Thinking About the 'Mind' in Digital Humanities: Apple, Turing and Lovelace

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The mind is its own place, and in itself
Can make a Heaven of Hell, a Hell of Heaven.
John Milton, *Paradise Lost*, Book I, l. 233-234

Abstract

This article introduces an underestimated concept in Digital Humanities emergence history: the mind. Following Milad Doueihi suggestion, it revisits Alan Turing article (1950) as a milestone in the DH genealogy. The mind appears here as the key-concept, at stake in the confrontation of Turing with Ada Lovelace. The article demonstrates that the mind has to be considered in connection with the brain, the spirit and the 'unthought' (see Katherine Hayles and Nathalie Sarraute). The mind appears at the end of the inquiry as a place to keep together the physical brain and the poetical dimension, illustrated by the spirit. An example of the perception of the Apple logo, presented in Introduction and Conclusion, underlines that unthought elements are always present in a cultural context.

Keywords:

Mind, Alain Turing, gender, Apple logo, Digital Humanities history.

1. Introduction: What do you have in mind?

What do you have in mind when you say "apple"? Maybe the fruit you are eating regularly, but maybe also the Apple logo you see many times per day on a smartphone, computer, on your own things or in advertising. Indeed, if we google "Apple", the computing logo arrives before a real fruit, and ranks second in case of the free search engine *Qwanta*.

But in a surprising way, even if the Apple logo tends to be so clearly present in our culture, the historian Stephen Greenblatt does not devote a line to it in his detailed inquiry about the reception of the myth of Adam and Eve (Greenblatt, 2017). The fruit, and its interpretation as an "apple" is thus carefully discussed in his study. Greenblatt reminds us that the biblical text does not mention an "apple", but a fruit (16), present in the entire history of its reception (see especially 128, 129, 137), with interesting

interpretations such as the fatal fruit symbolizing private property as proposed by Reformer Gerrard Winstanley at the 17th century (195, 357). But one cannot find in this monograph a single word about the Apple computer entreprise and its logo with a bite, not even in a footnote.

Greenblatt explains, of course, that "over the centuries there have been innumerable interpretations of the story of Adam and Eve. Many of the most influential interpretations figure in this book. But it is impossible to convey the full richness, variety, cunning, and on occasion wildness of the vast archive that has accumulated and that continues to grow" (303). Nevertheless, the fact that the computing Apple did not find an evocation in this book remains a kind of a "cultural blind spot". Passing from the printed culture to the digital one, similar dichotomies between the form and the content happen regularly, as for example our way to speak about "dematerialization" for what is digital (Clivaz, 2016). I first introduced this phenomenon in my overview article on digital culture (Clivaz, 2012, 32). Each time it happens, it means an opportunity to go deeper in senses and significations.

That's the case for the Apple logo. This article will focus on the dimension that is at stake when one draws attention to the logo Apple symbol, leaving all the potential of this logo for other opportunities. The chosen point is the mind, and its impact in the emergence and definition of what one call digital humanities. Indeed the word "mind" is present in the very first version of the Apple logo, drawn by Ronald Gerald Wayne, the third co-founder of Apple, and briefly used for one year (Linzmayer, 2004, 6). This logo represents Isaac Newton, sitting down under an apple tree, with an apple in a circle of light and a verse of poet William Wordsworth: "Newton… a mind for ever voyaging through strange seas of thought, alone" (Wordsworth, 1805, l. 62–63). In quite a long poem of Wordsworth, the "spirit" is also evoked: "My spirit was up, my thoughts were full of hope" (Wordsworth, 1805, l. 18). And also what cannot or has not been thought: "I was obedient as a lute that waits upon the touches of the wind. *Unknown, unthought* of, yet I was most rich. I had a world about me, 'twas my own" (Wordsworth, 1805, l. 138–140; my italics).

The notion of the mind has been present since the beginning of the Apple adventure, in its first logo. One can also find it in Hebrew or German translations of the English expression 'digital humanities': *ruach digitalit* (digital spirit, in Hebrew); in German: "die digitalen Geisteswissenschaften"; one speaks also about "der digitale Geist". Each language considers this lexical field differently: French and German have only one word for "mind" and "spirit" (*esprit* and *Geist*). We face here a subtle linguistic point that could lead to further deep inquiries. In the framework of this article, we will begin to question the idea of the "mind" in the digital humanities, with our attention drawn to this concept by the first Apple logo.

