

RETHINKING THE DIGITAL HUMANITIES IN THE CONTEXT OF ORIGINARY TECHNICALITY

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There seems to be a vague sense among digital humanities scholars that this emerging field should be concerned with, and engaged in, thinking the humanities differently. However, there is no significant agreement about what this might actually mean.¹ Is the encounter between the humanities and digitality sufficient to make the humanities 'different', or 'new'? In what sense would digitality bring about something 'new' in the humanities, and what implications would this have for the way in which the humanities are practiced in the academy? Alan Liu, among others, has raised questions for such a search for novelty or 'new beginnings' in academic disciplines (Liu, 2008: 4). In his book of 2008 entitled *Local Transcendence* he understands the chase for 'the new or innovative in business, technology, media, art fashion', and (we may add) in academic disciplines, as a feature of the postindustrial Western sense of temporality – a 'sense of loose beginnings and loose ends' (1).

Liu also points out how the logic of management and flexibility has infiltrated the digital humanities and how, by making the transmission of academic knowledge more efficient and flexible, many humanities computing projects 'enrol the humanities and arts in the techno-logic of discourse network 2000' (211).² He suggests that the digital humanities resist efficiency by way of 'their own values': 'while the technological measure of the new discourse paradigm is postindustrial efficiency coupled with flexibility, that is, the ability to say anything to anyone quickly, the measure of academic knowledge is also historical, social, philosophical, artistic, and public (non-proprietary) diversity, for example, the ability to say anything to anyone fully, richly, openly, differently, kindly, or slowly' (211). However, what I want to call into question in this article is precisely the idea that the humanities traditionally rest on a clearly identifiable set of common values, neatly distinguishable from – and even opposed to – technological concepts. After all, have not the

humanities always been concerned with technology, at least to some extent? Is not access to every text always already mediated by technology (such as, e.g., by writing)? In order to explain this point better, let me start from outlining the understanding of the relationship between computation and the humanities as advanced by Johanna Drucker in her 2009 book, *SpecLab*.

In this book Drucker warns the humanities against the premise of objectivity embodied by computational methodologies. For her, the infatuation of the humanities with computation falls within the tradition of *mathesis universalis*, with its aspiration to the reconciliation of natural and mathematical languages fostered by the intellectual assumptions of British analytical philosophy and those of the Vienna Circle, as well as by structural linguistics and its legacy (Drucker, 2009: 4). By contrast, Drucker proposes the concept of 'speculative computing' as a way 'to push back on the cultural authority by which computational methods instrumentalize their effects across many disciplines' (5).

I therefore want to advance here a different (although perhaps complementary) proposition – namely, that computation and the humanities cannot be thought as two separate entities whose relations can be defined once and for all, and that the digital humanities might need to keep the very question of the relations between the humanities and digitality (and perhaps, more broadly, between the human and the technological) open. In fact, the ability to question inherited conceptual frameworks regarding technology might be one of the digital humanities' points of strength, which is pivotal to the production of new knowledge.

In order to do so, a good starting point for thinking about the digital humanities could be the re-examination of the philosophical conceptions of technology. Indeed, as Bernard Stiegler remarks, Western philosophy has always found it rather difficult to think about technology. In the first volume of his book *Technics and Time* (1998a), Stiegler points out how, while the extraordinary technological changes of our age need to be conceptualized and made intelligible as soon as possible, in attempting to achieve this intelligibility one cannot rely on any available account of technology in the Western philosophical tradition: 'at its very origin and up until now, philosophy has repressed technics as an object of thought. Technics is the unthought' (Stiegler, 1998a: ix).³ Although later on in his work Stiegler identifies a few exceptions to this philosophical refusal to openly approach technology – namely, the thought of

several French philosophers, including Jacques Derrida, and that of Martin Heidegger – he nevertheless points out that philosophical reflection has traditionally pushed technology to its own margins. And yet, a critical evaluation of such reflection shows how the concept of technology has always been tightly connected to the concepts of ‘knowledge’, ‘language’ and ‘humanity’.

