



Three pages by Bernard Stiegler

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The noetic loop, its flavors¹ and absolute non-knowledge as fixed capital

Unlike the sensorimotor loop that the tick's circuit is, the noetic loop is a whorl: it forms the spiral of ubris where the exosomatic² drift occurs, which is a transformation of the world and of living environments through organological³ - and not only organic - production which reveals a new type of diversification by artificial selection, constituting not only *a local difference⁴ of entropy*, that is to say a negentropy⁵, but *an exorganologically located neganthropy*.

Organological⁶ neganthropy⁷ is not a negentropy: it is not produced by the living, but by the non-living placed at the service of the living being that is in turn placed at its service: clothing, tools, artificial organs, paths, roads, dwellings, cities,

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- 1 "Flavors" in French is "saveurs" and has the same origin as "savoir" (Eng. "knowledge")
 - 2 The word "exosomatic" denominates the external extensions of men's bodies usually called "tools".
 - 3 In Stiegler's view, tools are seen as external organs. Their study is therefore called "organology".
 - 4 Having never read anything by Postmodernist authors, I shall not discuss about what the french term "différance" means in their writtings. It would probably be too long anyway. The word *différance* has been coined by Jacques Derrida because he noted that "différer" has two meanings in French. The most frequent one is "to be different from", like in English. A less frequent meaning but quite used too is "to occur with some delay" such as in "l'opération a dû être différée" which in English would be "the operation had to be postponed". As there was no noun corresponding to this second meaning, Derrida created the word "différance". In this case the meaning is that the increase of entropy has been locally delayed or postponed.
 - 5 **Entropy** is a complex and somewhat slippery notion that has often been equated with disorder, so **negentropy** relates to the order spontaneously created by open systems (among which living beings), that is, systems that are exchanging matter and energy with the outside world. **Negentropy** has sometimes been equated with the notion of information due to a high similarity between the mathematical expression for Entropy and Claude Shannon's definition of Information..
 - 6 Since tools and techniques are external organs, the associated corpus of knowledge is an organology.
 - 7 I must say at this point in my reading, I am still not sure what the term neganthropy means in Stiegler's thought.

engrammages⁸, mail, computers, networks ... everything that makes up the world is made up of such *pharmaka*⁹, where social relations of obligation and domination are established, that are more or less functional and dysfunctional. Neganthropy therefore always produces an increase in the rate of entropy, for example through the dissipation of energy and the destruction of living environments and of organisms themselves during what geographers describe as *anthropization*.

But organological transformation (exosomatic organogenesis¹⁰) is also what produces neganthropy. Neganthropology and its neganthropic production, which results from exosomatization, only materialize through the knowledge that they require, and which, in so far as they take care of the *pharmaka* in order to intensify their neganthropic possibilities, are therapeutics¹¹. **This knowledge produces flavors, that is to say differences, noodiversified nuances¹² by which the**

8 “Engrammage” is anything recorded in some kind of memory mostly, but not only, graphical forms of memory, like writing or the equivalents of writing in digital or electronic technologies.

9 “*Pharmaka*” is the plural of the Greek word “*pharmakon*”. With the ancient Greeks and with Stiegler a *pharmakon* is something which can be both poison and remedy. In Stiegler's view, this is the case with all tools and technologies. To which I will personally add the theories, ideas, etc.

10 As a first approximation, “exosomatic organogenesis” is more simply the process of technological evolution.

11 At this point of the reading, perhaps we may make the following approximation: Neganthropy would be as regards men the equivalent of what negentropy is more generally for living beings, i.e. the capacity to produce order from disorder . But in the case of human beings, due to the use of tools and energies external to the living human body, neganthropy includes a part of entropy increase and hence also produces disorder (physical and also human and-or social disorders in particular). Yet, taking *care* of tools and techniques, that is to say enhancing the “remedy” side associated with these *pharmaka* that tools always are, by identifying their “poison” sides, makes it possible to reduce this production of entropy (of disorder - again, social disorders among others.). What must then be taken care of, is not only tools and techniques as such, but more particularly, and even especially, the relations which are built between the human beings and their tools, as well as the transformations that tools and technologies induce in humans, whether at the physical level (e.g. Cancer) or at the mental and intellectual level. Neganthropy according to Stiegler therefore includes the specific sort of knowledge which makes it possible to make a non-toxic use of tools. This is why Stiegler says that neganthropy is a kind of *therapeutics*.

