissipation of energy in irreversible processes of heat exchange, very soon received a probabilistic interpretation, and it was this reformulation – made first by Ludwig Boltzmann – that allowed scientists almost 100 years later to merge together the notions of information and entropy.

³ Monod uses the adjective “free” to describe the DNA helix in its openness to “accommodate all possible sequences” (106).

Mathematicians, physicians and philosophers wrote a gargantuan number of texts on this uncanny relationship, but I will present it here as briefly as possible in order not to overcomplicate an already complex argument present in Flusser's work.

Initially, Boltzmann proved that every thermodynamic system can be described not only in terms of heat (temperature) but also in probabilistic distributions. For instance, after we have measured the temperature of a closed system, we can translate this value to the amount of possible states of the particles within. At a given time every particle has a given speed, direction and position inside the chamber. With the rise of temperature (which is related to the speed of the particles) there are more possible arrangements of the particles. In fact, even a very small container has an astronomic number of such states: if a given particle can have 200 000 000 possible states, you will then need to multiply it by 100 000 000, which corresponds to the number of particles inside, to receive the final result. Entropy measures the disorder of these particles, but "disorder" in this sense has nothing to do with the intuitive, static meaning of this word. Disorder means here a number of possible arrangements of particles. That is to say, it denotes a possibility space in which many possible arrangements happen at the same time, not a specific, "chaotic" one. When particles have more potential states and are scattered in a larger space, there are more potential states for them to be in. If we would relocate all particles to one side of the container and lower their speed, the number of locations and speeds for them would be lower. This example shows how the notion of entropy is tightly related to the idea of freedom. Entropy rises in "free" systems, where there are more ways for the particles to "express" themselves. In this sense entropy is also related to uncertainty – the more possible states exist, the less certainty we can have about the actual one. Correspondingly, Shannon and Weaver realized that the information value of a given message can be measured in relation to the number of possible messages. So when we send a long and complex message, it will "weigh" more bits than a short, simple and repetitive one. As Weaver simply put it: "The greater this freedom of choice, and hence the greater the information, the greater is the uncertainty that the message actually selected is some particular one. Thus greater freedom of choice, greater uncertainty, greater information go hand in hand" (18/19). It was a very unlikely idea for an engineer who was working on a noise-free communication system to admit that noise itself may be a source of information. It meant that squeaks and crackles may actually be more informative than a boring platitude from someone's grandmother, just like "quantum noise" could disrupt gene replication and serve as an evolutionary factor. Ten years after Monod Robert Shaw, an American physicist, took Shannon's ideas and proved that chaos also produces information. Shaw even interpreted information as a measure of surprise (1981).

Flusser adapted Monod's views on "chance and necessity" throughout his works, mostly in writings that focused on his theory of communication. It can be argued that Flusser's engagement with the idea of dialogue stemmed from his conviction that synthesizing new information is possible through an encounter of two causally unrelated systems (the Other), and this "unrelatedness" is nothing else but freedom *per se*. Only when systems do not fully determine each other's inner workings something truly accidental may happen. Flusser's faith in the liberating power of accident was expressed most plainly in *Into the Universe of Technical Images*, and more specifically in his final sketch about the utopian society of the future (entitled "Chamber Music"). Here Flusser formulated the idea of a human being as an instigator of chance: "True catastrophes are new information. They are, by definition, surprising adventures. In this essay, I have proposed that human engagement consists in bringing about surprising adventures, catastrophes, and that telematics realizes this engagement, theoretically and technically. Telematic society is, then, a structure for realizing catastrophes" (2011b: 160). Games played by telematic citizens may seem intentional on the local level – players operate according to plans and intentions. They might be deeply convinced of reasons behind their deeds and thoughts. However, new information is introduced because players play in a free network (or circle) which enables encounters of players who respond to the other's otherness. To better understand that, we just need to imagine a catastrophe-free environment where we can reason causally, but nothing surprises us. In a society where accident (catastrophe) is forbidden, we limit ourselves only to information that can be produced/deduced from what is already known. Such (luckily impossible) world may as well be heaven for machines, but for machines only. Throughout his career, Flusser was convinced that we are approaching a society that is unbearably inhospitable to human beings. Free society and dialogic media were humanity's only chance to save itself from the idiocy of technological progress: "Apparatuses are, in fact, exceptionally fast idiots that forget nothing, but they are idiots nevertheless. Therefore, although individual receivers and functionaries cannot take control of the apparatus, the society as a whole could. This is what the 'unspectacular new revolutionaries' are trying to do" (2011b: 76). Flusser sounds at this point surprisingly anarchist and Debordian: he seems to affirm situationist tactics of disruption, from dissolving the spectacle by *détournement* to injecting chaos into the tissue of the city by the purposeless (aleatory) drift.