Tracing a map of the philosophical thought on technology is not an easy task. In order to start exploring this problem, let me follow for a moment the innovative genealogy proposed by Stiegler (1998a). Stiegler’s position on the relationship between philosophy and technology is quite striking. Although, as we have seen above, he argues for the ‘urgency and necessity of an encounter between philosophy and technology’ (1998a: xi), he actually views philosophy as traditionally and constitutively incapable of thinking technology. For him philosophy has always ‘repressed’ technology as an object of thought. Even more significantly, from the very beginning Western philosophy has distinguished itself from technology, and has in fact identified itself as *not* technology. It has done so by separating *technê* from *epistêmê*. *Epistêmê* is the Greek word most often translated as knowledge, while *technê* is translated as either craft or art (Parry, 2003). The separation between *technê* and *epistêmê* was rooted in the political arena of fifth century Athens, and it associated *technê* with the rhetorical skills of the Sophists. As professional rhetoricians, the Sophists were skilled in the construction of political arguments. Their skillfulness (*technê*) was perceived as indifference to establishing truth, or, worse, as an attempt to make truth instrumental to power. As such, Sophists’ *technê* came to be opposed to true knowledge. Therefore, truth remained the only object of *epistêmê*, which in turn was identified with philosophy. This substantially political move deprived technical knowledge of any value.

Stiegler emphasizes that the subsequent step in the devaluation of technology was made by Aristotle through his definition of a ‘technical being’ as a being that does not have an end in itself and that is just a tool used by someone else for their ends.⁴ In other words, the exclusion of technology from philosophy has been founded on the concept of instrumentality: technical knowledge has been interpreted as instrumental, and therefore as non-philosophy. To quote Timothy Clark (2000), ‘the conception of technology that has dominated Western thought for almost three thousand years’ can be synthesised as follows:

The traditional, Aristotelian view is that technology is extrinsic to human nature as a tool which is used to bring about certain ends. Technology is applied science, an instrument of knowledge. The inverse of this conception, now commonly heard, is that the instrument has taken control of its maker, the creation control of its creator (Frankenstein's monster). (Clark, 2000: 238)

Thus, the utilitarian model of technology which is still in use today has its foundations in Aristotelian thought. Moreover, as Stiegler maintains, instrumentality has gained a new importance during the process of the industrialization of the Western world. Accordingly, technology has slowly acquired a new place in philosophical thought. Science has in fact become more and more instrumental (to economy, to war) in the course of the last two centuries, therefore gradually renouncing its character of 'pure' knowledge. At the same time, philosophy has become interested in the 'technicization' of science. An example of this is Edmund Husserl's work on the arithmeticization of geometry.⁵

Importantly, as Stiegler also points out, the Platonic conception of technicization as the loss of memory is still at the basis of Husserl's understanding of algebra (1998a: 3). I will come back to Plato's understanding of technology in a moment. For now it is worth remembering that in his dialogue *Phaedrus*, Plato famously associates writing, understood as a technique to aid memory, with the loss of true memory, which for Plato is *anamnesis*, or recollection of an ideal truth. From this perspective, which again separates knowledge from technology, writing is devalued because of its instrumentality.⁶

To recapitulate the above argument, the devaluation of technology in Western philosophy goes hand in hand with the devaluation of writing. What I want to argue here is that the relationship established by Stiegler between technology and writing as both excluded by knowledge and encompassed by the concept of instrumentality assumes a particular importance in the context of the digital humanities. The question to be posed at this point is: if digital technologies exceed and destabilize the concept of instrumentality, do they not also destabilize the concept of writing? And what would the consequences of such a destabilization be for the digital humanities?

In order to develop this point, let me now turn to the alternative tradition of thought on technology that, again according to Stiegler, starts with Heidegger and is not based on the concept of instrumentality. Clark (2000) calls this the tradition of 'originary technicity' – a term he borrows from Richard Beardsworth (1996). This term assumes a paradoxical character only if one remains situated within the instrumental conceptualisation of technology: if technology were instrumental, it could not be originary – that is, constitutive of the human. Therefore, the concept of 'originary technicity' resists the utilitarian conception of technology. To clarify what he means by 'originary technicity', Clark refers to the 1992 novel, *The Turing Option*, co-authored by Marvin Minsky, a leading theorist in the field of Artificial Intelligence (Harry and Minsky, 1992). In order to regain his cognitive capacities after a shooting accident has severely damaged his brain, the protagonist of the novel, Brian Delaney, has a small computer implanted into his skull as a prosthesis. After the surgery he starts reconstructing the knowledge he had before the shooting. The novel shows him trying to catch up with himself through his former notes and getting an intense feeling that the self that wrote those notes in the past is lost forever. Clark uses this story as a brilliant figuration of the fact that no self-consciousness can be reached without technology:

