

# The rating Brain of Bureaucrats and Luhmann's Zettelkasten: two versions of the "Machine Man" in the age of digitalization

*Sergei Korolev\**, and *Irina Lyalina*

The Institute of State and Law of the Russian Academy of Sciences, Moscow, Russia

**Abstract.** The modern "digitalized" person is predominantly an object of information, to a lesser extent a subject and an agent of information. The digitalization of the individual manifests itself in the expansion of all sorts of rating systems through which the employer controls the employee and social media monitors people's daily lives. The phenomenon of "digitalized man" brings us back to the idea of dualism: the man of the modern information society is objectively bifurcated into a biopsychic organism, on the one hand, and his "digital replica", on the other. Niklas Luhmann proved by his way of life the possibility of a paradoxical synthesis between the idea of mechanistic (bureaucratic) functionality and the idea of spontaneous, intuitive insight inherent only in a living person.

## 1 Introduction

In our opinion, it is productive to analyze the modern state of the biopsychological organism called "homo sapiens" in terms of degradation theory [3]. By definition, the term "degradation" in this context suggests that anthropological optimism is being replaced by pessimism. At first, the Pythagoreans [3] and later Plato believed that human nature has a cosmic (divine) nature because man intuitively grasps (according to Plato "remembers") the basics of mathematics, i.e., in principle, any man is mathematical by nature [9]. Then, Aristotle lowered the Pythagorean-Platonic (numerical) pathos by stating that one need not comprehend anything beyond the basics of mathematics. It is enough for him to be a "political animal", i.e., a socially-oriented subject of the human collective [14] As we see, Aristotle was the first to realize the principal impossibility to reduce the "political animal" to a set of abstract forms, including those in the spirit of mathematical constructions.

The Middle Ages can be seen as an era of peculiar interaction between the Pythagorean-Platonic and Aristotelian traditions, with the latter usually dominating the former. The moment the Catholic Church lost control over the sale of indulgences, which can be seen as a perversion of the Pythagorean-Platonic tradition, the Reformation happened.

Descartes tried to rethink both traditions inherited from Antiquity. On the one hand, René Descartes reinterpreted Plato's latent dualism (in terms of extended and unextended, i.e., thinking substance); on the other hand, Descartes tried to reinterpret what might be called

---

\* Corresponding author: [sko.05@mail.ru](mailto:sko.05@mail.ru)

"Aristotelian biology". The fact is that all animals and, in part, humans were referred to by Aristotle as a term that translates well into English as "self-mover". In other words, animals - unlike plants - move themselves where they want to go. Aristotle thought so, but Descartes (see below) decided to "correct" him: animals, according to Descartes, are always driven by their instincts and affects. In other words, their movements are always reactive. Instincts and affects always "wind up" the animal movement. In turn, instincts and affects according to Descartes are always caused by external causes. In this sense, an animal is simply a "mechanism" that is affected by external causes. Man is quite another matter: he "exists because he thinks". Only man is the subject of goal-setting. The French medical-materialist Julien LaMettire (see below) seized upon the Cartesian analogy between the concept of "animal" and the concept of "mechanism" and extended it to man in his scandalous pamphlet "Man a Machine". By this, in our opinion, the theory of degradation in terms of anthropology has reached its "metaphysical plinth". LaMettire is, in fact, the latent "metaphysical" founding father of all modern anti-human aspects of digitalization (see below).

## **2 Study methodology**

The authors apply in this paper the logical, historical, sociological and comparative method. The latter is dominant in analyzing two poorly compatible trends of what might be called "anthropological digitalization," namely, the "rating replica" of the individual and the "Zettelkasten" model invented and implemented by the prominent sociologist of the last century, Niklas Luhmann.

### **2.1 Problematics of the term "man-machine"**

The most famous but clearly unwitting harbinger of modern digitalization is, in our view, René Descartes (1596-1650). However, it would be retrospectively unfair to classify Descartes as a supporter of the current technocrats of digitalization. First, the latter are too self-righteous to look back on metaphysics, even when it comes to René Descartes. Secondly, even if they had read Descartes' little work entitled Principles of Philosophy [2], it would have disappointed them with its central principle of "I think therefore I exist" and the fundamental dualism of Cartesianism. The technocrats of digitalization don't need thinking people. All the more, they abhor the idea of an insurmountable barrier between the world of extended things and the world of things conceivable. The former exist in space, the latter only in time. According to Descartes, man as a thinking being is the main riddle of the universe. For man incomprehensibly (not only for Descartes) combines in himself a substance of the extended and a substance of the thinking.