Of course, Flusser limited his radicalism by asserting that there is an essential difference between "pure chance" of nature and chance in dialogue, in which humans may intervene and produce information from accidents (2011b: 111). In this context, freedom surprisingly involved competence – it meant the ability to transform "redundant coincidence into unforeseeable, into an adventure" (2011b: 113). But more interestingly, Flusser's views on the creative potential of

randomness were also partly counterbalanced by his rather more nuanced, or – as one could convincingly argue – rather inconsistent use of the term “information”. On numerous occasions Flusser referred to information as negentropy, or “reversed entropy”, and on other occasions as “improbable events”. The first meaning seems to be at odds with what has already been said, the second seems to support it. The first definition Flusser drew from philosophical papers written by a French physicist Léon Brillouin. For him information, in contrast to Shannon, Weaver and Shaw, represented “negative contribution to entropy” (14). Brillouin, who approached information from a different perspective than the scholars mentioned above, attempted to solve an old philosophical conundrum called the “Maxwell’s demon”. This hypothetical creature, a literary invention by James Clerk Maxwell which served him to illustrate the second law of thermodynamics, was supposed to counter entropy by introducing order into disorderly systems. Although initially the demon was used only for educational purposes, it soon possessed the minds of many scientists and philosophers who were intrigued whether such entity is even theoretically possible – and if not, why. In Maxwell’s story the creature’s job was to monitor every particle in a gas chamber and to separate them according to their speed (slower ones to side A, faster to side B). Brillouin (and earlier Leó Szilárd) proved that demon’s work could not be done without expending energy and thus – on a wider scale – it did not counter the second law of thermodynamics. But more interestingly – from our perspective – Brillouin noted that the demon’s job was no other than producing information. And this is approximately how Léon Brillouin defined information itself – as counter-entropy, or, how he called it, *negentropy*. According to his ideas informing meant taking specific form. It involved the ability to reduce ambivalence and uncertainty through the introduction of order. Moreover, demon’s work was a noble task. It was an act of rebellion against the natural tendency in the world towards maximum entropy. Flusser imagined that such Maxwellian entities – “automatic censors or critics (2011b: 117) – will become necessary in telematic society, or otherwise humanity will drown in excess of accidental information produced in dialogical networks. It is worth noticing that Flusser’s response to the contemporary “post-truth condition” of uncontrollable spread of information would be more automation.⁴

Flusser adapted the thermodynamic interpretation of information in his philosophy to merge the basic tenet of Heideggerian existentialism (*Dasein* as being towards death) with a more scientifically informed perspective. He translated human existential struggle against death as a

⁴ In *Into the Universe of Technical Images* Flusser prophesizes: “And this brings us to the third question: wouldn’t it be possible to automate this critique so that people wouldn’t have to check all the information running in the net for its informational content? Such automata would guarantee the negatively entropic character of all dialogue. They would automatically not only eliminate everything redundant, all gossip, all kitsch, but also erase it from memory, as if such accidents and excesses had never happened” (2011b: 121).

struggle to oppose the entropic tendency of every physical process in the universe, which was possible only through production of negentropic information. Flusser was convinced that any form of “new enlightenment” (that would lead to the creation of telematic society) must necessarily involve a moment of *anagnorisis*, when humanity finally recognizes that its sole purpose is to produce information and – temporarily of course – rebel against the inevitable growth of disorder: “If we define human beings by their negentropic tendency, then this is when they will become truly human for the first time, that is, players with information” (2011b: 94).

As a result, Flusser tangled himself into a paradox that he never explicitly addressed, but rather productively exploited throughout his work. On the one hand, since he strived to reformulate the notion of freedom and distanced himself from its definitions in terms of subjective choice, he appreciated the value of accidents and catastrophes as potentially productive (informative) events. But such standpoint necessarily implied that information could be understood in Shannon’s terms as entropy, because every event that happens “out of order” increases the possibility space of a given system. On the other hand, he did not fetishize “blind luck”, because it would mean that a random number generator could serve as an equally valuable source of information as a human being. For that Flusser’s philosophy was too “humanistic” (although not anthropocentric). It was not devoted to some abstract or technical idea of freedom, but to its more human and complex variant.

