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ARTICLE

TECHNOLOGY STRIKES BACK[1]

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Abstract:

The concept of *Rückschlag* (relapse / striking back) seems to synthetize Flusser's theory of technic. This paper tries to disclose the different layers of meaning of this concept by relating it to similar approaches such as the idea of externalization theorized by the French paleoanthropologist André Leroi-Gourhan, the concept of feedback as it was developed by the inventor of cybernetics, Norbert Wiener, and the concept of interplay (*Zwischenspiel*) as proposed by Walter Benjamin.

Keywords: Feedback; Interplay; Externalization; Apparatus; Prosthesis; Epithesis.

Resumo:

O conceito de *Rückschlag*, ou contra-ataque, parece sintetizar a fase mais madura da teoria da técnica de Vilém Flusser. O artigo tenta revelar os diferentes níveis de significado contidos no conceito, relacionando-o com concepções similares como a ideia de exteriorização teorizada pelo paleoetnólogo francês André Leroi-Gourhan, o conceito de *feedback*, desenvolvido pelo inventor da cibernética Norbert Wiener, e o conceito de interação pensado por Walter Benjamin.

Palavras-chave: Feedback; Interação; Exteriorização; Aparelho; Prótese; Epítese**.**

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In his last years, between 1989 and 1991, Vilém Flusser updated his philosophy of technic, developing an original notion that has been overlooked by the scholars: the concept of *Rückschlag*, literally relapse, rebound, recoil, backfire. It is hard translating it into English, since it is, in its turn, a free translation of the English term *feedback*. However, as it is characteristic of Flusser's re-translation method, a few levels of complexity are added to the concept of *Rückschlag* that cannot be found in the one of *feedback*.

In order to fully understand it, we should step back and analyze some theories of technology that may engage in dialog with Flusser's one and that he probably knew: the idea of externalization theorized by the French paleoanthropologist André Leroi-Gourhan, the concept of feedback as it was developed by the inventor of cybernetics, Norbert Wiener, and the concept of interplay (*Zwischenspiel*) proposed by Walter Benjamin.

1.

In the eighth chapter of "Gesture and Speech", Leroi-Gourhan rethinks the history of technology as the history of the process of externalization of technical activities from the human body to external devices.[3] The process of externalization is also a liberation of the hand, which is now free to engage in other activities. Leroi-Gourhan identifies different stages within this phenomenon.

With the "emergence" of the first technical devices, "cutting, crushing, molding, scraping, and digging operations were transferred to tools. The hand ceased to be a tool and became a driving force".[4]

The second stage is the exteriorization of the motor process: something that occurs gradually, covering a very long time frame. The tools that strengthen the motor gesture of the hand are invented first: the spear-thrower (*atlatl*), the bow and the lever. The movement is enhanced, but the body is still fully engaged in the motor function. Later, human beings start using animal strength to activate tools: human motor function is deflected to drive the animal motor. Then the energy of wind and water is employed. After many centuries, the invention of the steam engine

[3] Flusser never mentions Leroi-Gourhan, but he translated a text by his close friend the paleontologist Bernardino Bagolini, who mentions Leroi-Gourhan as one of his main references. Flusser and Bagolini were in almost daily contact, especially when they both lived in Trentino-Alto Adige/Südtirol (1972-1976): even if Flusser never read Leroi-Gourhan we can assume he absorbed some of his theories through the conversations with Bagolini. Another important common point between Leroi-Gourhan and Flusser is their conception of graphic systems (pictures and writing) as technologies: just as the other technologies writing should also be considered an externalization of thought. Moreover, unlike the theorists of the Canadian school such as Marshall McLuhan and Walter Ong, both Leroi-Gourhan and Flusser think the oral age was dominated by visual culture, they believe writing systems developed from images (pictograms) and they relate the crisis of the written culture to the birth of new image technologies.

[4] LEROI-GOURHAN, André. **Gesture and Speech**. Translator: BOSTOCK BERGER, Anna. Cambridge MA-London: MIT Press, 1993, p. 242.

completes this stage: "the conquest of steam definitively confirmed the exteriorization of muscle power".[5]

The third stage of the process of liberation of the hand consists in overcoming the necessity of correcting and guiding the machine's operations. This is only possible if the technical device is provided with *executing organs* (as any tool), an *engine*, but primarily a *program* that governs the execution of the operation in its different phases. In other words, "evolution has entered upon a new stage, that of the exteriorization of the brain, and from a strictly technological point of view the mutation has already been achieved"[6].

