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Fantasia essata:

Behind Flusser's theory of imagination

1. First-order and second-order imagination

The concept of technical imagination is one of Flusser's best known and most quoted thoughts¹. In many of his texts he distinguishes between a traditional imagination and a technical or new imagination, usually in the context of his "model of cultural history" (Flusser 2011: 6). An early sketch of this model can already be found in his 1972 essay *Line and Surface* (Flusser 2002: 31-32). "When man assumed himself subject of the world, when he stepped back from the world to think about it—when he became man—he did so mainly thanks to his curious capacity to imagine the world. Thus, he created a world of images to mediate between himself and the world of facts with which, because of this distance-taking process, he was beginning to lose contact. Later, he learned how to handle his imaginal world, thanks to another human capacity—the capacity to conceive. Through thinking in concepts, he became not only subject to an objectified world of facts, but also subject to an objectified world of images. Now, however, by again having recourse to his imaginal capacity, he is beginning to learn how to handle his conceptual world. Through imagination, he is now beginning to objectify his concepts and thus to free himself from them. In the first position, he stands in the midst of static images (in myth); in the second position, he stands in the midst of linear progressive concepts (in history); in the third position he stands in the midst of images that order concepts (in "structures")."

Here he still uses the same term for first-order imagination, which reduces the four-dimensional "world of situations" into two-dimensional "scenes" (Flusser 2002: 37), and for second-order imagination, which objectifies abstract concepts by representing them in images. Between 1978 and 1983 Flusser uses the German terms *Imagination* for the first one and *Technoimagination* (Flusser 1998: 8-16), or *Imagination zweiten Grades*, "second-order imagination" (Flusser 2000: 17) for the second one. In other texts, starting from 1985, he calls this second sort of imagination using the German term *Einbildungskraft*,² sometimes translated into English as "visualiza-

¹ For an overview of Flusser's theory of techno-imagination see Guldin (2007) and Irrgang (2023).

² In a letter to Czech photographers Daniela Mrazkova and Vladimir Remes dated 19th of February 1985, written in English, he defines what he calls *Einbildungskraft* as "conceptual imagination" and admits the influence of Kant in this conception.

tion”.³ “Thus, to be more exact in speaking about photographs, we should not say imagination [*Imagination*], but rather visualization [*Einbildungskraft*]” (Flusser 2002: 129). In one of his last publications, he simply refers to it as *Eine neue Einbildungskraft*, “a new imagination” (Flusser 2002: 110).

The phrase “technical imagination” might suggest that the main difference between the two types of imagination is that the second one is technical, while the first one is not. This might be a misconception. Although Flusser does not say so explicitly, it is clear that he believes imagination always to be technical in some way, since it has to do with external images, which are produced technically. Imagination is not simply the ability to represent images mentally, but first of all to produce physical images and to read them: “man’s unique ability to create images for himself and for others” (Flusser 2002: 110). This definition implies an operational dimension, involving both mental and embodied processes, somehow anticipating the theory of enactivism.

Flusser uses the same terms to refer to the activity of experiencing an image, the mental activity of visualizing something absent or different from how it appears to us, and the practical activity of producing images. In Flusser’s terms, when artists paint, they *imagine* the picture. This confusion is deliberate. Flusser believes that, on the one hand, the production of pictures is driven by our imagination; on the other hand, the mental capacity to visualize images is shaped not only by experience, but also by the activity of producing pictures. These processes are so deeply intertwined that they can hardly be distinguished. Children gradually learn to imagine, to visualize, and to read images, as they learn to draw and make them. First, we produce external models, then we can internalize them.

Of course, producing an image using a software or using a pencil is not the same thing. They are both technical activities, but in different ways. If we define technicity as the degree of structural complexity (inversely proportional to functional complexity), as Flusser does (2000: 57), then we can say that images produced by apparatuses are more technical. But how does this affect our imagination? If we look again at Flusser’s model of cultural history, we notice that he focused on one aspect that he clearly felt was decisive: the relationship between text and image, conceptual thought and imaginal thought.