But – as I want to argue – the sheer possibility of constructing an existentially inclined theory of communication was possible because of this foundational inconsistency. N. Katherine Hayles compared these approaches to information in her famous saying: “Like the optimist and pessimist regarding a glass of water, Shannon and Brillouin locate themselves at the halfway point of the information–probability arc and look in opposite directions” (1990: 59). Thus, depending on the perspective, information can denote order or disorder. This was of course a crucial problem for scientists. Jeffrey S. Wicken, who is a biochemist studying evolution, commented that two ways of understanding information “is one too many. It is not science's habit to affix the same name to different concepts. Shared names suggest shared meanings, and the connotative field of the old tends inevitably to intrude on the denotative terrain of the new” (1987: 183). Wicken’s critique is justified as long as it concerns science. Communication systems of “hard sciences” can benefit from catastrophes, as Thomas Kuhn convincingly showed, but they inherently seek to reduce uncertainty. The form of dissertation, which Flusser avoided throughout his career despite being affiliated with academia, aims exactly at this: to introduce a rigid framework which allows the author to get rid of any ambiguities. This is also my task – present the problem as a formula, a paradox that can be easily approached. But Flusser’s essayistic style, although simple and clear, benefits from uncertainty.

Chadwick Smith suggested interestingly – and in somewhat “deconstructivist” spirit – that Flusser’s project of “new humanism” may lie “precisely at the seams and cracks in [his] own work” (13). Smith’s perspective focused on Flusser’s concern about inhuman scales introduced in the 20th century by science and technology (from particle observation to Google Earth), and the “human” aspect of the grey zones between them. Analogously, the paradoxical nature of information in Flusser’s communicology established an uncertain, grey zone in its own theoretical foundations. From this point of view, we can think about the “groundlessness” of information, which would not mean immateriality, but its theoretical ambivalence. Moreover, the ambiguous information – just like Kurt Gödel’s incompleteness theorem – saves science from “inhuman” totality. In this sense, the transition from Newtonian paradigm based on deterministic worldview to programmatic view on universe of programs actually offers more possibilities to think about freedom. The programmatic perspective, which introduces “information” and “chance” as its core concepts, breaks with teleonomy, and thereby introduces a new kind of dialogic freedom which has little in common with the ideas of “free will” and of “free action” alike. Flusser realizes that this emancipation from subjectivity comes at a price. Recognition that teleonomy is just a superficial naivety leads him to the conclusion that new existentialisms for the “information age” should embrace the absurd (2013: 23).

Conclusion

If doubt is “a polyvalent state of mind” (2014b: 3), then information is a good notion with which one can begin doubting productively. As Hayles argued and Flusser’s philosophy illustrated, information cannot be in any way a stable ground to firmly thread on: not because it is electric and “immaterial”, but because it is highly ambiguous, even as a rational (and mathematical) concept. After all, information is a measure of pure difference and nothing more than that. For that reason information paradox lies deep underneath, as Rainer Guldin put it, “the deep ambivalence of media and their utopian but also dystopian possibilities” (2014: 16). We can witness the ambiguity and ambivalence of information technologies very clearly now, over 25 years after Flusser’s death. Regardless of our views on this matter, the post-truth reality, where players orchestrate technical images (memes) to produce improbable outcomes, is a realization of the telematic society. Improbability and absurdity are steadily taking place of truth and objectivity as the most cherished values of information society. And all attempts to stop this process seem to

make things worse. But media and computers get what they want: more and more data is being harnessed and new information (however absurd) is produced.