In section 2, we will consider the necessity to adopt different points of view to visit the history of the emergence of the digital humanities, and propose to start with the famous

Alan Turing's article "Computing Machinery and Intelligence" (1950), focused on the mind. Section 3 will discuss this complicated text, keeping attention to the question of the mind. Meanwhile, we will consider the question of gender as an additional element, since Ada Lovelace plays an important role in Turing's article. After having enlarged the notion of mind by situating it in the triad mind-brain-spirit (section 4), the conclusion will come back to our starting point : the Apple logo.

2. Revisiting the emergence of the digital humanities

It is always useful to keep in mind the Plato's adage about "taking once again a fresh starting point suitable to the matter" (Plato, *Timaeus* 48b). It sounds particularly adequate when looking at diverse ways to choose a starting point to narrate the history of the digital humanities. Busa's visit to the IBM president in 1949 is often seen emblematic. In a recent article, Domenico Fiormonte affirms that there is no doubt that "Busa's undertaking founded the discipline of the Humanities Computing (although years later it was renamed Digital Humanities), but above all it laid the groundwork for a profound epistemological and cultural transformation" (Fiormonte, 2017, 30). But this starting point, even if evident for so many of us and for so many reasons, can be questioned. It is indeed situated in a specific context.

As I pointed in a previous article (Clivaz, 2017), Steven E. Jones' clever monograph about Busa demonstrates that "IBM's interests in 1949–1952 surely included shoring up post-war diplomatic relations with the Vatican, Italy, and Europe as a whole just at the advent of its World Trade Corporation" (Jones, 2016, 97). Conscious of this commercial context, Busa asks in a private letter written in 1960 if the cooperation between a businessman and a priest is blessed by God, and concludes yes, referring to an unidentified biblical verse. As Jones narrates:

> After discussing machinery and an upcoming conference in Tübingen, Father Busa closed by reporting that the work of the Center (CAAL) continued 'at full speed', and then posed a question : 'Do you think will God praise this co-operation of a high businessman with a priest ? I guess yes, for in the Bible He said that the business can, if we want, lead people to find Him each day'. A copy of the letter was sent to Paul Tasman with a typed note attached (probably written by an assistant to Mr. Watson) that joked, 'Mr. Tasman, As a Bible student I wonder where Father Busa finds such a statement ??? Kay M.' I leave the biblical question to the theologians, but the very fact that Busa posed the question (then answered it so quickly) indicates that he recognized in 1960 that it was debatable and might be controversial, the cooperation and alliance between the businessman and the priest, the technology corporation and the academic (and Jesuit) research project (Jones, 2016, 97).

This lengthy paragraph exactly outlines the controversies around a genealogical interpretation of Busa as the "DH father". Another important name in the pre-DHers generation is

Tito Orlandi, also an Italian. Julian Nyhan and Andrew Flinn, in their thoroughgoing inquiry in the DH oral history, have been able to shed light on informal but nevertheless decisive moments, such as this one : "Tito Orlandi recounts that his earliest memory of a computer dates to the 1950s when he saw an IBM machine in the window of an IBM shop in Milan. Around 1960, together with his PhD supervisor Ignazio Cazzaniga, he engaged in some brief exploratory work to see what role punched card technology might play in the making of a critical edition of *Augustine's City of God*" (Nyhan and Flinn, 2016, 75). In the reception history, Aquinas won over Augustine: in a similar way, Busa Aquinas electronic index has overcome Ellison electronic biblical index in the traditional memory of the DH emergence (Jones, 2016, 14). But it is time to open our memories to diverse remembrances.

Looking at progressive diversification of our perception of recent history, I was inspired by Milad Doueihi to consider Alan Turing's article "Computing Machinery and Intelligence" (1950). Indeed, the French thinker suggested to start DH history with Turing's article in 2014 (Doueihi, 2014, 8–9). Turing is at the same time a central scientific figure, and, socially speaking, a marginalized figure from the 1950s UK, calling to include the mind into consideration. Indeed, "Computing Machinery and Intelligence" starts in this way: "I propose to consider the question, 'Can machines think?'. This should begin with definitions of the meaning of the terms 'machine' and 'think'" (Turing, 1950, 433). Let's see what happens to this question.