Flusser has been dealing with the same problem—the interplay between imagination and conceptualization, art and science, practice and abstraction—long before he studied contemporary technologies. In his Brazilian years, Flusser has been very interested in Renaissance humanism and had a significant dialogue with experts in the field. It was in this context that he came across

³ Salvatore Patriarca, Italian translator of *Ins Universum der technischen Bilder*, translates this term as *uniformazione*, “uniformity,” playing with the original German term (*Einbildung*: *ein* = one + *Bildung* = formation) thus emphasizing the synthetic dimension of this ability, which consists of collecting unimaginable data (bits) and putting them into images.

an expression he would use throughout his life on several occasions: *fantasia esatta*, or as he spells it, *fantasia essata*.

A better understanding of this concept could be extremely relevant to the comprehension of Flusser's theory of second-order imagination. This article aims, on the one hand, to investigate the affinity between these two concepts and, on the other hand, to reconstruct a genealogy of Flusser's use of the term *fantasia essata*, which he (wrongly) attributes to Leonardo da Vinci.

2. Flusser's *fantasia essata*: between science and fiction

As early as 1972 Flusser uses the expression "*fantasia exata*", in Portuguese, in a short article called "Bicho de sete cabeças" for the *Posto Zero* section of the newspaper *Folha de S. Paulo*. It is the fourth episode of a series on animals (*bichos*). Here Flusser ironically reflects on a Portuguese expression that literally means "a seven-headed beast" and is normally used to refer to something exceptional, an unsolvable problem. Flusser notes that a seven-headed dog, for example, would be surprising, but not impossible to conceive. It is something we can imagine without questioning the scientific rules we believe in. On the contrary, most of popular sci-fi narrative describes impossible events, although it refers to pseudo-scientific theories and technologies. This allows him to draw a distinction between an impoverishing imagination, which represents the impossible and is not based on any rules, and a fertile one,⁴ which represents something improbable but possible: an exact imagination.⁵ Only the latter stimulates thought and enables us to enrich our knowledge.

In *Kommunikologie*, written between 1973 and 1978, and published posthumously in 1996, Flusser again uses the expression *fantasia essata*, this time in Italian and referring to Leonardo da Vinci. Flusser is discussing the "dialectical tension between image and concept", or image and text, as the "basic theme of history" (Flusser 2023: 145)—another version of his model of cultural history. According to him, ancient thought was predominantly imaginative; with the spread of the technology of writing, conceptual thinking slowly began to be internalized, until it became dominant with the success of the printing industry. For a moment, around the 15th century, imaginal and conceptual thinking must have reached an ephemeral equilibrium, which broke down

⁴ "Apenas uma fantasia exata pode ser fértil" (Flusser 1972). See J.A. Torres' doctoral thesis (2024: 78). I owe to a dialogue with Jessé Torres many of the reflections on science fiction in this article, as well as the discovery of Oliveira's book.

⁵ *Fantasia esatta* was translated by William Hanff with the beautiful expression "exacting fantasy." However, I prefer "exact imagination" for two reasons. First, the Italian word *fantasia* (just like the German word *Phantasie*) doesn't have the dreamy and wishful connotation that the English word "fantasy" has: it refers to a human faculty, alongside reason and sensibility, and translates the Latin word *imaginatio*. Second, the adjective *esatta* is clearly a reference to the phrase "exact science". On some occasions I will use "exact fantasy," since that is the expression used by Cassirer's translator and Santillana.

soon after in favor of writing when three major events occurred: the invention of printing, the Protestant Reformation, and later the establishment of the Galilean scientific method. “At the point when printing was invented and the victory of concept over image became a real possibility, Leonardo tried to save imagination by establishing a balance between image and concept in what he called *fantasia essata*. He projected a science in which acoustics would not be an analysis of concepts like wavelength but of images like birds singing, and still be *exact* in the sense of linearly progressive and measurable by scales. Leonardo failed and Galileo won because *mental experiments* are far easier to codify in print than is *fantasia essata*” (Flusser 2023: 147).

In the following lines, Flusser compares Leonardo’s approach with current science fiction, asserting (as he already did in 1972) that the latter is the opposite of *fantasia essata*, i.e., a “*fantasia inessata*.” While the former consists of an imaginative and operational contribution to science and knowledge—based on the belief that art and science are not two separate realms—the latter borrows scientific terms and references and transfers them into a fictional context with no direct connection to the world of life.