The sphere of law and order in Cartesian terms is the sphere of the dominance of the thinking substance over the extended substance, i.e., the dominance of the rational will, both within this thinking substance itself, such as the dominance of the rational will over the irrational will and the dominance of the rational will over the extended substance, i.e., the world of material things.

Descartes' dualism ultimately drove him to the impasse of what might be called anthropocentric chauvinism. Thus, Descartes clearly states that the animal is nothing other than a perfect machine, or automaton, created by God. Humans, too, can make machines, such as clocks or winding dolls, but they - according to Descartes - can never be as perfect as animal automatons. Thus, Descartes' rationalism is conflated with mechanisticism [6]. In the context of the mechanistic worldview, man is seen as a rational being, namely as an analyst who can infer the whole from the functions of the individual parts. Hence Descartes' desire to explain the living through the dead, for example, through pathology.

In a short work entitled *Discourse de la Methode* [1], Descartes rationally reconstructs with the admiration of a pathologist the perfect interaction of (a) the heart, (b) the arterial system, (c) the venous system, and (d) the lungs. Even now, it is difficult to reproach Descartes for succumbing to the temptation to draw a complete analogy between an organism and a mechanism. It seems that if a modern car mechanic were to be shown a bull's heart in section and asked if it looked like an internal combustion engine, he would be likely to find some analogies.

Another thing is that any comparison is lame. As for identifying nature as living (organic) and dead (mechanical), the current state of biology completely rejects such an identification. But according to Descartes, animals are not that much less intelligent than humans; animals have no reason at all and are guided only by instincts and affects.

Man, on the other hand, according to Descartes, is doomed to a dualistic existence. On the one hand, he is immersed in the animal nature of instincts and affects. On the other hand, he is endowed with intelligence and a linguistic resource. Even the dumbest among people, but without any physical brain pathology, is somehow able to speak, i.e. to voice, at least, his desires, his fears, his vague reasoning. No animal is capable of that. The dualism of the two worlds to which man is doomed is asymmetrical. According to Descartes, man is still much closer to God than animal automatons.

Julien Offre de LaMettire (1709-1751), as a medical doctor, picked up on what might be called Descartes' "pathologoanatomical method". Moreover, in his famous pamphlet "Man a Machine", he [10] actually tried to disavow Descartes' dualism. In other words, according to LaMettire, there is no fundamental difference between "simple" animals and humans. The latter is not a mystery of the universe for LaMettire (unlike Descartes). He is only the perfect mechanism, say, "an automaton from God". The human mind is only a consequence of the particular organization of his brain, or his "computer," as modern adherents of technocratic digitalization would say.

## 2.2 Rating brains of bureaucrats

We turn to the analysis of modern rating systems of human efficiency, adaptability, rationality, etc. [15]. In our view, any personnel performance rating system is structurally inconsistent. It represents an attempt to combine dialectical logic in the spirit of Hegel [5] with the classical logic to which "machine intelligence" obeys. In principle, such a combination is no less absurd than attempting to explain the living in terms of non-living. Dialectical (substantive) logic aims to understand the process, while classical (formal) logic aims to evaluate the result. Accordingly, dialectical logic is dynamic and is based on the principle of continuity, wavelength. Classical logic is static and based on the principle of discreteness, corpuscularity, or a sequence of "quanta" from which a rating analyst "constructs" an object of evaluation.

Accordingly, the staff performance rating system is incorrigibly syncretic. It confuses or, more precisely, does not distinguish within itself (1) orientation towards a living subject, i.e., a concrete worker, and (2) orientation towards a 'non-living outcome', i.e., an intermediate or final product of this worker's expended efforts. The situation is further complicated because, under the conditions of global mercantilism, the main objective of the personnel efficiency rating system is the maximization of private profit (for business) or minimization of public expenses (for state structures). The attempt to present rating systems as a tool to increase motivation [8] should not be considered a step towards humanization of labor relations: motivation here should be understood as an employee's readiness for increased self-exploitation. Hence, we can conclude that the formally subject-oriented nature of the rating system is, in fact, purely object-oriented. In other words, a particular worker is always an object of the rating algorithm both as a living being and as its "digital counterpart". The

parameters of this algorithm are variable, depending on commercial conditions, i.e., the main objective of maximizing revenues and/or minimizing costs.

The personnel performance rating system is literally infantile in nature because it reduces an adult employee to a schoolboy who gets "grades" from his superiors. This circumstance technically returns an employee to the "child state" and, correspondingly, activates the psychology of either "an excellent conformist" or an "executive" without pathos, or "an eternal failed student", or, finally, "a failed student, an outcast" subject to "personnel optimization or sanitation".