The second Enlightenment for the information age is thus still to come, and Flusser – as I am convinced – was trying to come up with philosophical notions and models that would allow us to orient ourselves in this new reality. The first Enlightenment, based on faulty determinism and narcissistic subjectivity, failed in this regard, because it explained the world in causal terms instead of probabilities. But, in contrast to Theodor Adorno, Max Horkheimer, and many other philosophers who debunked the myth of Enlightenment in the 20th century, Flusser strived to “update” and “actualize” the project of Enlightenment. For that he used science as a source of terms and models for his own philosophy. Of course, as he identified with the “groundless” position of a migrant, he never used science as a “hard ground”. He rejected scientific explicitness and rigid discipline of formalism, but never turned away from scientific creativity and scientific “entropy” which irreversibly dissolved old ideas. Flusser’s attachment to tradition struggled with this existential groundlessness – fuelled by doubt, he could never find true harbour. And this instinct was radically modern. Flusser shed some light on this problem in a short text called *On the Crisis of Our Models* (2002), where he claimed there that there had always been a pragmatic and performative dimension to his writing. He admitted that as a philosopher he was occupied primarily with building “models”, which is a very modern occupation. He stated: “For moderns, knowledge is in part the result of manipulations of models. This is an aspect of progress“ (75). Due to this accelerating tempo of cultural and technological change, humanity’s search for new notions and values becomes more and more desperate. This endeavour also becomes more complex, as it is no longer authentic and satisfactory to derive worldviews from non-mediated experience, however complicated they were. Likewise, the idea of immediate experience was called into question in the century that spitted out one communication technology after another. Finally, when the electronic vortex of data took place of heavy books in archives, mathematical notion of information had to replace the old, worn-out value of truth. Flusser realized it very soon and tried to simulate its consequence in the virtual space of philosophical speculation. The absurdity of this conceptual gesture defined his philosophy, and at its roots lay the radical doubt which transformed the “I” into a neural and programmatic web in the sea of other webs and programs. This absurdity grows even stronger when we realize that Flusser deduced this new human condition from science itself. After all, science is only “an extremely fascinating game, the most entertaining of all games, and most intelligent of all programs that amuse us” (2013: 42). And this game lets us express freedom, but more importantly it tells us what it means.

References

- Bröckling, Guido (2013). Das handlungsfähige Projekt? oder: Die Frage nach der Subjekthaftigkeit des Projekts in der Menschwerdung Zwischen Geste, Projektion und Verantwortung, "Flusser Studies 2013" (16).
- Finger, Anke, Guldin, Rainer, Bernardo, Gustavo (2011). Vilém Flusser. An Introduction, Minneapolis, MN: University of Minnesota Press.
- Flusser, Vilém (1989). Von linearen Entscheidungen zu synthetischen Projektionen, „gdi impuls“, no. 4.
- Flusser, Vilém (1998). Kommunikologie. Ed. Stefan Bollman, Edith Flusser, Frankfurt: Fischer.
- Flusser, Vilém (2002). Writings. Trans. Erik Eisel, Minneapolis, MN: University of Minnesota Press.
- Flusser, Vilém (2003). The Freedom of the Migrant. Trans. Kenneth Kronenberg, Urbana and Chicago: University of Illinois Press.
- Flusser, Vilém (2011b). Into the Universe of Technical Images. Trans. Nancy Ann Roth, Minneapolis, MN: University of Minnesota Press.
- Flusser, Vilém (2013). Post-History. Trans. Rodrigo Maltez Novaes, Minneapolis, MN: Univocal.
- Flusser, Vilém (2014a). History of the Devil. Trans. Rodrigo Maltez Novaes, Minneapolis, MN: Univocal.
- Flusser, Vilém (2014b). On Doubt. Trans. Rodrigo Maltez Novaes, Minneapolis, MN: Univocal.
- Fuller, Matthew (2005). Media Ecologies. Materialist Energies in Art and Technoculture, Cambridge, MA: MIT Press.
- Gigerenzer, Gerd et. al (1990). The Empire of Chance: How probability changed science and everyday life, Cambridge: Cambridge University Press.
- Guldin, Rainer (2014). "To make music with visionary power". On the Relationship of Music and Mathematics in Vilém Flusser's Work, "Flusser Studies", no. 17.
- Hacking, Ian (1990). Taming of Chance, Cambridge: Cambridge University Press.
- Hayles, N. Katherine (1990). Chaos Bound, Ithaca, NY: Cornell University Press.
- Mahoney, Michael S. (1990). Cybernetics and Information Theory. In: R. C. Olby, et al. (ed.), Companion to Modern Science, London: Routledge.
- Monod, Jacques (1971). Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology, New York: Alfred A. Knopf.
- Shaw, Robert (1981). Strange Attractors, Chaotic Behaviour and Information Flow, "Zeitschrift für Naturforschung A.", vol. 36, issue 1.
- Smith, Chadwick Truscott (2014). "The Lens is to Blame": Three Remarks on Black Boxes, Digital Humanities, and the Necessities of Vilém Flusser's "New Humanism", "Flusser Studies" no. 18.
- Wicken, Jeffrey S. (1987). Evolution, Thermodynamics, and Information: Extending the Darwinian Program, Oxford: Oxford University Press.