3. Alan Turing, the mind and Ada Lovelace

This important article on computing and epistemology was published in *Mind*, a journal funded in 1876 with a high prestige as a philosophy journal from the 50s; it was progressively open to diverse subjects areas. By submitting his article to the journal, Turing gave it an impressive interdisciplinary impact, a strong focus that he will keep through all his life, working ultimately on patterns in biology.

The machine that he is analyzing is the "digital computer", an expression that sounds redundant to our ears, but not in the 50s. The first written trace we have of the English words 'digital' and 'computer' combined in a single phrase as opposed to an analogue computer, goes back to a 1942 scientific report by George Robert Stibitz (Williams, 1984, 310). In "Computing Machinery", Turing writes, assessing the impact of the digital computer: "the present interest in 'thinking machines' has been aroused by a particular kind of machine, usually called an 'electronic computer' or 'digital computer'. Following this suggestion we only permit digital computers to take part in our game" (Turing, 1950, 436). He describes an ideal digital computer as a 'human computer':

> The idea behind digital computers may be explained by saying that these machines are intended to carry out any operations which could be done by a human computer. The human computer is supposed to be following fixed rules; he has no authority to deviate

> from them in any detail. We may suppose that these rules are supplied in a book, which is altered whenever he is put on to a new job. He has also an unlimited supply of paper on which he does his calculations. He may also do his multiplications and additions on a 'desk machine', but this is not important (Turing, 1950, 436).

To open the possibility for this machine – described as a human computer – to really *think*, Turing explains that a random element should be added to it (438). Random element and 'free will' are the necessary elements to go in the direction of letting it 'think'. It is his way to counter the strongest of the six objections towards the idea that a machine could think. The strongest objection was raised by Ada Lovelace (Ambramson, 2008, 157). As Turing summarizes it: "Our most detailed information of Babbage's Analytical Engine comes from a memoir by Lady Lovelace (1842). In it she states, 'The Analytical Engine has no pretensions to *originate* anything. It can do *whatever we know how to order* it to perform' (her italics)" (Turing, 1950, 447). Valeria Aurora pointed out, in defense of Ada Lovelace, that Turing misread her, while she was defending the same point of view as Turing (Aurora, 2016, 232–233). As far as I have been able to verify it, Turing does not seem to refer to Lovelace's work itself but to Douglas Hartree's work (Turing, 1951, 2). Turing wrestles with what he considers "Lovelace's objection". To overcome this point, he develops two main arguments, and the first one is the random element idea, which leads him to speaking about digital computers in an anthropomorphic fashion (see sentence in italics):

> A better variant of the objection says that a machine can never 'take us by surprise'. This statement is a more direct challenge and can be met directly. *Machines take me by surprise with great frequency.* This is largely because I do not do sufficient calculation to decide what to expect them to do, or rather because, although I do a calculation, I do it in a hurried, slipshod fashion, taking risks. (Turing, 1950, 448)

To concede or recognize that the machine has the possibility to *originate* something, is a surprise for the human, Turing has to put in balance the moments where his own human mind is somehow inefficient : "because I do not do sufficient calculation… or I do it in a hurried fashion, taking risks". This breaking point in Turing's argumentation is fascinating : it recognizes an implicit concurrency between the human mind and computational potential, something that has become today explicit and everyday is growing up. In the fifties, Turing is already hoping for our present computing developments. Coming back at the end of the text to Lovelace's objection – the one which *means* the most to him –, he gives the future as the horizon to give her a full answer one day: "Let us return for a moment to Lady Lovelace's objection, which stated that the machine can only do what we tell it to do (452). […] The only really satisfactory support that can be given for the view expressed will be that provided by waiting for the end of the century and then doing the experiment described" (Turing, 1950, 455).

The second argument that Turing opposes to Lovelace objection's is the brain, or a pure mechanical perception of the mind, that he simply put in as synonymous of the mind :

"In considering the functions *of the mind or the brain*, we find certain operations which we can explain in purely mechanical terms. This we say does not correspond to the real mind: it is a sort of skin, which we must strip off if we are to find the real mind. But then in what remains we find a further skin to be stripped off, and so on. Proceeding in this way do we ever come to the "real" mind, or do we eventually come to the skin, which has nothing in it? In the latter case the whole mind is mechanical" (Turing, 1950, 454–455).

Should we speak here about Turing's demystification of an old Western concept of 'mind'? Almost seventy years later, it has at last become evident that 'brain' is a word really more challenging for scholars than 'mind', especially if we consider the huge European flagship *Humain Brain Project*. Turing's proposal could, after all, sound simpler compared to the one used today: let's consider simply the skin, as it is, without other dimensions implied. Starting on this base, making the digital computer similar to a mechanical human brain does not sound so impossible, if we add the random element recommended by Turing.