In a similar way to Leroi-Gourhan, Flusser articulates the history of technology in four stages (*Stufen*): hands, instruments, machines and apparatuses.[7] Although Flusser does not refer explicitly to the concept of externalization, by including the hands in the history of technology he shows how he conceives the human body and the tools as part of the same technological life form.

Flusser agrees with Leroi-Gourhan that the process of externalization is producing a progressive and problematic liberation of the human beings from the work, but he prefers to focus on the concept of simulation: "tools, machines and robots can be regarded as simulations of hands which extend one's hands rather like prostheses and therefore enlarge the pool of inherited information by means of acquired, cultural information".[8] A simulation is an imitation of the main aspects of something and it reduces its complexity to a single function: instruments are at the same time more effective and more limited than the body organs they simulate.

If every technological device is an extension and a simulation of the human body, why does Flusser distinguish instruments, machines and apparatuses? First of all because of the object of the simulation: tools simulate organs and parts of the body (a wooden leg), machines simulate an entire mindless body (a Cartesian automaton) and apparatuses simulate a nervous system (a computer)[9]. In second place each of these simulations requires a different epistemological approach: "tools are empirical, machines are mechanical, and robots are neurophysiological and biological."[10]

2.

Norbert Wiener, known as the father of cybernetics, was also an eminent popularizer and a theorist of technic who had social, political and moral concerns.[11]

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5 Ibid., p. 246.
6 Ibid., p. 252.
7 FLUSSER, Vilém. "The factory". **The Shape of Things: A Philosophy of Design**. Translator: MATHEWS, Anthony. London: Reaktion Books, 1999.
8 Ibid., p. 44.
9 FLUSSER, Vilém. **We Shall Survive in the Memory of Others**. Cologne: Walther König, 2010, p. 38.
10 FLUSSER, Vilém. "The factory". Op. Cit., p. 46.
11 Flusser had a copy of Wiener's *God & Golem INC*. For more details about their relationship see GULDIN, Rainer. "Golem, Roboter und andere Gebilde. Zu Vilém

In "The Human Use of Human Beings", his first book on the social and ethical implications of the new cybernetic technologies, Wiener distinguishes "the older machines, and in particular the older attempts to produce automata", from the "modern automatic machines such as the controlled missile".[12] The former functions "on a closed clockwork basis" and does not have any interaction with the environment. The latter possesses sense organs, which enable them to receive messages from the environment and interact with it. If the engine can be considered the essential element of the first industrial revolution, having substituted the labor of slaves and animals with the energy of the machine, the second industrial revolution can find its icon in the photoelectric cell.[13] A few pages further, Wiener describes these new machines through two general features:

> One is that they are machines to perform some definite task or tasks, and therefore must possess effector organs (analogous to arms and legs in human beings) with which such tasks can be performed. The second point is that they must be *en rapport* with the outer world by sense organs, such as photoelectric cells and thermometers, which not only tell them what the existing circumstances are, but enable them to record the performance or nonperformance of their own tasks. This last function, as we have seen, is called *feedback*, the property of being able to adjust future conduct by past performance.[14]

The older machines, such as the automata, can only execute what they are programmed for and regularly need human intervention to adjust their functioning. On the contrary, machines provided with self-regulatory systems – modern machines – can react to a change in the environment without human interference.

In "God & Golem Inc.", Wiener applies the distinction between older and modern machines to the prosthetic engineering, but this time he distinguishes them into three types. A simple, mechanical substitution of a missing limb, such as a wooden leg, is the most trivial case. A more interesting one is the prosthesis which can substitute for muscles and damaged sense organs, such as a robot hand connected to the nervous system. But the third example is the most important one: "this type of engineering need not to be confined to the replacement of parts that we have lost. There is a prosthesis of parts which we do not have and which we never had".[15] On our airplanes we have the wings of an eagle; thanks to our sonars we navigate like dolphins. This enhancement is not just for one individual, but for groups of people and finally for the society as a whole.