In the context of digitalization, the rating system is primarily aimed at creating a rating (virtual) double of each employee because it is not able to grasp and evaluate a "live person" outside its connection to the main task, i.e., maximization of income and/or minimization of expenses of the relevant company or state institution. On the one hand, living workers have to deform their nature, including their good qualities, to make their "corpse of ratings" or "man-machine" in LaMettire's spirit. On the other hand, live workers - consciously or subconsciously - try to keep everything "live" for themselves and conceal personal information (for example, hobbies, attitude to transvestites, outlook, etc.) from the rating system as far as possible.

As a result, the rating system generates a "bureaucratic dualism" within a given individual, or - in Descartes' terms - within the thinking substance itself, dividing it into two versions: a living and a dead one. Such perverse dualism would certainly have angered the progenitor of New Age philosophy. Be that as it may, in the age of digitalization, the HR department of any enterprise, organization, or institution deals not with a live employee but with his "rating duplicate". Even when an HR department or supervisor has physical contact with a particular employee, he or she is represented by his or her rating copy. The living person himself or herself is relegated to the twilight of uncertainty. Thus, the university rector is likely to ask the rank-and-file assistant professor, without pathos, "How many scores do you have at international conferences?" instead of asking, "Why aren't you interested in the topic of artificial intelligence with your potential?"

As we can see, the personnel efficiency rating system falsifies itself. It is basically unable to give true employee information. Before rating the quality of a particular performer, the rating system must construct a discrete rating copy of a live person, turning it into a set of algorithms built on easily replaceable "quanta" in the form of a variety of points. The sum of these points is then considered and analyzed as an employee's virtual certificate. Not only does his rating certificate have a very approximate relation to a living person, but it often greatly distorts what that person really is. This circumstance has already become the object of critical studies and rejection of personnel efficiency rating systems by some large companies [7].

### **2.3 Niklas Luhmann and his Zettelkasten**

Niklas Luhmann (1927-1998) is probably the most authoritative sociologist of postwar Germany. His primacy in modern German sociology can only be challenged by Jürgen Habermas (b. 1929). Unfortunately, within the framework of the stated topic, we cannot consider the huge scientific heritage of Luhmann, which alone counts more than 50 monographs. What is certain is that Luhmann's incredible creative productivity has everything to do with what he called "my Zettelkasten". What is it?

Luhmann's Zettelkasten is three conventional bibliographic cabinets, each holding eight compact catalog boxes. However, behind the unassuming exterior appearance hides an original collecting, storing, and processing information system. The key word here is "information processing". First of all, Zettelkasten is a kind of interface between Luhmann - the author of Zettelkasten - and Luhmann - the "reader" - of Zettelkasten. As an author,

starting in the 1950s, Luhmann deliberately put ideas, comments, scientific hypotheses, etc., into his catalog that could be useful to Luhmann as a future user of his own catalog in, say, 10, 20, or 30 years. Thus, Luhmann's Zettelkasten, firstly, "worked" as a retroactive time machine, allowing the actual Luhmann to respond creatively to the historical Luhmann of 10, 20, or 30 years ago. Secondly, Luhmann's Zettelkasten became more than just a "second memory" of its creator; it became his "interlocutor": "I do not think everything through alone, it mostly happens in Zettelkasten" [11].

One could even say that Zettelkasten became Luhmann's "second brain" and acquired the ability to offer his "first brain" incredibly productive ideas, otherwise unavailable to Luhmann. This was possible because through the communication of the present Luhmann with the historical Luhmann - thanks to Zettelkasten's cross-reference surfing - a THIRD Luhmann was born every time, grasping Zettelkasten's genius "clue" rather than the historical or actual Luhmann BEFORE the moment of illumination.

Thus, the mystery of Niklas Luhmann's creative method is centered in his "second memory," or his "outer brain" called "Zettelkasten." It should be noted that Luhmann did not seek to create a strictly rational system. Zettelkasten's notes do not represent a hierarchical system of categories, which, however, does not exclude a partial (fragmentary) systematization of the data set. In other words, Luhmann initially rejected the idea of an end-to-end systematization of information through the deductive method, i.e., descending from the general to the particular and then to the singular. The orderliness of Zettelkasten's notes is ensured by a branched (spider-web) numbering system, a system of cross-references, and the mandatory presence of keywords in each note. The latter requirement implies a keyword register with one to four notes. Each note is necessarily referenced to a so-called Folgezettel, i.e. to a subsequent note that is contextually linked to its "parent" note. As a result, through the keyword register Luhmann - the "reader" ALWAYS had the opportunity to open the entire relevant "web" of context of any category from the keyword register [12].