12 “Noo” denominates thought and “Noo-diversified” thus designates diverse, varied thoughts. An equivalent as regards thought of biodiversity in Biology.

exosomatic being¹³ constantly rises towards a noesis which is more than human, which is always super-human - like the cosmos is always sur-realistic: the cosmos, which is not only the Universe, is made up of places from which arise improbable possibilities, surreal in that¹⁴.

This tendency contained in the exosomatization is however and perpetually destroyed by the opposite, anthropic¹⁵, homogeneous tendency, dictating to the very great noetic diversity forming the noodiversity, the obligations to which it is forced to adapt, in particular since capitalism has seized the Western knowledge to make it a production function and an economic domination power by means of calculation.

Thus, the *episteme* of capitalism is formed which, having become the purely and simply computational fixed capital, tends to transform knowledge into information systems since the appearance of digital tertiary retention¹⁶, concretizing what Marx's "*Fragment on machines*" described as an automation

13 In other words Man

14 This is one of two sentences where Stiegler refers to surrealism and it is not trivial. Although I do not like the term "surreal" at all, its use here seems - for once - justified. Realism - scientific or not - is a reductionism. It claims to describe the Cosmos as it is. But it only describes what it is by systematically "forgetting" what it can become at any moment. Realism as opposed to SUR-realism, claims to eradicate the possible, the unexpected, from the description of the Universe. But when considered from the human world, the Cosmos also includes what the Universe can become, it includes the spontaneous *transformations* of the Universe as well as the *transformations* that human activity produces within the Universe. *Transformations as opposed to interpretations alone*, as Marx said when he said that "the philosophers have only interpreted the world and it is now a question of transforming it". We may note that in a similar way, the physicist [Ilya Prigogine](#) writes that, from now on, *science is no longer reduced to describing what is*, but according to Prigogine's own expression "designates (indicates) possibilities".

15 Stiegler's thought is here built on an analogy, the couple anthropy-neganthropy is the analog of the couple entropy-negentropy. Entropy-Negentropy is a couple of opposites that apply to the physico-chemical domain (biology included) while the couple anthropy-neganthropy applies to the human and social domain. Anthropy is something like an equivalent of "human mess and human induced mess".

16 As first approximation, *retention* means memory. But a memory which is not necessarily stored in a memory, but just anywhere in tools, habits, traditions, in any of the material of non material artifacts created by human activity.

achieved by the integration and total absorption of knowledge into this fixed capital – which in reality leads to the disintegration of knowledge in, through, and as, absolute non-knowledge¹⁷.

The question is therefore to cultivate the possibility of a neganthropological bifurcation¹⁸ directly on and from the computational exosomatization, and as its prescriptive therapy, which requires the organological invention of new data architectures designed in close relation with academic organizations revisiting, in the era of digital, the computational and reticular tertiary retentions, what Kant already described as a conflict of faculties¹⁹.

17 Stiegler extended Marx's *proletarianization* concept, that is to say the permanent tendency of Capitalism to integrate human knowledge within the production systems (i.e. machines and much more) which globally constitute, for Marx as for other economists, "fixed capital". Technical knowledge was previously created and maintained by craftsmen. It is easy to understand the interest, both economic and political, for Capitalism in doing without craftsmen and workers know-how that it has to pay for and, on the contrary, to have low paid operatives who no longer know anything. But in this process, knowledge itself, once integrated into machines disappears from the global social knowledge (and in this the technophobes and their contempt of any technical knowledge can be considered as precious auxiliaries of Capitalism). I can testify because I happened to have lived it directly that the deployment of the old "Artificial Intelligence", that of "expert systems" explicitly consisted in extracting the know-how of executants who were taking advantage of some specific knowledge (i.e. Lawyers, Doctors, Engineers) in order to incorporate their knowledge into databases and exploit this knowledge through algorithms and logic browsing these databases so as to "answer questions", "solve problems" and "produce solutions". Current Artificial Intelligence goes much further in the sense that it now allows - through the use of neural networks and so-called "deep learning" - to *directly* produce knowledge, without using human brains. For a (so-called) machine, to learn is one thing, but what it has learned is opaque, totally inaccessible to human brains and is no longer known at all to anyone. Literally speaking in the course of this process, human knowledge has totally disappeared. Moreover, Stiegler very early on extended Marx's concept of proletarianization - the loss of know-how - to other areas, such as the loss of *know-how-to-live* (i.e. for instance, the French "savoir vivre", the art of refining and increasing pleasures) and the loss of *know-how-to-know*, in other words the loss of the very conditions and knowledge required by the production of any knowledge whatsoever.