Delaney's experience in *The Turing Option* is only different in degree from the normal working of the mind from minute to minute ... No thinking – no interiority of the psyche – can be conceived apart from technics in the guise of systems of signs which it may seem to employ but which are a condition of its own identity. (Clark, 2000: 240)

This passage draws on the understanding of 'technics' not in terms of massive engineering works but as 'the subtler intimacy of the relation of technology to human thinking', and especially as 'the intimacy between technology and language' (Clark, 2000: 240). Such an understanding of technology ostensibly borrows from Heidegger's thought, as well from that of Derrida and Stiegler. What Clark (2000) calls 'originary technicity', Stiegler in turn names 'originary prostheticity' of the human (Stiegler, 1998a: 98-100). To understand this point better, it is helpful to examine briefly Stiegler's essay, 'The Time of Cinema', as well as the third volume of *Technics and Time*, in particular the section where, in dialogue with Derrida,

he reworks Husserl's philosophy of time (Stiegler, 1998b, 2001a, 2003a).

Stiegler's philosophy of technology is based on the central premise that 'the human has always been technological' (Hansen, 2003: non-pag.). Stiegler draws here on the work of the French paleontologist André Leroi-Gourhan, who tightly connects the appearance of the human with tool use. For Stiegler, too, the human co-emerges with tool use. He writes:

Humans die but their histories remain – this is the big difference between mankind and other life forms. Among these traces most have in fact not been produced with a view to transmitting memories: a piece of pottery or a tool were not made to transmit any memory but they do so nevertheless, spontaneously. Which is why archaeologists are looking for them: they are often the only witnesses of the most ancient *episodes*. Other traces are specifically devoted to the transmission of memory, for example writing, photography, phonography and cinematography. (Stiegler, 2003a: non-pag.)⁷

For Stiegler technology carries traces of past events. In Mark Hansen's words, it is 'the support for the inscription of memory' (Hansen, 2003: non-pag.) – that is, technology is always a memory aid, and only through memory do human beings gain access to their own past, and therefore become aware of themselves, or gain consciousness. Any technical instrument registers and transmits the memory of its use. For instance, a carved stone used as a knife preserves the act of cutting, thus becoming a support for memory. In this sense, technology is the condition of the constitution of our relation to the past. In sum, it can be said that human beings 'exteriorize' their memory into technological objects, which in turn are nothing but memory exteriorized. Importantly, by doing this the human species becomes able to suspend its genetic program and to evolve through means other than animal instincts –that is, in Stiegler's words, to 'pursue life through means other than life' (Stiegler, 1998a: 17). Stiegler gives the name of 'epiphylogenesis' to this process (2003a: non-pag). Epiphylogenesis is the transformation and evolution of the human species through its relationship with technology, rather than only on the basis of its genetic program. Furthermore, by functioning as a support for

memory, a technical object for Stiegler ‘forms the condition for the givenness of time in any concrete situation’ (Hansen, 2003: non-pag.). For this reason, Stiegler maintains that human beings can experience themselves only through technology.⁸

However, Stiegler’s reflections on originary technicity cannot be transferred into the digital humanities uncritically. The main question that needs to be addressed here is the distinction operated by Stiegler between technics and mnemotechnics. Although ‘technics is always a memory aid, ‘not every technics is a mnemotechnics. The first mnemotechnical systems appear after the Neolithic period. They form what will later become the kind of writing we are still using today’ (Stiegler, 2003a: non-pag.). For Stiegler every technics (for instance, pottery) carries the memory of a past experience; but only mnemotechnics (for instance, writing) are conceived with the primary *purpose* of carrying the memory of a past experience. In Stiegler’s argument, the emphasis is on the aim, or end, of different technologies: some technologies are conceived just for recording, others are not.