In a 1986 article on photography,⁶ partly written in preparation for a discussion with Jean Baudrillard, Flusser further develops his theory of a rupture between science and art that occurred at the end of the Renaissance and is being mended today with new imaging technologies. “Ever since the fifteenth century, Occidental civilization has suffered from the divorce into two cultures: science and its techniques—the “true” and the “good for something”—on the one hand; the arts—beauty—on the other. This is a pernicious distinction. Every scientific proposition and every technical gadget have an aesthetic quality, just as every work of art has an epistemological and political quality. More significantly, there is no basic distinction between scientific and artistic research: both are fictions in the quest of truth (scientific hypotheses being fictions). Electromagnetized images do away with this divorce because they are the result of science and are at the service of the imagination. They are what Leonardo da Vinci used to call “*fantasia essata*” (Flusser 1986: 331).

In a 1988 conference in Vienna, Flusser again refers to an exact imagination in the context of his reflections on science fiction, which he sees as a missed opportunity to investigate that “grey zone in which science and imagination, fact and fiction, overlap and intersect themselves” (Flusser 2015): “Creative acts always have a strict passion for the improbable, or (as Leonardo said) a ‘*fantasia essata*’” (*Ibid.*).⁷

⁶ See Finger (2011: 137-138) and Guldin

⁷ This is not an exhaustive list of occurrences, but merely a selection to present Flusser’s main uses of the concept. See for example the letter to Dora Ferreira da Silva of the 9th of November 1981.

Overall, Flusser resorts to the concept of exact imagination when he wants to investigate ways to bridge the gap between art and science, often in opposition to current science fiction. As has been noted (Torres 2020; 2021; Hanff 2020), Flusser’s critique of science fiction is ambivalent, in that he opposes impoverishing narratives that depict impossible events, while at the same time writing short scientific fictions that deal with the improbable—that is, try to open a dialogue between imagination and scientific research. Flusser developed this path partly together with Louis Bec, visual co-author of *Vampyroteuthis infernalis*, who theorized a “fabulatory epistemology” (Bec 2005).⁸

However, when Flusser uses the concept of *fantasia essata*, he often implies a historical reference to the Renaissance, Leonardo’s approach to knowledge and, more generally, to the divorce between art and science that has occurred from the early modern age to the 20th century. This conception could be fruitfully compared with Hegel and Gadamer’s idea that before the modern age and “aesthetic differentiation” (Gadamer 1989: 74) art was meant to have a high cognitive and truthful potential, while after the Protestant Reformation the seriousness of art has become “a thing of the past” (Hegel 1975: 11).

3. *Exakte sinnliche Phantasie: Leonardo, Goethe, Cassirer*

Those interested in learning more about Flusser’s references to *fantasia essata* would have to search Leonardo da Vinci’s writings.⁹ Here, however, they would encounter a problem. In Leonardo’s writings there is no mention of anything like a *fantasia essata*. We can find many occurrences of the term *imaginatione* and even some of the term *fantasia*, but never related to exactness, or some synonym. This makes sense, if we think that “exact fantasy” is a pun on “exact science” and that this expression was not yet common in Leonardo’s times, which predate the scientific revolution. Nonetheless, in the writings of Leonardo we can find the deep inner connection between art and science, imagination and reason that Flusser refers to when he writes of *fantasia essata*.

⁸ “Fabulatory epistemology introduces an element of imagination into scientific methodologies, by postulating that knowledge cannot develop validly without the operative presence of an ‘exact fantasy’” (my translation); “L’épistémologie fabulatoire introduit au sein des méthodologies scientifiques une part d’imagination, en postulant que la connaissance ne peut se développer valablement sans la présence opératoire d’une ‘fantaisie exacte’” (Bec 2005: 69). Bec seems to have taken this concept from Flusser.

⁹ Leonardo’s manuscripts were not intended for publication—or at least, not in this form. There are 28 codices left, dispersed throughout the world, as well as several scattered papers, totaling more than 8000 folios, which include texts and images. There are some facsimile editions of the codices, which are difficult to read, but the most widely used texts are anthologies. Of these, the most important is the *Treatise on Painting* (Leonardo 1964), composed by his heir Francesco Melzi around the 1540s, which includes excerpts from 18 codices, ten of which have not been identified or are missing. Another influential publication is Jean Paul Richter’s collection known as *The Literary Works of Leonardo da Vinci*, or *The Notebooks of Leonardo da Vinci* (1883), later annotated, and expanded by Carlo Pedretti. See also Franzini (1987), Guastini (2002), and Frosini-Nova (2015).