18 The term bifurcation here most probably constitutes a reference (obviously metaphorical!) to the mathematical and physical meaning of the word in the bifurcation theory which is a part of the theory of dynamic systems: https://en.wikipedia.org/wiki/Bifurcation_theory. Very roughly ; in dynamic systems, a very slight change sometimes drives the system to take a completely different behavioral path, in a way that may not really be predicted. This is also true of open systems and hence of living beings.

19 Never having read Kant, I cannot say anything of the "conflict of faculties". But what Stiegler is proposing here is that the University (and more generally society as a whole) seize on digital technologies and transform them in such a way as to incorporate or add to them the knowledge which would constitute remedies intended for annihilating or reducing their toxicity. It is the

Thinking as a critique of political economy: learning storytelling²⁰

This conflict is also and first of all a conflict of functions in exosomatization itself – and insofar as these functions are mathematizable. We must heal²¹ this conflict of functions (and faculties) in order to reorient exorganisms towards their negative anthropological destiny through a new macroeconomics bringing the Neganthropocene²² to existence, where the microeconomically differentiated economy through relations of noodiversified scales²³ is made necessary by exosomatization in that, from the start, this requires the establishment of an economy that is substituted to biology – but which can only do so by always being both a general economy in Bataille’s meaning and a libidinal economy in the sense of the second Freudian topic²⁴.

fact of seizing and using for a completely different purpose what is there, that the expression "directly on and from the computational exosomatization" emphasizes. One may be surprised at the hopes that Stiegler always placed in the university. But I remember hearing Stiegler calling for the constitution of "*knowledge co-operatives*" – what surrealism could be if it wanted to care – but historically the University was created as a knowledge co-operative, and although in a lesser extent, university *remains* such a co-operative.

20 In French “compter” (Eng. To count) sounds exactly as “conter”(Eng.; To tell stories)

21 Here is a French play on words between “penser “(to think) and “panser” (to heal).

22 The Neganthropocene is the type of human organization that must allow us to emerge from the Anthropocene, that is to say from this geological era when man has become a geological force – somewhat destructive it is true.

23 Stiegler is referring here to the type of socio-economic organization that he tried to implement through the “Plaine Commune” project, bringing together the means and efforts of a number of municipalities in the northern suburbs of Paris.

24 I am quite uneducated both as regards "Bataille's general economy" and as regards the second Freudian topic. But I observe that Stiegler perseveres in a separation between Nature and Culture, which in my opinion is very bad in that it perpetuates the Platonic and similar visions and especially the extremely harmful conceptions of the Abrahamic religions which clearly led us to the ongoing disaster.

Such an economy is and must remain political in that it is above all a science of criteria for artificial selection beyond the calculable, that is to say beyond the market²⁵. It would be necessary here to revisit and requalify great politics, the politics of memory and great health from the transvaluation of the Nietzschean transvaluation. Such a politics, which is also a general and libidinal economy, supposes giving a new meaning to German Ideology, as well as to Engels' Dialectic of Nature. Through such a rereading, where the question would be to interpret the interpretation as a transformation of the world²⁶, it is not first of all a

25 An "a science of criteria for artificial selection beyond the calculable" refers to the ideas that Stiegler has developed in recent years, namely about going beyond the limits of the calculable (ideas based for instance on reflections by Alan Turing – and other theorists of mathematics and computing – on computability) and about the art and way of going beyond the limits of calculation. What is at stake is hence selection criteria (for data, tools and architectures – IT or others) that would directly emerge from beyond calculation itself and lead us in a different cultural path.

The question here is quite simply the question of preserving human freedom as it is now faced with its destruction by the unleashed computerized market forces. Moreover, obviously, the Bourgeoisie is in essence the class which calculates and which counts.

26 It is not easy to understand the phrase "to interpret the interpretation as a transformation of the world" in the context of Stiegler's thought. On the one hand, we may imagine that Stiegler is speaking here of the power of transformation which also resides in the interpretation of the world. This would cover the use of the word "interpretation" itself. But on the other hand the use of the word "to interpret" in the expression "to interpret the interpretation as a transformation of the world" may refer to the musical field since Stiegler was for some years director of IRCAM (Institute of Research and Coordination for Acoustics / Music) near the Pompidou Center in Paris. In this case, the noetic loop would be of the type Transformation → Interpretation → Interpretation ("physical") of the interpretation, that is to say the effective implementation of the imaginary in the real, hereby transforming the real. Which seems consistent with the rest of this text.