At this point I want to advance the following proposition: digitality (as evident in particular in software-based technologies) transgresses Stiegler’s distinction between technics and mnemotechnics. Although this thesis needs to be investigated further, it is important to position it first of all as a problem. If one relies on the widely accepted definition of software that constitutes the foundation of Software Engineering, one finds that ‘software’ is the totality of all computer programs as well as all the written texts related to computer programs (Humphrey, 1989; Sommerville, 1995). To give but one example, Ian Sommerville writes that ‘software engineers model parts of the real world in software. These models are large, abstract and complex so they must be made visible in documents such as system designs, user manuals, and so on. Producing these documents is as much part of the software engineering process as programming’ (Sommerville, 1995: 4).⁹ According to this definition, software can be thought of as a totality of ‘documents’ or ‘texts’ written in natural and formal languages at every stage of software development. Thus, software can be considered – in Stiegler’s terms – as mnemotechnics. On the other hand, it cannot be said that the main purpose of software is recording in the same way that it is for writing or cinema. It could be argued that the main purpose of software is to make things happen in the world (for instance, to change the polarities of the electronic circuits within a computer on which software is executed). This is

why software might be the point where Stiegler's distinction between technics and mnemotechnics is suspended.¹⁰

But, if digitality calls into question the distinction between technics and mnemotechnics, how is one supposed to think digitality within the framework of originary technicity? And, even more importantly, does not digitality call into question also the concept of writing on which the humanities have been traditionally based? If so, can digital technologies be considered purely instrumental to the digital humanities, or do the digital humanities need to rethink the very concept of instrumentality in relation to digitality and writing? To explain this point better, it is worth returning to Clark and to his claim that the thinkers of originary technicity situate the question of technology 'in the subtle intimacy' of the relation between technology and language (2000: 240). Indeed, according to Clark, Jacques Derrida is one of the most important thinkers of originary technicity precisely because he 'takes on the radical consequences of conceiving technical objects (including systems of signs) as having a mode of being that resists being totally understood in terms of some posited function or purpose for human being' (2000: 240). By his refusal to explain either technology or language in instrumental, functionalist terms, Derrida resists the widespread denigration of the 'merely' technical in Western thought.

Famously, Derrida makes references to technology and to the importance of technicity for the definition of the human throughout his whole work. Importantly, his conception of technology as something that cannot be understood within the conceptual framework of instrumentality is inseparable from his understanding of writing. Actually Derrida traces the devaluation of instrumentality back to the famous devaluation of writing that I have examined earlier on in Plato's *Phaedrus* (Derrida, 1981). For Derrida, as for Stiegler, the devaluation of instrumentality cannot be separated from the devaluation of writing.

Derrida's reflection on writing is crucial to the whole of his theory, and lies at the core of his criticism of Western metaphysics. Derrida's goal is not a reversal of priorities – namely, the prioritizing of writing over speech – but a critique of the whole of Western metaphysics that he understands as 'logocentric'. As Gayatri Spivak points out in her introduction to *Of Grammatology*, the term 'writing' is used by Derrida to name a whole strategy of investigation, not merely 'writing in the narrow sense' as a kind of notation on a material support (Derrida, 1976: lxix). Thus, Derrida writes *Of*

Grammatology not to pursue a mere valorisation of writing over speech, but to present the repression of writing ‘in the narrow sense’, as a symptom of logocentrism that forbids us to recognize that everything is pervaded by the structure of ‘writing in general’ – that is, an eternal escaping of the ‘thing itself’.¹¹ Derrida argues that speech too is structured like writing. There is no structural distinction between writing and speech – except that, in the history of metaphysics, writing has been repressed and read as a surrogate of speech.

In the chapter ‘The End of the Book and the Beginning of Writing’ in *Of Grammatology* Derrida maintains that today writing can no longer be thought as ‘a particular, derivative, auxiliary form of language in general’, or as ‘an exterior surface, the insubstantial double of a major signifier, *the signifier of the signifier*’ (1976: 7). Making writing instrumental is a move of Western metaphysics, and it is paired with the notion of speech as fully present. From this perspective, writing is seen as an interpretation of original speech, as technology in the service of language. However, Derrida suggests that language could only be a ‘mode’ or an aspect of writing.