According to Leonardo, to be a good painter one must be able to imagine what one wants to represent: one must exercise imagination by attentively observing nature and selecting the most distinctive features. Those who have a *lazy imagination* (“*stanchi co’ la lor fantasia*”) and experience the world without this active observation, are like “the mirror, which imitates all things set against itself, without knowledge of them” (Leonardo 1915: 154). Just like reason without experience would be mere speculation, experience without reason (“*sanza ragione*”) is simple mirroring. In Leonardo’s writings we can find the sketch of a very interesting theory of a *productive* imagination: “The idea or imagination is the helm and guiding-rein of the senses, because the thing conceived of moves the sense. Pre-imagining, is imagining the things that are to be. Post-imagining, is imagining the things that are past” (Leonardo 1883: 839).

If Leonardo did not coin the phrase *fantasia esatta*, who did? The earliest occurrence of a similar phrase is found in the scientific writings of Johann Wolfgang von Goethe. In a brief review of Ernst Stiedenroth’s *Psychologie zur Erklärung der Seelenerscheinungen*,¹⁰ Goethe uses the German expression *exakte sinnliche Phantasie*, “exact sensory imagination.” In this text Goethe does not refer to Leonardo, although he develops a similar conception of productive imagination. He speaks out against the idea of a hierarchy of faculties: sensibility, reason, imagination, and intellect should be conceived in their unity. “Thus, a man born and educated for the so-called exact sciences, at the height of his intellectual reason, will not easily understand that there can also be an exact sensory imagination, without which no art is actually conceivable” (Goethe 1989: 356).¹¹ Goethe is aware that his times are characterized by a belief in the superiority of science and reason over art and imagination, and considers this conception dangerous: something like an “exact sensory imagination” not only exists, but also plays a role for scientific knowledge that is just as important as that of intellectual reason.

According to Iris Hennigfeld, Goethe’s “exact sensory imagination” must be understood in the context of his theory of *Anschauung* (intuition), as a productive act of consciousness. Nature, especially organic phenomena, is always in motion, constantly changing; our visualization of nature must also be flexible.¹² This active mode of observation—common to the poet, the philosopher, and the scientist—is imaginative, because it is productive; and it is exact, because it is not arbitrary, but “fully complies instead with the constitutional lawfulness of nature” (Hennigfeld

¹⁰ Stiedenroth (1794-1858) was a German philosopher, who was highly regarded by Goethe. At that time, psychology was still considered a branch of philosophy, in charge of studying the human mind and faculties.

¹¹ My translation. Here is the original: “So wird ein Mann, zu den sogenannten exakten Wissenschaften geboren und gebildet, auf der Höhe seiner Verstandesvernunft nicht leicht begreifen, daß es auch eine exakte sinnliche Phantasie geben könne, ohne welche doch eigentlich keine Kunst denkbar ist.”

¹² This may resonate with Flusser’s idea that technical images should be flexible, plastic and manipulable (Flusser 1995).

2021). Just like Flusser's *fantasia exata*, Goethe's *exakte sinnliche Phantasie* is a form of rule-based creativity.¹³

Why did Flusser end up attributing this concept to Leonardo da Vinci? Ernst Cassirer may be responsible. In a chapter devoted to Leonardo of *The Individual and the Cosmos in Renaissance Philosophy* [1927] Cassirer uses Goethe's phrase to explain the peculiarity of Leonardo's conception of imagination: not a form of "subjective fantasy", but "a genuine and indispensable organ for the understanding of reality itself" (Cassirer 1963: 157). The main problem in studying Leonardo's science is to judge it from a modern perspective, using systems of thought—either speculative idealism or positivism—that assume science as abstract and exact, and art as contemplative. Those who consider Leonardo to be a scientist like Galileo and Newton, and those who blame him for being only an artist and not a true scientist (not being capable of abstraction), commit the same mistake: they apply concepts of science and art which do not belong to the Renaissance. "Both forget that there is, to use Goethe's words, such a thing as an "exact sensible fantasy", with its own rules and its own immanent standards. And Leonardo has shown, better than anyone, just what this form of exact fantasy can do for empirical research. Nothing is more wrong than to see in his scientific writings a mixture of sharply observed facts and of fantastic "visions." Fantasy here is not an addition to perception; it is its living vehicle. Fantasy guides perception and gives it its significance, its sharpness, and its definiteness. [...] His "exact fantasy" knows how to insist firmly upon visually real, as opposed to merely conceptual and abstract distinctions. True and objective necessity is found in vision, not above or below it" (Cassirer 1963: 158-159).