As the author and compiler of Zettelkasten, Luhmann never knew in advance when or how a particular cataloged note would be of interest to a future Luhmannian "reader". In fact, much of the notes of the historical Luhmann remained unclaimed by the later Luhmann - the "reader". On the other hand, Zettelkasten's system makes it possible to capture "uncoordinated thoughts": it is no coincidence that Luhmann says that his Zettelkasten can function as a "cesspool" or cognitive "septic tank". A flimsy but intuitively productive idea may "rest" in the depths of Zettelkasten until a future Luhmann-"reader" is not only able to recognize its true potential but also to formulate it more intelligibly.

The time has come to explain why we put the word "reader" in quotes when referring to Luhmann. The fact is that Luhmann was a kind of "intellectual slave" to his Zettelkasten. In other words, Luhmann read any literature with an eye to whether or not the information in question could be verzetteln. Thus, the reading for Luhmann boiled down to the following problem: "Can another LETTER note for Zettelkasten be produced from this information"? At the same time, this formal restriction in some sense neutralized the problem of complexity of scientific creativity. After all, Luhmann - almost cynically - could easily disregard any information, any "scoop," inoperable in Zettelkasten's terms. Incidentally, this circumstance largely explains the fact that there was no television in Luhmann's house.

### **3 Results of the study**

Proponents of technocratic digitalization, like LaMettire, are radical materialists, but, unlike the latter, do not consider it necessary to seek a worldview justification for their activities. First of all, they are unaware or not interested at all in the definition of a living being developed by the first French biologist, Jean-Baptiste Lamarck (1744-1829). He argues that there is a vast gulf between inorganic and organic nature. Accordingly, it is not possible to

study organic objects mechanistically, i.e., exclusively in terms of physics. In other words, the nature of living beings is irreducible to their anatomy and the physiological processes within them. The main difference, according to Lamarck, between a mechanism and an organism is that the structure of a mechanism is always of a fixed nature, predestined once and for all to carry out the same repetitive algorithm, which is embedded in it from the outside and is not subject to arbitrary change. In contrast, the organism's structure is dynamic and fluid, allowing the organism to reproduce, develop and evolve. The reason for the organism's existence is within itself. The reason for the existence of a mechanism is always external. The functions of the mechanism can be fully explained in terms of cause and effect. In addition to cause and effect, the functions of the organism are largely determined by purpose, which often defies external control, manipulation, and other alien deformations.

Popular (especially in second and third-world countries) Americanized rating systems objectively form a caste system: "A's" compete with each other and are indifferent to those ranked lower. "B's" look with some envy toward the "A's" and are interested in making sure that the "C's" are always and never rise to a higher caste. The least infected by the rating psychology are the so-called honest "C's". They do their job just enough not to incur the wrath of their superiors. It is the "C's" who retain their personal sphere of external and internal freedom, outside the control of the rating systems. The only merit of the rating system, at first glance, is that it allows us to identify completely dysfunctional or even destructive "underachievers". But the problem is that among the "underachievers" can hide - albeit as isolated specimens - non-conformists with enormous creative potential, experiencing an overwhelming idiosyncrasy to bureaucratic ratings. The rating system objectively squeezes out and marginalizes such workers. An employer firing such "underachievers" will never realize that he may have missed his best chance as an "effective manager".

## 4 Discussion of results

The modern "digitalized" person is predominantly an object of information. He becomes less and less its subject and even less her agent. The attempt of mechanistic Cartesianism to "extract" man from the animal world of causality (instincts and affects) by pointing to an unextended thinking substance that is unique to homo sapiens is disavowed by modern biology. However, the great French naturalist Jean-Baptiste Lamarck, who lived at the turn of the 18th and 19th centuries, pointed out the unacceptability of interpreting living organisms in terms of mechanics.

Moreover, as early as the 18th century, the Cartesian idea of man's dualistic nature was completely deformed or even discarded in the pamphlet "Man a Machine" by the materialist physician Julien de LaMettire. For him, human thinking activity is reducible to psychological acts and the latter to physiological processes within the body. Thus, man, according to LaMettire, is a strange animal endowed with a peculiar "thinking physiology", but no more than that.