According to Wiener, feedback is what distinguishes older and modern machines: it is the essential condition for them to learn from the environment and to learn

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Flussers Apparatbegriff". In **Flusser Studies**, n. 9, November 2009.
[12] WIENER, Norbert. **The Human Use of Human Beings. Cybernetics and Society**. London: Free Association Books, 1989, p. 22.
[13] Ibid., p. 23.
[14] Ibid., pp. 32-33.
[15] WIENER, Norbert. **God & Golem Inc.: A Comment on Certain Points where Cybernetics Impinges on Religion**. Cambridge MA: The Riverside Press, 1964, p. 76.

about their action on the environment and therefore establish a relationship with it. Like Flusser, Wiener thinks modern machines are simulations of human bodies and minds: this means that feedback is what makes machines similar to humans. The concept of feedback, which was elaborated in the context of engineering, can also be applied to human beings (and to any other biological system) and the way they interact with their environment.

What happens when a human being interacts with a machine provided with self-regulatory systems? Each entity, human and machine, is the environment of the other: they both act on the other and learn from the other. This is what Wiener calls a mixed system. What should a human being learn from a machine? It may appear paradoxical, but according to Wiener they should learn from machines how to stay human. Human beings need to learn, by interacting with the machines, what they do to them, how they are both affected by their mutual action and especially how to avoid being transformed into machines in their turn.

> I have spoken of machines, but not only of machines having brains of brass and thews of iron. When human atoms are knit into an organization in which they are used, not in their full right as responsible human beings, but as cogs and levers and rods, it matters little that their raw material is flesh and blood. *What is used as an element in a machine, is in fact an element in the machine.*[16]

Just as we develop our social skills, growing up and interacting with other people, and learn how to respect others and to be respected, we should learn how to interact with machines without losing our humanity.

3.

In his well-known essay, *The Work of Art in the Age of Its Technological Reproducibility*, Walter Benjamin also seems to introduce a distinction between two different stages of technology[17]. However, he is not interested in a specific feature of technology itself, but in the different ways human beings interact with technology and through it with nature. He distinguishes a first technology, based on mastery over nature, and a second one based on interplay.[18]

> Whereas the former made the maximum possible use of human beings, the latter reduces their use to the minimum. The achievements of the first technology might be said to culminate

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16 WIENER, Norbert. **The Human Use of Human Beings**. Op. Cit., p. 185.
17 Flusser mentions Benjamin as one of his main references in an interview to Peternák of September 1988. In a letter to Dora Ferreira da Silva dated July 29, 1990, he regrets not having read Benjamin earlier.
18 The French philosopher Jean Baudrillard, whom was read, quoted and considered a friend by Flusser, also distinguishes two different relationships with technology in a text where he also mentions Benjamin: one based on reciprocity, the radical openness to a possible response, the other one based on reversibility, which is only a simulation of a response, integrated in a system that does not really leaves space for otherness. BAUDRILLARD, Jean. **For a Critique of the Political Economy of the Sign**. Translator: LEVIN, Charles. St. Louis Mo: Telos press Ltd., 1981.

> in human sacrifice; those of the second, in the remote-controlled aircraft which needs no human crew. The results of the first technology are valid once and for all (it deals with irreparable lapse or sacrificial death, which holds good for eternity). The results of the second are wholly provisional (it operates by means of experiments and endlessly varied test procedures).[19]

The first technology was developed in the context of worship and ritual, but far from being restricted to the past, it is still present today, every time something is done "once and for all". The second technology is necessarily recent, because it needs receptors to function by itself, reducing the use of human beings to the minimum. It is not conceived to master the world, but to function within it.

Benjamin, who writes in 1935, does not use the word *feedback*, but significantly relates the second technology to the concept of *test*. This would be a mark of contemporary society that translates every human action into a measurable performance. Every aspect of our daily life seems to be organized according to the model of sports performance and all this happens through the interaction with the second technology: actors are tested by the camera, workers by the rhythm of the assembly line. Test is what turns war into sport and ritual into spectacle, adding a playful dimension.

> The origin of the second technology lies at the point where, by an unconscious ruse, human beings first began to distance themselves from nature. It lies, in other words, in play. […] The first technology really sought to master nature, whereas the second aims rather at an interplay [*Zwischenspiel*] between nature and humanity.[20]

The term interplay is not used by Benjamin without a reason: the interaction with the second technology has a recreational dimension that does not belong to the mythical world of the first technology. What makes the interaction with new machines playful? First of all their unpredictability: they do not simply obey our orders, they do not follow a rigid program as clocks do. They test us while we are testing them and they react to our reactions. Even an old analog camera (which Benjamin considers already part of the second technology), for the simple reason of recording reality from its own point of view has something to teach us. Watching a film we can discover something new, even if we were present during the shooting: the mechanical eye discloses our "optical unconscious".[21] The interaction with the second technology is playful because we *learn* something from it.