Cassirer recognizes the affinities between Leonardo and Goethe firstly in their theory of a productive and embodied imagination, which is not a mere fantasy but guides perception ("imagination is the helm and guiding-rein of the senses"); secondly, in the idea that human faculties should always work together and be considered as a unity, neither according to a hierarchy, nor as a mixture of separate elements. Interestingly, in this passage by Cassirer it appears, perhaps for the first time, the abbreviated expression *exakte Phantasie*, "exact fantasy," or "exact imagination."

4. The success of a concept: Ferreira da Silva, Santillana, Grassi

This phrase, extremely powerful due to its paradoxical nature, had some success in the mid-20th century and is found in a few influential writers even in Brazil. Literary critic Franklin de Oliveira published a book in 1959 entitled *A fantasia exata. Ensaio de literatura e música*. In a chapter devoted

¹³ It could be debated whether it should be conceived as *rule-governed creativity* or as *rule-making creativity*, to use Chomsky's terms (Montani 2017).

to the Italian Renaissance he refers to Cassirer's reading of Leonardo:¹⁴ while Galileo kept science and art separated, considering the latter based on a subjective fantasy, Leonardo thought that artistic creation is an act of "imagination that does not admit arbitrary moments: an *exact imagination*" (Oliveira 1959: 74).¹⁵ Oliveira even suggests that Leonardo's conception of imagination could be "the remote source of the distinction" established by Coleridge between *fancy* and *imagination*.

However, in Brazil, there was also someone closer to Flusser who referred to *fantasia exata*: Vicente Ferreira da Silva.¹⁶ In an article published in 1960, "Educação e Filosofia", he discusses the relevance of imagination and the arts and emphasizes that imagination is no vain dream: "Artistic fantasy is thus an exact imagination [*fantasia exata*], a revelation of the truth or the arcana of the world" (Ferreira da Silva 2009: 383). Immediately afterwards he quotes from an interview with Oppenheimer, the father of the atomic bomb, about the close connection between art and science: "Perhaps during the Renaissance there was a parallel between the sciences and the arts. And there is always a collaboration between the two. Science helps the artist to improve the quality of his tools. Literature and art help the scientist through the power of the imagination" (*Ibid.*).¹⁷

There is one last source that might have led Flusser to rediscover the concept exact imagination and link it with Leonardo da Vinci. Giorgio de Santillana, an Italian philosopher and historian of science of Jewish descent who escaped fascism and moved to the United States of America, where he became professor at MIT, mentioned "exact fantasy" in two of his books.¹⁸ Flusser was familiar with Santillana's work¹⁹ and met him in Boston during his trip to the USA in 1967.²⁰ In *The Age of Adventure: The Renaissance Philosophers* (1956), in the chapter dedicated to Leonardo da Vinci, Santillana discusses his idea of knowledge by emphasizing that it is not merely observa-

¹⁴ In the text, Oliveira seems to attribute the concept of *fantasia exata* to Leonardo, referring only in a footnote to Cassirer's mediation. When he writes that Leonardo may have influenced German idealism "through Goethe," he seems to believe that Goethe's "exakte Phantasie" refers to Leonardo.

¹⁵ My translation. "A criação artística é ato da fantasia, porém de uma imaginação que não admite nenhum momento arbitrário: a *fantasia exata*."