LaMettire's dystopia is the hidden metaphysical basis for the ideology of the global information society. One of the priorities of this ideology is the digitalization of humans, which is a little different in function from the chipping of animals. In particular, any modern person inevitably becomes an element of the information space as soon as he or she attaches a travel card to a bus validator, then - his or her debit or credit card to an electronic cash register in a store, etc. Moreover, a significant part of not only young people but also middle-aged people have become modern analogues of "man-machine" in the spirit of LaMettire: they literally feel disabled in real space if there is no access to virtual space in the form of the Internet.

## 5 Concluding remarks

Thesis 1: Digitalization of man as in fact his "chipping" is clearly manifested in the expansion of all kinds of rating systems. With the latter's help, employers are trying to keep employees under control; social sites monitor people's personal lives, namely their consumption preferences, hobbies, special services monitor the circle of acquaintances, and ideological predilections.

Thesis 2: The phenomenon of "digitalized man" brings us back to the idea of dualism, but no longer in Descartes' sense. An individual of modern information society is objectively bifurcated into a biopsychic organism, on the one hand, and his/her "digital replica", on the other. Thus, a modern hired worker in Russia can be represented by his electronic work record book. In the West, there are no employment records, but there are various rating systems which construct a digital image of an employee in the form of a certain set of points. In modern Russia, a similar system is known as an "effective contract". In any case, the employer - both in Russia and in the West - is no longer interested in the "biopsychic organism", i.e., the real person, but deals mainly with a "rating copy" of this person. Moreover, a paradoxical situation arises, since it is the rating copy that has primary relevance for the employer. At the same time, the person himself with his "human, all too human qualities" [13] is transformed into what the French call "la quantité négligeable".

Thesis 3: Thus, the global information bureaucracy - both public and private - literally splits a person through rating systems, replacing his living (qualitative and dynamic) characteristics with inanimate (quantitative and static) characteristics of rating scores. In principle, the situation is not much different from LaMettire's absurd attempts to prove the absence of the soul through the interpretation of pathological manipulations. In other words, in LaMettire's terms, the 'rating copy' of contemporary employee constructed by HR, the bureaucrat, corresponds to the employee as a biopsychic organism, the same way a person in his lifetime corresponds to his post-mortem remains.

Thesis 4: Fortunately, in the last century, Germany was home to the amazing scholar Niklas Luhmann. By his way of life, he proved the possibility of a paradoxical synthesis between the idea of mechanistic (bureaucratic) functionality and the idea of spontaneous, intuitive insight inherent only in a living person. For his needs, Luhmann mechanistically created an intellectual assistant, his "bureaucratic copy" in the form of Zettelkasten. As a result, Luhmann's entire professional activity as professor of sociology focused on an interactive process, namely communication with his "second memory," as he called his Zettelkasten, that is, a catalog of notes interconnected by a system of cross-references in the form of a specially designed cipher.

Thesis 5: With Zettelkasten, Luhmann (1) was able to communicate with himself 10, 20 retroactively, and 30 years ago, (2) record the "dry branches" and "dominant shoots" of his personal creative potential, and (3) at the prompting of his "second brain," formulate insights that he as an isolated biopsychic organism would not have been capable of.

The reported study was funded by Russian Foundation for Basic Research (RFBR), project number 18-29-16012.

## References

1. R. Descartes, *Discourse de la methode/Discourse on the method* (1994)
2. R. Descartes, *Principles of Philosophy* (1982)
3. K. Ferguson, *Pythagoras: His Lives and the Legacy of a Rational Universe* (2011)

4. D. H. Fowler, *The Mathematics of Plato's Academy: A New Reconstruction*. 2nd edition (1999)
5. H. G. Gadamer, *Hegel's Dialectics. Five Hermeneutical Studies* (1982)
6. H. Hattab, *Descartes on Forms and Mechanisms* (2009)
7. <https://hbr.org/2015/09/why-more-and-more-companies-are-ditching-performance-ratings>
8. A. Idowu, Nile Journal of Business and Economics **5**, 15 (2017)
9. P. Kaufmann, H. Kuch, Ch. Neuhaeuser, E. Webster, *Humiliation, Degradation, Dehumanization: Human Dignity Violated* (2010)
10. J. LaMettire, *L'homme machine* (2001)
11. N. Luhmann, Archimedes und wir. Interviews (herausgegeben von D. Baecker und G. Stanitzek) (1987)
12. N. Luhmann, Öffentliche Meinung und Sozialer Wandel. FS für E. Noelle-Neumann. Herausgegeben von H. Baier et al, 222 (1981)
13. Fr. Nietzsche, *Human, All Too Human* (1996)
14. P.L. Ph. Simpson, *The Politics of Aristotle* (1997)
15. M. Strebler, D. Robinson, S. Bevan, Performance Review: Balancing Objectives and Content (2001)