The opposition between the serious dimension of the older machines and the playful one of the second technology can also be found in Flusser, who defines

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[19] BENJAMIN, Walter. **The Work of Art in the Age of Its Technological Reproducibility**. Translator: JENNINGS, Michael. Cambridge MA-London: Harvard University Press, 2008, p. 26.
[20] Id.
[21] This phenomenon is clearly exemplified in the plot of "Blow Up", by Antonioni.

apparatus as "a plaything or game that simulates thought".[22] While machines from the industrial age are thought through the category of *work*, since they are meant to change the world (in an irreversible way), apparatuses of the post-industrial society are meant to change the meaning of the world, therefore they have to be thought through the category of *play*. By working one informs a material, by playing one creates new information. The main difference between the industrial and the post-industrial society is that the producers of information, which have always existed (such as poets, painters, scientists, and more recently managers and programmers), are not marginal anymore: they belong to the heart of the production system. Since the second technology appeared, the distinction between work and play, production (*negotium*) and leisure (*otium*) is becoming increasingly more nuanced. Benjamin – and more explicitly Flusser – anticipates the theory of cognitive capitalism developed at the end of the 1990s by Paulré, Moulier Boutang and Vercellone.[23]

According to Benjamin, the second technology leads to a reorganization of the entire society: the change in the relationship between human beings and the apparatuses involves a change in the relationship among the humans themselves. "A new, historically unique collective" is born, "which has its organs in the new technology."[24] Like Flusser, Wiener, Leroi-Gourhan, but also McLuhan, Benjamin thinks of technology as an extension of human organs, but more than anyone else, he stresses the collective dimension of this body. In order to refer to the connections between this new collective and its technical organs, Benjamin uses the word *innervation*, which he borrows from Freud's early writings. This term has a double meaning: the distribution of the nerves in every part of the body and the act of stimulating a reaction of an organ. The two aspects are strictly related since the stimulus needs the network, but the network is built through the stimuli. The collective Benjamin refers to in 1936 is still in the making, it is a project: this is why he writes about "efforts at innervation" and he relates them to revolutions. It is a stimulus that waits for a response, a playful training. "Just as a child who has learned to grasp stretches out its hand for the moon as it would for a ball, so humanity, in its efforts at innervation, sets its sights as much on currently utopian goals as on within reach."[25] An apparently useless gesture as stretching out one's hand for the moon can be a training for a child to learn how to better grasp the ball – but, at the same time, it teaches him that he can strive for something more than a ball.

> Dealing with this apparatus also teaches them that technology will release them from their enslavement to the powers of the apparatus only when humanity's whole constitution has adapted

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[22] FLUSSER, Vilém. **Towards a Philosophy of Photography**. Translator: MATHEWS, Anthony. London: Reaktion Books, 1999, p. 83.
[23] PAULRÉ, Bernard; CORSANI, Antonella; DIEUAIDE, Patrick; LAZZARATO, MAURIZIO; MONNIER, Jean-Marie; MOULIER-BOUTANG, Yann; VERCELLONE, Carlo. **Le capitalisme cognitif comme sortie de la crise du capitalisme industriel: Un programme de recherche**. Paris: I.SY.S. – MATISSE UMR CNRS, Université Paris 1, n° 8595.
[24] BENJAMIN, Walter. **The Work of Art in the Age of Its Technological Reproducibility**. Op. Cit., p. 45.
[25] Id.

> itself to the new productive forces which the second technology has set free.[26]
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> Because this technology aims at liberating human beings from drudgery, the individual suddenly sees his scope for play, his field of action [*Spielraum*], immeasurably expanded. He does not yet know his way around this space. But already he registers his demands on it.[27]

4.