Derrida’s questioning of logocentrism is inseparable from his questioning of the instrumental conception of technology. In *Mémoires: for Paul de Man* he states that ‘[t]here is no deconstruction which does not ... begin by calling again into question the dissociation between thought and technology, especially when it has a hierarchical vocation, however secret, subtle, sublime or denied it may be’ (Derrida, 1986: 108). Thus, once again, Derrida makes it explicit that the dissociation between thought and technology is – as is every other binary opposition – hierarchical, since it implies the devaluation of one of the two terms of the binary: in this case, technology. For this reason Clark (2000) suggests that ‘originary technicity’ can be considered another name for Derrida’s ‘writing in the general sense’. As Derrida states in *Of Grammatology*: ‘Writing is not an auxiliary in the service of science – and possibly its object – but first, as Husserl in particular points out in *The Origin of Geometry*, the condition of the possibility of ideal objects and therefore of scientific objectivity. Before being its object, writing is the condition of the *episteme*’ (Derrida 1976: 27).

This passage is crucial for clarifying the relationship that Derrida establishes between writing and thought, and ultimately for his understanding of technology as constitutive of the human. As Clark explains, for Derrida ‘writing enregisters the past in a way that

produces a new relation to the present and the future, which may now be conceived within the horizon of an historical temporality, and as an element of ideality' (2000: 241). Thus, the written mark gives us the possibility of preserving a trace of the past and enables us to acquire a sense of time. Clearly Derrida views writing – understood here as technology, or the technological capacity of registering the past – as a constitutive condition of thought. Consequently, technology cannot be understood through the opposition between *technê* and *epistêmê*, because it precedes and enables such an opposition. But what would all this mean for the digital humanities? To be more specific, in what way would the reformulation of 'originary technicity' in terms of Derrida's 'writing in general' advance our understanding of the digital and of its relations with the humanities? In order to start addressing both of these questions, it is useful to examine Derrida's rereading of Leroi-Gourhan's thought in *Of Grammatology*. Famously, in this work Derrida expressly highlights how the reconceptualization of the Western tradition of thought is particularly urgent today. Such a rethinking is what Derrida famously calls 'the end of the book', or the end of linear writing. According to Derrida, we are suspended today between two eras of writing – and this is why we can also reread our past in a new way.

For Derrida, Leroi-Gourhan has shown in *Le geste et la parole* that the historical perspective that associates humanity with the emergence of writing (and therefore excludes peoples 'without writing' from history) is profoundly ethnocentric. In fact, it shortsightedly denies the characteristic of humanity to peoples who do not actually lack 'writing', but only 'a certain type of writing' (Derrida 1976: 83) – that is, alphabetic writing. To explain this point Derrida draws on Leroi-Gourhan's concept of 'linearization'. For Leroi-Gourhan the emergence of alphabetic writing must be understood as a process of linearization (Leroi-Gourhan, 1993: 190). In his analysis of the emergence of graphism, Leroi-Gourhan emphasises what he considers to be the underestimated link between figurative art and writing. '[I]n its origins', he states, 'figurative art was directly linked with language and was much closer to writing (in the broadest sense) than to what we understand by a work of art' (190). Given the difficulty of separating primitive figurative art from language, he proposes the name 'picto-ideography' for this general figurative mindframe. Yet he is very clear that such a mindframe does not correspond to writing 'in its infancy' (195). Such an interpretation would amount to applying to the study of graphism a mentality influenced by four thousand years of

alphabetic writing – something that linguists have often done, for instance, when studying pictograms. But ‘picto-ideography’ signals an originary independence of graphism from the mental attitude that constitutes the basis of what Leroi-Gourhan calls ‘linearization’.

To understand the concept of linearization better, one must start from Leroi-Gourhan’s concept of language as a ‘world of symbols’ that ‘parallels the real world and provides us with our means of coming to grips with reality’ (195). For Leroi-Gourhan graphism is not dependent on spoken language, although the two belong to the same realm. Leroi-Gourhan views the emergence of alphabetic writing as associated with the technoeconomic development of the Mediterranean and European group of civilizations. At a certain point in time during this process writing became subordinated to spoken language. Before that, Leroi-Gourhan states, the hand had its own language, which was sight-related, while the face possessed another one, which was related to hearing. He explains:

At the linear graphism stage that characterizes writing, the relationship between the two fields undergoes yet another development. Written language, phoneticized and linear in space, becomes completely subordinated to spoken language, which is phonetic and linear in time. The dualism between graphic and verbal disappears, and the whole of human linguistic apparatus becomes a single instrument for expressing and preserving thought – which itself is channelled increasingly toward reasoning. (210)

By becoming a means for the phonetic recording of speech, writing becomes a technology. It is actually placed at the level of the tool, or of ‘technology’ in its instrumental sense. As a tool, its efficiency becomes proportional to what Leroi-Gourhan views as a ‘constriction’ of its figurative force, pursued precisely through an increasing linearization of symbols. Leroi-Gourhan calls this process ‘the adoption of a regimented form of writing’ that opens the way ‘to the unrestrained development of a technical utilitarianism’ (212).