Assuming that imagination is based on randomness, what is here suggested by Stiegler is similar to the project of *Muad'Dib* the God-Emperor of Dune in the novel series by Frank Herbert : make mankind's behavior random enough so that it may escape any threats based on computable predictions.

I would like to add that Marx's project is literally an alchemical project in the sense that Alchemy, far from the highly secret and mysterious esoteric and symbolic kind of sauces to which it has so often been reduced, is essentially a project of transformation of man through the practical as well as the intellectual experience of the transformation of matter. When the alchemist works to refine matter, he is working, in the same process and more fundamentally, on refining and transforming *himself*. In other words, *alchemical thought is essentially a thought of work*. Besides, Alchemy is originally very probably the offspring of craftsmen knowledge. It is therefore not very surprising to find some scents of Alchemy in the context of the workers emancipation movement. The above remark about the transformation of man through the alchemical work is central and appears to be valid in both "Western" Alchemy and Muslim Alchemy, although it is more readily tinted with mysticism in the latter case. In the traditional view of Alchemy, the alchemical experience is assumed to be an individual, solitary experience. In Marx's view the solitary alchemist is replaced by the whole of human society.

question of finding an alternative to capitalism, but of spawning an alternative to anthropy²⁷ from anthropy itself, and this, not through the dialectic of the power of the negative, which only leads to the impotence of resentment²⁸, but as an economy of the irreducibly pharmacological tendencies of neganthropy - without any possible relief.

The state of emergency that has become the state of affairs of capital as *smart and soft totalitarianism* requires a new rule of law cultivated according to the realities of contemporary exosomatization as they can and must give rise to a new knowledge, which, because it is not simply calculable, requires mobilizing the function of reason according to possibilities and impossibilities opened and closed by automated understanding. The function of this new reason can only be a new criticism. As a capacity for bifurcation and decision, it activates and reactivates (in the sense of Husserl) the data supplied by high-performance computing to interpretation as the power to bifurcate, that is to say as the power to act – to trans-form.

Such a problematic presupposes digital studies devoted to redesigning data architectures from the manufacturing functions of fingers such as, in

27 Anthropy is hence entropy of human origin, in other words the disorder (social and intellectual disorder too) resulting from human activities as long as they are not mitigated or corrected by neguanthropy, that is to say by healing and correcting, within human activities, the various forms of toxicity that may result from the unbridled use of technologies.

28 What Stiegler is proposing here is **action**, action *here and now* - or to put it more simply and more radically, the establishment of a form of production based on the imagination - instead of the cries and wailings of the post WW2 Parisian surrealists generation (and of many other people, alas), instead of the lazy expectations of a revolutionary “big night” too. It should be noted that the traditional attitudes of “absolute revolt” which are more pose than action also consist, as usual, in *interpreting* the world instead of *transforming* it, thus reducing any active revolt to some sort of religious passivity. This, in opposition and in total contradiction with “the real movement which abolishes the current state” referred to in Marx’s *German Ideology*.

There are many other tendencies among within recent communist theoretical activity which propose to move to communism here and now, in other words, to start building communism. The originality of Stiegler here is to put the emphasis on **work**, that is to say to suggest to work here and now, “right into and from the existing society”. This is reminiscent too of the importance of the word “**work**” in Debord’s sentence relating to “prosituationists”: “*in the work of the negative, they hate the negative and also the work*”.

exosomatization, the “digits” at the same time manufacture, count and tell stories. “Digital” here designates what ties calculation to fabrication and fabrication to storytelling. In other terms to the nocturnal and diurnal dream, which always supposes going beyond calculation. That is to say, precisely, the power to bifurcate, such as only knowledge, insofar as it takes care of the pharmakon by fictionalization, thus going beyond the anthropic dimension of exosomatic organs and their organization, is capable of reopening sur-real perspectives of a future.

In these new perspectives, the duty of the thrifty beings that we must be is no longer simply moral: it is economic in Nietzsche's meaning, which also means that it is cosmic. Based on the noetic power to dream and to realize one's dreams²⁹, which is the condition for exosomatization beyond reality, it must put itself at the service of a surrealist and serendipitous cosmology, using any possible available means to reach its goals : quasi-causal.

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²⁹ I added this underlining, it does not appear in Stiegler's text.