Flusser writes the essays contained in the book "Gestures" in the 1970s. When he decides to publish it in 1991, he adds an interesting reflection about the concept of prosthesis that proves how in those years his theory of technic reached a new stage. While writing, he observes, we are moving our fingers and we are moving a pen: does it make sense to distinguish the movement of the fingers from the movement of the pen? "From one standpoint, the pen may be regarded as a finger prosthesis (a lengthening outward, so a 'finger extension') but, from another standpoint, as an 'epithesis' of the pen (an inward extension of the pen, a 'pen-internalization')".[28]

This simple reversal of the point of view actually implies a deep critical reconsideration of the theory of the prosthesis. The idea that technology is an extension of the body – which can be found in most of the theorists of technic from Ernst Kapp to Norbert Wiener, André Leroi-Gourhan and Marshall McLuhan – maintains the human subject as the center of this process. Flusser seems to amplify the post-humanist approach that is already contained in Benjamin's notion of *innervation* and in Wiener's *mixed systems*. By putting the concept of internalization (*epithesis*) in contact with the concept of externalization (*prosthesis*) he is applying the idea of *feedback* to the analysis of the interplay between humans and technology. All this without forgetting the playful and agonistic dimension of this interplay: every move the human and the technological components make is a reaction and is based on an expectation of a reaction. This is when the concept of *Rückschlag* comes into play.

This term first appears in the essay from 1989 "The lever strikes back" ("Der Hebel schlägt zurück") and then again in several articles published in the following years, including "Die Macht des Bildes",[29] where he applies the concept of *Rückschlag* to the relationship with the images, conceived as technologies, and in *Kommunikologie weiter denken*.

The essay in which the term occurs for the first time, "The lever strikes back", may have been inspired by a short story written by the Chinese Taoist Zhuang Zhou,

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[26] Ibid., pp. 26-27.
[27] Ibid., p. 45.
[28] FLUSSER, Vilém. **Gestures**. Translator: ROTH, Nancy Ann. Minneapolis: University of Minnesota Press, 2014, p. 165.
[29] FLUSSER, Vilém. "Die Macht des Bildes". In H. von Amelunxen and A. Ujica (eds.), **Television/Revolution: Das Ultimatum des Bildes. Rumänien im Dezember 1989**. Marburg: Jonas, 1990, pp. 116-124.

reported by Werner Heisenberg in the chapter "Science as Part of the Interplay Between Man and Nature" of his book "The Physicist's Conception of Nature", and then quoted by Marshall McLuhan in "The Gutenberg Galaxy", which Flusser almost certainly knew.

> As Tzu-Gung was traveling through the regions north of the river Han, he saw an old man working in his vegetable garden. He had dug an irrigation ditch. The man would descend into a well, fetch up a vessel of water in his arms and pour it out into the ditch. While his efforts were tremendous the results appeared to be very meager.
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> Tzu-Gung said. "There is a way whereby you can irrigate a hundred ditches in one day, and whereby you can do much with little effort. Would you not like to hear of it?"
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> Then the gardener stood up, looked at him and said, "And what would that be?"
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> Tzu-Gung replied, "You take a wooden lever, weighted at the back and light in front. In this way you can bring up water so quickly that it just gushes out. This is called a draw-well".
>
> Then anger rose up in the old man's face and he said, "I have heard my teacher say that whoever uses machines does all his work like a machine. He who does his work like a machine grows a heart like a machine, and he who carries the heart of a machine in his breast loses his simplicity. He who has lost his simplicity becomes unsure in the strivings of his soul. Uncertainty in the strivings of the soul is something which does not agree with honest sense. It is not that I do not know of such things; I am ashamed to use them.[30]

McLuhan mentions this text to show how the sensitivity of a modern scientist changed: Newton wouldn't have found this interesting. Heisenberg, in his turn, wants to show how ancient is the problem of technology. He thinks the "uncertainty in the strivings of the soul" represents very well our contemporary alienation, but at the same time he objects: if Zhuang Zhou was completely right, 2300 years of technical progress that followed the Wise's warning shouldn't have left any trace of the strivings of our souls.

"The lever strikes back" could also be interpreted as a commentary on this short story. In this essay Flusser analyzes the same technology Tzu-Gung disliked so much and, just as Zhuang Zhou, he's mostly interested in understanding how the technology affects our strivings: how technology strikes back (*schlägt zurück*).