¹⁶ Vicente Ferreira da Silva, one of Flusser's closest friends and one of the few he would have considered a teacher, was among the most important Brazilian philosophers of the 20th century. He co-founded the *Revista Brasileira de Filosofia* and the *Instituto Brasileiro de Filosofia*, together with Miguel Reale, and later the journal *Diálogo*, together with Milton Vargas. He was at first interested in mathematical logic, studying with the Italian mathematician Luigi Fantappiè (theorist of negative entropy) and later collaborating with Willard Van Orman Quine, before making a turn and approaching the thought of the last Heidegger and devoting himself to the study of myth and the sacred.

¹⁷ My translation. "A fantasia artística é pois uma fantasia exata, uma revelação da verdade ou dos arcanos do mundo. [...] 'Talvez durante o Renascimento houvesse um paralelo entre as ciências e as artes. E sempre existe uma colaboração entre ambas. A ciência ajuda o artista a melhorar a qualidade do seu instrumento. A literatura, a arte, ajudam o cientista através da força da imaginação?'"

¹⁸ In *L'esatta fantasia*, Martino Doni (2009) briefly mentions that the concept of "fantasia esatta" has a long history involving Leonardo, Goethe and Santillana (curiously, he does not mention Cassirer). On Santillana and the relationship between science and literature see also Allocca (2018).

¹⁹ In Flusser's *Reisebibliothek* are two books by Santillana: *The Crime of Galileo* (1955), which might have been the inspiration for Flusser's comparison between Leonardo and Galileo, and *Prologue to Parmenides*, later reprinted in *Reflections on Men and Ideas*.

²⁰ See the letter to Milton Vargas of the 15th of January 1967, *et seq.*

tional, but rather based on the interplay between the trained eye (which knows how to see) and the skilled hand: “It is operational and creative knowledge, or, as Leonardo calls it, ‘exact fantasy’” (Santillana 1956: 69).²¹ Again, in *Reflections on Men and Ideas* he defines Leonardo as “a scientific artist, an artist of the ‘exact fantasy’” (Santillana 1968: 14). According to Santillana, a similar conception of an imagination that is not reduced to fancy, but rather dialogues with reason, experience, and action, also emerges—at least in part—in other Renaissance thinkers: he writes of a “geometrical imagination” in regard to Nicholas of Cusa (Santillana 1956: 50), and of a “plastic” imagination in regard to Michelangelo (*Ibid.*: 150). In general, Santillana is very interested in the role of imagination in science and writes about the “realism of imagination” (Santillana 1968: 71), a “scientific imagination” (*Ibid.*: 255), a “mathematical imagination” (*Ibid.*: 93), a “rigorous abstractive imagination” (*Ibid.*: 117).

Apart from the direct use of the expression “exact fantasy” and other variants, an interest in Renaissance Humanism and the early modern (and pre-modern) theories of imagination was in the air in Flusser’s milieu. Among Brazilian and international scholars somewhat connected to the Instituto Brasileiro de Filosofia, Ernesto Grassi,²² professor of Philosophy in Munich, was probably the one who most strongly asserted the importance of the humanistic theory of imagination and fantasy (Grassi 1979: 220-223). In the early 1970s Flusser and Grassi had an interesting correspondence where they respectively exchanged and commented some of their publications. Flusser received from Grassi *Marxistische Praxis* and especially *Humanismus und Marxismus*,²³ a text of which Flusser wrote a review that he sent to Dora Ferreira da Silva. Both agreed that Renaissance Humanism is an alternative epistemology to the modern one and not its starting point. According to Grassi—and Flusser—, from Descartes, Western thought has been characterized by an alienating separation of theory and praxis, *ratio* and *pathos*, conceptual thought and imagination. On the contrary, Humanist thinkers believed that knowledge could only arise within practical activity. In this sense, Vico would be heir to the humanistic tradition and this *dynamic* epistemology, as opposed to Cartesian *formal* epistemology.²⁴ Thus, the idea of “operational

²¹ This seems to be the first time that someone directly attributes Goethe’s expression to Leonardo. We could explain this inaccuracy with the educational nature of the book, which appears to be more a textbook than an essay.

²² Grassi studied in Italy with Martinetti and then in Germany with Heidegger. He dialogued with Croce, Husserl, Scheler and Jaspers. He was Professor of Philosophy in Munich and, from 1955, was editor of the Rowohlt *Deutsche Enzyklopädie*. He was a friend of Ferreira da Silva and visited him in São Paulo in the 1950s.