Expanding on Leroi-Gourhan’s view of phonetic writing as ‘rooted in a past of nonlinear writing’, and on the concept of the linearization of writing as the victory of ‘the irreversible temporality of sound’, Derrida relates the emergence of phonetic writing to a linear understanding of time and history (Derrida, 1976: 85). For

him linearization is nothing but the constitution of the 'line' as a norm, a model – and yet, one must keep in mind that the line is *just* a model, however privileged. The linear conception of writing implies a linear conception of time – that is, a conception of time as homogeneous and involved in a continuous movement, be it straight or circular. Derrida draws on Heidegger's argument that this conception of time characterizes all ontology from Aristotle to Hegel – that is, all Western thought. Therefore, and this is the main point of Derrida's thesis, 'the meditation upon writing and the deconstruction of the history of philosophy become inseparable' (86).

However simplified, this reconstruction of Derrida's argument demonstrates how, in his rereading of Leroi-Gourhan's theory, Derrida understands the relationship of the human with writing and with technology as constitutive of the human, rather than instrumental. Writing has become what it is through a process of linearization – that is, by conforming to the model of the line – and in doing so it has become instrumental to speech. Since the model of the line also characterizes the idea of time in Western thought, questioning the idea of language as linear implies questioning the role of the line as a model, and thus the concept of time as modelled on the line. It also implies questioning the foundations of Western thought (by means of a strategy of investigation that, as we have seen, Derrida names 'writing in general', or 'writing in the broader sense'). At this point it becomes clear why, if we follow Derrida's reworking of the concept of originary technicity, a new understanding of technology (as intimately related to language and writing) entails a rethinking of Western philosophy – ambitious as this task may be. It is worth noting here that in *Of Grammatology* Derrida expressly highlights how the reconceptualization of the Western tradition of thought is particularly urgent today. Actually, the 'uneasiness' of philosophy in the past century is due to an increasing destabilization of the model of the line. He states that what is thought today cannot be written in a book – that is, it cannot be thought through with a linear model – any more than contemporary mathematics can be taught with an abacus (87). This inadequacy does not just apply to the current moment in time, but it comes to the fore today more clearly than ever. Derrida writes:

The history of writing is erected [by Leroi-Gourhan] on the base of the history of the *grammé* as an adventure of relationships between the face and the hand. Here, by a precaution

whose schema we must constantly repeat, let us specify that the history of writing is not explained by what we believe we know of the face and the hand, of the glance, of the spoken word, and of the gesture. We must, on the contrary, disturb this familiar knowledge, and awaken a meaning of hand and face in terms of that history. (1976: 84)

For Derrida what is most relevant in Leroi-Gourhan's history of writing is that it problematizes our conception of the human ('what we believe we know of the face and the hand'). Yet the focus of Derrida's work is not the concrete analysis of historical systems of writing, since, as we have seen, he differentiates 'writing in general' from any such system. With regard to my investigation of the digital humanities, then, Derrida's understanding of what Clark calls 'originary technicity' has two important implications. On the one hand, it confirms the fundamental relationship between technology and the human, and it supports the need for a radical questioning of both concepts in the digital humanities. On the other hand, Derrida leaves open the question of how to investigate a historically specific technology without losing its significance for a radical rethinking of the relationship between technology and the human. It is actually Stiegler's rereading of Derrida's thought in *Technics and Time* that allows for such an investigation. Let me now analyze this point a little further.

As Stiegler emphasizes, the emergence of the technique of linear writing radically transforms the modes of cultural transmission from generation to generation. In fact, from the point of view of Greek pre-Socratic thought, which does not presume the immortality of the soul, the dead can nevertheless return as ghosts that transmit an inheritance, and such inheritance is deemed to come from a spirit (*esprit*) that crosses generations. This is the pre-Socratic image of cultural transmission. In contrast, the appearance of linear writing allows for the transmission of culture 'as a unified spirit, precisely through the unification of language enabled by literalization' (1998a: 154). Drawing on Leroi-Gourhan's and Derrida's thought, Stiegler insists that the emergence of the model of the line has changed both the transmission of culture *and* the modes of thought.