I do not claim I would like to oppose this point of view. My attempt is to emphasize an important missing word or concept in Turing's essay about the mind: the spirit. As we have seen, English separates the meanings unified in similar words in German or French. It is not surprising that Turing does not consider this concept in his article, since his favorite option, to resist the main objection by Lovelace, is to compare the mind to the physical brain. What is missing in a text seems to matter. Section 2 introduced the spirit in Wordsworth's poem: "My spirit was up, my thoughts were full of hope". In the Judeo-Christian tradition, the spirit has a long gender pre-history: it is female in Hebrew and in the biblical Old Testament or Hebrew Bible (*rouach*); it is neutral in Greek and in the New Testament of the Christian Bible (*pneuma*). Only Latin turned it into a male word (*spiritus*). The spirit represents a flexible and open element in the Christian trinity, or even a female one in the Hebrew Bible.

If Turing does not speak about the spirit, it is worth to notice that genders are present in this text, as aside element. At the very beginning, he describes people playing an 'imitation game' in this way: "It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex" (Turing, 1950, 433). Further, he assumes that "the best strategy is to try to provide answers that would naturally be given by a man. [...] One might for instance insist that the team of engineers should be all of one sex, but this would not really be satisfactory, for it is probably possible to rear a complete individual from a single cell of the skin (say) of a man" (435–436). In context of the 50s, such a point of view in an academic text is surely common and understandable. Nevertheless, the person who presents a stronger objection to Turing is Ada Lovelace, a woman. A full gender reading of Turing's article is something that future scholars will have to do.

One can go a step further by pointing to the absence of the notion of "unthought", expressed in Wordsworth's poem: "I was obedient as a lute that waits upon the

touches of the wind. Unknown, unthought of, yet I was most rich. I had a world about me, 'twas my own " (Wordsworth, 1805, l. 138–140). This notion is taking an important place in the DH landscape and it is outlined in the last book of Katherine Hayles, *Unthought. The power of the cognitive nonconscious* (2017). Back in 2012, she was already describing the meaning of the "unthought" using this example : "A woman who worked on Morse code receiving [...] during World War II reported that after her intense experiences there, she heard Morse code everywhere – in traffic noise, bird songs, and other ambient sounds – *with her mind automatically forming the words to which the sounds putatively corresponded*. Although no scientific data exist on the changes sound receiving made in neural functioning, we may reasonably infer that it brought about long-lasting changes in brain activation patterns, as this anecdote suggests" (Hayles, 2012, 127–128; my italics).

Is such an example taking us back from the "spirit" to the brain, as described by Turing? We stand here in fact at a subtle crossroad between the nonconscious, the unthought, the materiality and the poetics. We realize it by reading a poetical description of the unthought, written by Nathalie Sarraute, a French author, born in Ivanovo-Voznessensk in 1900, and dead in Paris in 1999. In her book *Tropism*, she describes in a narrative way how we are affected by the "unthought"; she describes the unconscious movements of the brain, of our emotions: "These movements, of which we are hardly cognizant, slip through us on the frontiers of consciousness in the form of indefinable, extremely rapid sensations. They hide behind our gestures, beneath the words we speak and the feelings we manifest, all of which we are aware of experiencing, and are able to define. They seemed, and still seem to me to constitute the secret source of our existence, in what might be called its nascent state" (Sarraute, *The Age of Suspicion*, 1956; engl. Tribout-Joseph, 2008, 13). Sarraute comments here on the literary and poetic effect she developed in *Tropismes* (first published in 1931).

It is probably crucial to notice that Sarraute uses a literary example in 1931 and 1956 to demonstrate what we are now beginning to describe physically as a phenomenon happening in our brain. These two aspects should not be separated. The 'mind' is eminently at stake when we enact our capacity to relate the poetic dimension and physical brain in order to represent the reality to ourselves. The 'spirit', beyond its theological flavor, belongs to the poetical sphere, and triggers a long tradition of our capacity to express the 'unthought', as shown in this passage from Paul of Tarsus: "In the same way, the Spirit helps us in our weakness. We do not know what we ought to pray for, but the Spirit himself intercedes for us through wordless groans" (Rm 8,26). Wordless groans of the spirit and unthought of the mind lead to situate our perception of the brain in a cultural framework.