²³ In Flusser’s *Reisebibliothek* there is also a copy of Grassi’s *Macht des Bildes*.

²⁴ Grassi believes Marxism also belongs to the dynamic epistemology, like Renaissance humanism and Vico, as it values practice over abstraction. He goes on to state that the failures of Marxism are mostly due to its lack of consideration of fantasy, which is condemned as illusion. That is why a recovery of the humanistic tradition would be crucial. In the letter of the 1st of December 1973 to Grassi, Flusser seems to agree with this conception, although he reproaches Grassi of not taking into consideration the structures of communication. Grassi replies reproaching Flusser for his not academic style and refuses to help him publishing his works.

knowledge” already mentioned by Santillana can also be found in Grassi, as well as the conviction that the divorce between art and science, abstraction and imagination, must be overcome.

5. Flusser’s sources

In light of all this, it is now clear that the expression *exakte Phantasie*, *fantasia exata*, or exact imagination was not used by Leonardo da Vinci: it was coined by Goethe with regard to Stiedenroth, used by Cassirer to describe Leonardo’s approach to fantasy, and then borrowed by a number of thinkers around the 1950s to refer to an operational and productive conception of imagination that could bridge the gap between art and science—often in the context of a return to Leonardo’s theories.

It is hard to tell which one is Flusser’s direct source, since he famously did not cite his references. None of the texts mentioned above that refer to *exact fantasy* are part of Flusser’s *Reisebibliothek*, although other texts by the same authors are. Even if he did not own them, it is possible that he borrowed some of these books from a friend or a public library, although we should not underestimate the role of oral conversations in the development of Flusser’s thought. We know that he read Goethe and Cassirer (Flusser 2002: 201-202), but we have no information about these specific texts. It is very likely that he read Ferreira da Silva’s article and perhaps even discussed it with him in one of their meetings on his terrace in the Jardins neighborhood; and it is possible that he talked about *exact fantasy* with Santillana in Boston.²⁵

There is still one thing that might be relevant to note. Flusser is the only one to quote the expression in Italian, with an unusual spelling: *fantasia essata*, rather than *fantasia esatta*. Now, we can only make hypotheses—hence fictions, as Flusser always reminds us. If it is true that neither Leonardo nor any other early modern Italian writers used this expression (as Goethe and Cassirer seem to confirm), then Flusser simply invented the Italian phrase: he believed that “exact fantasy” was coined by Leonardo (as Santillana suggests) and tried to guess the original version by translating “*fantasia exata*” into Italian. The spelling oddity sounds like a typical mistake of Portuguese speakers when writing in Italian (there is no double T in Portuguese, but a double S is common). At the same time, the peculiar spelling seems to be due to an archaic form of Italian, similar to Leonardo’s language.²⁶ This may have appeared to several scholars as a guarantee of the authenticity of Leonardo’s quotation and contributed to Flusser’s invention going unnoticed.

²⁵ In 1967 Santillana was writing *Reflections on Men and Ideas* (published in 1968), where he mentions exact fantasy.

²⁶ However, the only record of the spelling “*essata*,” according to the Italian Dictionary *Grande dizionario della lingua italiana* UTET, is in Alvise Contarini (1601–1684), who wrote in the Venetian vernacular.

What really matters, however, is what resonates when Flusser refers to *fantasia essata*. Leaving aside the problem of sources, we can admit that the constellation that has appeared casts its light to Flusser's theory of imagination.

6. Exact fantasy: a new imagination?

Is second-order imagination really a *new* imagination ("Eine neue Einbildungskraft")? If we compare it with exact fantasy, we recognize that it has several elements in common with the conceptions that emerged from Leonardo to Goethe, from Cassirer to Ferreira da Silva, Santillana, and Grassi. This might slightly complicate Flusser's model of cultural history, but it could also explain why he changed the term *Technoimagination* to the broader *Einbildungskraft*.

In a short unpublished paper written for the presentation of a conference in Naples²⁷ in 1982, *Toward a Theory of Video*, Flusser opposes two forms of imagination, or two ways of using imagination, that do not fully correspond to the historical distinction between a traditional and a technical imagination: "Video images are, essentially, media for reflexive, philosophical, imagination, not of representative, artistic, imagination. Of course: those two imaginations cross and overlap, and video shows this. But still: it seems to me that video is, for the first time in history, a medium for a philosophy which no longer would be "discursive" (Flusser 1982: 2-3).