The lever, writes Flusser, can be considered a simulation of an arm: an extended arm. "It increases the ability of the arm to lift and ignores all the other functions

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[30] ZHUANG Zhu. Apud HEISENBERG, Werner. **The Physicist's Conception of Nature**. London: Hutchinson, 1958, pp. 20-22. Apud MCLUHAN, Marshall. **The Gutenberg Galaxy**. Toronto: University of Toronto Press, 1962.

the arm has."[31] The lever does not have any magical power over me: using it once does not affect me. This is why the notion of *Rückschlag* is so useful: it takes into account time and habit. There is a delay in the interplay between the human and the machine. When I get used to lift with a lever, in order to obtain the best results, my body moves adapt to its needs. At first I think I'm using the lever for my needs, I think the tool is at my disposal. But then the lever *strikes back*, it counterattacks: "we have been moving our arms as though they were levers since we have had levers. We simulate that which we have simulated."[32] When we are developing or programming a new technology we shouldn't limit our considerations to questions such as: what could it do? Or even what could it do to us? According to Flusser, our first concern when dealing with a new technology should be: what could it make us do? Or even: what could it make us want to do? "The apparatus only does what the human being wants, but the human being can only want what the apparatus can do."[33]

This has been the problem of technology since the ancient times. How did we survive? How happened we didn't all turn into organic levers? The main solution human beings found, according to Flusser, was just moderation in the use of the tool and diversity of the kind of instruments we have to deal with. For this reason, workers who have to deal with the same tool every day, for years, are much more affected than other people. This is why alienation is a problem that emerged especially in the industrial age, where one single machine surrounded by the workers becomes the center of the production process. In the pre-industrial age, where the worker was surrounded by his instruments, the *Rückschlag* effect was more mediated. The concept of alienation is related to the concept of *Rückschlag*, but they cannot be identified. In "Towards a Philosophy of Photography", an anticipation of the concept of *Rückschlag* can be found: Flusser writes that humans create tools using themselves as a model, but then they take the tools as models for themselves, the world and the society. In the 17th century, for example, machines became the models that philosophers were using to conceive everything from human bodies to the stars. Now, in the age of apparatuses, "new, robot-like actions are observable everywhere: at bank counters, in offices, in factories, in supermarkets, in sport, dancing".[34] Does this mean that originally, before they started creating technologies, human beings were behaving as real humans and then they were progressively alienated because of the *Rückschlag* effect? According to Flusser, this is not true for at least two reasons. First of all there is no original pre-technological stage in the history of humanity. Secondly, because "this *Rückschlag* ('feedback') is what distinguishes us human beings from the other living beings".[35] We are human beings *because* we have an interplay with the technology we create, based on a long-term, playful, mutual feedback. When Flusser says that our goal is to stay human, it does not mean that we should give up technology and return to our supposed

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31 FLUSSER, Vilém. "The lever strikes back". **The Shape of Things: A Philosophy of Design**. London: Reaktion Books, 1999, p. 51.
32 Ibid., p. 53.
33 FLUSSER, Vilém. "The factory". **The Shape of Things: A Philosophy of Design**. Op. Cit., p. 48.
34 FLUSSER, Vilém. **Towards a Philosophy of Photography**. Op. Cit., p. 71.
35 FLUSSER, Vilém. "Die Macht des Bildes". Op. Cit., p. 118, my translation.

original self. It means, on the contrary, that we should not get stuck in a standardized clockwork-like functioning, but adapt to our constantly changing technological environment, react and counter-attack.

What Flusser writes about *Rückschlag* seems to be valid for all kinds of technology, from the older machines, such as a lever, to the modern ones. But does it change somehow with the new machines? How do apparatuses strike back? They are provided with a feedback system: this means that they are also affected by us. The *Rückschlag* effect is mutual: we can experimentally observe in them what happens to us. In the past, Flusser observes, we used animals as "living machines": for example, in the Paleolithic, we used jackals as hunting tools. Apparatuses, which react and learn, are probably more similar to those jackals than to levers. Just like with jackals, if we do not learn how to deal with them, they could harm us. How should we program the apparatuses so that they will not harm us? "Naturally, we can design them in such a way that they lick us instead of biting us. But do we really want to be licked? These are difficult questions because nobody really knows what they want to be like."[36]

For the first time in the history of humanity, the technology that we are surrounded by is not stupid as a lever: it simulates our thought. Apparatuses are neither harmless tools at our disposal, nor mysterious entities that control us: they are mirrors of what we are.[37] If we try to prevail, they will prevail, if we want them domesticated, we will turn into pets. But if we learn how to play with them, we could grow up together.

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