In summary, I would say that the mind that becomes conscious of its debt to the brain stays in touch with its spiritual part, as long as it produces poetical expressions,

seeking the 'unthought'. We can notice that placing the 'unthought' below the rational line of argumentation, Turing's article also shows implicit dimensions, such as the one of gender. To follow Milad Doueihi's suggestion – to begin a DH history with Turing's article – means to give voice to Turing and Lovelace, a man and a woman, two people who have not been at the center of the stage in their contemporary societies for gender or sexual orientation issues. It is a fascinating place to start a DH history and reconfigure the notion of 'mind' from Turing's 'imitation game' to the cognitive unthought introduced by Hayles. If now we come back to our starting question – the Apple logo –, we face Turing' questions and gender questions in the quest for the origin of the logo that is so emblematic of the digital culture.

4. Conclusion : the Apple logo

Where does the Apple logo come from? What does a bitten apple mean, first colored, then in grey or metal color? Such a question is raised in the academic movie *Le modèle Turing* produced by Catherine Bernstein in 2012. The French philosopher Michel Serres claims in the film that the bitten apple in the logo refers to the dramatic story about Turing's death. Turing is supposed to have committed suicide by eating a poisoned apple: "ce logo, c'est toujours la pomme de Turing, il n'y a aucun doute là-dessus"; "this logo is always the Turing apple, there is no doubt about that" (Bernstein, 2012, minute 26, 21–24). Before that, Serres explains that he agrees with a dramatic story about Turing's sucide : "I belive it is true" (Bernstein, 2012, minute 25, 18–27).

I am much obliged to the Pommier publisher for an opportunity to ask Michel Serres if he had any evidence confirming the origin of the Apple logo. In fact, it was just an oral story heard from several colleagues in the Silicon Valley. Ian Watson (2012) clarifies the story. He explains that Stephen Fry, a BBC presenter, speaks in a BBC program about Steve Jobs, Apple founder, denying the fact that the Turing apple was the origin for the logo: "It isn't true, but God we wish it were!". Watson comments: "Whenever I see the Apple logo I remember Turing, for without his discoveries Apple's products would not exist" (Watson, 2012, 85). Additional evidence on the topic was produced by Wozniak, Apple co-founder who said in 2004 that he never asked Jobs about the origin of the apple choice: "Steve Jobs had just come back from one of his trips and we were driving along he said 'I've got a great name: Apple Computer'. Maybe he worked in apple trees. I didn't even ask. Maybe it had some other meaning to him" (Linzmayer, 2004, 5). There is nothing on Turing's story Linzmayer's book written in 2004. Apparently, the phrase emerged later.

The link to Turing did not relate to the original choice of an apple in the Apple logo. Indeed, we have seen the Newton apple – without a bite – in the very first version of the logo drawn by Wayne, in section 1. According to graphic designer Rob Janoff, "the 'bite' in the Apple logo was originally implemented so that people would know that it represented an apple, and not a cherry tomato", as a second step (Think Marketing, 2012).

Nevertheless, Watson comment shows that the "Turing interpretation" of the Apple logo is now strongly embedded as an interpretation effect in the perception of the logo history. It will surely be successful, since the LGTB rights have now really progressed: the interpretation is emblematic in this case.

In summary, one can say that the choice of an apple, combined with a powerful verse from Wordsworth, was very successful for Apple Compagny. As Jean-Louis Gassée, former Apple executive and founder of BeOS, explains: "One of the deep mysteries to me is our logo, the symbol of lust and knowledge, bitten into, all crossed with the colors of the rainbow in the wrong order. You couldn't dream a more appropriate logo: lust, knowledge, hope and anarchy" (Think Marketing, 2012). The apple of Adam and Eve already had all these symbolic dimensions. It remains an ambiguous fruit that we contemplate about each time we open our Apple computer or use our iPhone, a kind of digital *pharmakon*. Corrupted or safe, entire or bitten, poisoned or tasty, the apple is the same fruit. Humans transform it according to their responsibility and sense of duty. It was the opinion of Augustin, a philosopher and Christian writer, from the 5th century: "The apples of the fatal tree were the same kind as the apples Adam and Eve had already found to be harmless on other trees" (Augustin, *On Genesis*; quoted by Greenblatt, 2017, 343, footnote 113). Our minds have a difficult duty to distinguish between them.

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