According to Stiegler, the Sophists themselves are a by-product of this process. The years between the seventh and the fifth century BCE are witness to the arrival of the *grammatists*, the masters of letters, and later on of the Sophists, who 'go on systematically to

develop a technique of language that quickly acquires a critical dimension, in so far as this technique of developed language will in turn engender a moral crisis' (155). Thus, sophistry is not an oral technique; rather, it presupposes writing.¹² Accordingly, Plato criticizes the Sophists because they manage to speak well, 'but they learn everything by heart, by means of this techno-logical "hypomnesis" that is logography, the preliminary writing out of speeches. It is because writing exists that the sophists can learn the apparently "oral" technique of language that is rhetorical construction' (155). In the *Ion* Plato even makes a connection between poets and Sophists, claiming that they work along the same lines of falsehood: '[s]ophists, poets, are only liars, *that is to say*, technicians' (155). This powerful image of the technician as a liar constitutes the summation of Plato's devaluation of technology and writing.

To summarize, Stiegler points out that, on the one hand, the question of technology, considered as the object of repression, 'is a question that emerges *with* and *by* its denunciation by Plato' (155). It arises 'above all as a *denial*, and in this sense therefore as a *kind of forgetting*' – and this is quite paradoxical, since in *Phaedrus* what Plato blames technology for is precisely its power of forgetting (155). On the other hand, it can be said that the question of technology appears well before Plato: as we have just seen, it arises in the context of the transformation of the Greek cities, associated with the development of navigation, money, and above all mnemotechnics, that is to say of technologies capable of transforming the conditions of social and political life, and of thought. Ultimately, *technê* and *epistêmê* – that is, knowledge and technology – share a relationship with writing, the fundamental mnemotechnics. In turn, mnemotechnics, and technology in general, both reveal a constitutive connection with temporality.

Stiegler's understanding of the transformation of technology in time is crucially related to his 'displacement' of deconstruction that also results in his break with Heidegger (Hansen, 2003: non-pag.). Stiegler explains:

Let's say, for example, that one night I write the sentence: 'it is dark'. I then reread this sentence twelve hours later and I say to myself: hang on, it's not dark, it's light. I have entered into the dialectic. What is to be done here? ... That which makes consciousness be self-consciousness (i.e.

consciousness that is conscious of contradiction with itself) is the fact that consciousness is capable of externalising itself. (Stiegler, 2003b: 163)

This passage is extremely important because it reformulates the concept of the technical constitution of consciousness that Clark explores in his analysis of *The Turing Option* (Clark, 2000: 240). Here what Stiegler – and Leroi-Gourhan before him – calls ‘exteriorization’ (which constitutes the basis of self-consciousness) is clearly pursued *through writing*. One writes ‘it is dark’, and, when one rereads the note twelve hours later, it is light. This produces, as Stiegler himself further clarifies, ‘a contradiction between times’, namely the time of consciousness when one wrote this and the time of consciousness when one reads this. Yet, one still has the same consciousness, which is therefore ‘put in crisis’ (Stiegler, 2003b: 163), and this crisis in turn raises self-awareness. The act of inscription – that is, of exteriorization – ultimately constitutes interiority, which does not precede exteriority, and vice versa. As I have explained earlier, for Stiegler (again drawing on Leroi-Gourhan) the process of exteriorization constitutes the foundation of temporality, of language and of technical production, and requires a basic neurological ‘competence’ – that is, ‘a level of suitable cortical and subcortical organization’ (164).