This conception is developed in other texts in which Flusser examines video and photography and proposes that technical images should be seen as models, *Vorbilder*, and not as copies, *Abbilder*, (Flusser 1993). According to this view, imagination can either be used to recall what we have already experienced and reproduce it, or it can be used productively, experimentally, to see the world in a new way and act on it. When Flusser writes of an "artistic imagination" he is referring to a contemplative conception of art that is meant to be separate from knowledge and science; "philosophical imagination," on the other hand, seems to be a development of *exact imagination*, which allows for the critical investigation of the world through visual means. This is what Harun Farocki had in mind with both his *essay films* (Blümlinger-Farocki 2017) and with his considerations on *operative, or operational images* (Pantenburg 2015: 210-215).

This philosophical, exact imagination is productive, rather than reproductive, because it guides perception and allows us to see differently, to see new configurations.²⁸ It is operational, rather

²⁷ The manuscript reads: "For the International Video Exhibit, Salerno 82". There is no record of video exhibitions in Salerno that year. However, Mario Costa, Professor at the University of Salerno, organized an international video-art exhibit in Naples in 1982, *Differenzavideo* (15th-19th of November, Studio Trisorio). We can assume that the presentation was meant for the exhibition in Naples and Flusser just confused the two cities.

²⁸ This is the topic of Farocki's film *Images of the World and the Inscription of War* (1988). Aerial photographs of Auschwitz taken in 1944 were not recognized as such until 1977, not because of the poor visual quality of the image, but because of an untrained imagination.

than contemplative, because it provides models for something that does not yet exist, such as Leonardo's machines, the image of a fractal on a computer, or the design of an airplane—but also for something that might exist even if we do not yet know it, something possible but improbable such as Louis Bec's Sulfanograde creatures (Flusser 2008: 78; 2021). Philosophical imagination is reflexive, because it mirrors *Vorstellung* and *Darstellung*, questioning the status of representation itself and allowing for a visual dialectic. It is experimental because it is not arbitrary, but works with perceptual data, bridging the gap between art and science, visual and conceptual thinking.

Long before the invention of technical images, there were great examples of such philosophical imagination in the Renaissance. So, why does Flusser call it a *new* imagination and imply that it emerged with new technologies? Again, we can try to formulate a hypothesis, by rethinking Flusser's model of cultural history. For a moment, around the end of the Middle Ages, Western culture internalized the technology of writing to a degree that balanced visual and conceptual thinking. In the modern age, with the printing industry, written-conceptual culture dominated and excluded imagination and art from any serious aspect of life: knowledge, science, health, ethics, even religion (at least in the Protestant world). Now the reaction to that form of alienation Flusser calls *textolatry* and the development of new image technologies have allowed a return to exact imagination. However, some important differences can be noted between Renaissance and contemporary imagination. First, the production system. At that time, most people were uneducated workers who mostly did not internalize written culture. Only a small minority of people would work with information:²⁹ a few producers versus masses of visual consumers. Only the first could develop some form of conceptual imagination. Today, new technologies enable everybody to produce information: exact imagination has become, at least potentially, accessible to all.

The second major change concerns the relationship between imagination, hand, and eye. In other words, traditional external images are fixed: we can change them or replace them, but by far not as easily as we can change and transform our phantasy object (our mental images). New technologies allow us to perform these changes at a much higher speed; in some cases, like synthetic computer images, it is almost simultaneous: “just as if the imagination had become self-sufficient; or as if it had traveled from inside (let's say from the cranium) to outside (into the computer); or as if one could observe one's own dreams from the outside. In fact, some of the appearing images can be surprising: they are unexpected images” (Flusser 2002: 114; see Wiesing 2005: 98).

²⁹ “There have always been people who have done such things: writers, painters, composers, book-keepers, managers” (Flusser 2000: 25).

The increasing role of apparatuses in our imaginative life poses some ethical, political, and pedagogical problems of which Flusser's readers are well aware, just as they know that it also opens up new opportunities. For this reason, although exact imagination is an old concept, never has it been more urgent than today to rediscover it.

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