This is Stiegler’s fundamental point of departure from Derrida’s theory. Through this departure he lays the foundation for the concrete study of historically specific technologies as fundamental to the understanding of the constitutive relationship between technology and the human. To clarify this point, it is now worth examining Stiegler’s interpretation of the myth of Prometheus and Epimetheus briefly. According to the myth, Zeus gives Prometheus the task of distributing qualities and powers to the living creatures, but Prometheus leaves it to his twin brother Epimetheus to act in his place. Epimetheus hands out all the qualities to the living and forgets to keep at least one for the human being. Human beings therefore appear here as characterized by a ‘lack of quality’ (Stiegler, 2003b: 156). Stiegler comments that the human being is ‘a being by default, a being marked by its own original flaw or lack, that is to say afflicted with an original handicap’ (156). For this reason, Prometheus decides to steal technology – that is, fire – and gives it to human beings, in order to enable them to invent artefacts and to become capable of developing all qualities. With the gift of technology, a problem arises: mortals cannot agree on how to use artefacts, and

consequently start fighting and destroying each other. In Stiegler's words, '[t]hey are put in charge of their own fate, but nothing tells them what this fate is, because the lack [*défaut*] of origin is also a lack of purpose or end' (156). Stiegler's reworking of the myth clearly demonstrates how for him technology raises the problem of decision, and how this encounter of the human with decision in turn constitutes time – or rather, what Stiegler calls 'technical time'. Technical time emerges because human beings experience their capacity for making a difference in time through decisions. Temporality is precisely this opening of the possibility of a decision, which is also the possibility of creating the unpredictable, the new.

It is for this very reason that the historical specificity of technology is central to Stiegler's thought. The human capability of deciding 'what to become' *constitutes* temporality. Moreover, human prostheticity – that is, the fact that human beings, to survive, require non-living organs such as houses, clothes, sharpened flints, and all that Stiegler calls 'organized inorganic matter' – forms the basis for memory, or, more specifically, , for technical memory. Unlike genetic and individual memory, technical memory coincides with the process of exteriorization that 'enables the transmission of the individual experience of people from generation to generation, something inconceivable in animality' (159). This inherited experience is what Stiegler calls 'the world' – that is, a world that is always already haunted by 'spirits' in the pre-Socratic sense, always already constructed by the memories of others.

I want to highlight here how Stiegler's approach is extremely helpful in order to contextualize the necessity of making decisions about technology in the perspective of the digital humanities. In fact, such decisions do not just affect technology; they also change our experience of time, our modes of thought and, ultimately, our understanding of what it means to be human. If understood as originary, technology constitutes our sense of time – or rather, we only gain a sense of time and memory, and therefore of who we are, through technology. In turn, every change in technology changes our sense of time, and this then changes the meaning that we give to the fact of being human.

To recap, what I have attempted to show here is that the digital humanities must think digitality critically, first of all by questioning the assumptions of rationality that are at the foundation of digitality. The model(s) of rationality on which digital technologies are based cannot be 'imported' unquestioningly into the humanities. The

same is true for the idea of instrumentality. Indeed, on the one hand the digital humanities are the ideal place to investigate the mutual co-constitution of technology and the human. The originary connection between technology and language places technology at the core of the humanities. On the other hand, the specificities of singular encounters between instances of digital technologies and instances of the humanities must be investigated. To paraphrase Gary Hall, the digital humanities are performed whenever the humanities engage with some instances of digitality – be it an open access database, a blog, or an algorithm (Hall, 2007).

Such a radical engagement with digitality is not meant to interrupt the humanities' ongoing experimentation with digitality. However, it does call for critical reflection on digitality (for instance, on the conceptual foundations of the algorithms we use) *while* we experiment with it. Even more importantly, in a world in which the university is becoming more and more just another knowledge-based organization governed by rules of efficiency and flexibility, the digital humanities might become the ideal context in which to reaffirm the role of the university as a public sphere. Questioning instrumentality is an essential step toward questioning the idea of knowledge as a commodity, and of 'the neoliberal logic that views schools as malls, students as consumers, and faculty as entrepreneurs' (Giroux, 2010: non-pag.). If academic labour must resist instrumentality in order to remain political, then the digital humanities become an ideal place for a persistent critique of all instrumental modes of thinking.

Endnotes

¹ For the purpose of this article I understand the digital humanities as embracing all those scholarly activities that involve using computational techniques and methodologies (image processing, data visualisation, network analysis) to produce new ways of approaching humanities texts as well as the practices of being engaged in processes of digital media production (creating interactive electronic literature, or building online databases and wikis). See Hall's article in this issue.

² Liu's expression 'discourse network 2000' draws on Friedrich Kittler's concept of the 'discourse network', by which Kittler means 'the network of technologies and institutions that allow a given culture to select, store and process relevant data' (Kittler 1990: 369). 'Discursive networks 2000' is the name that Liu gives to the discursive circuit producing 'encoded or structured discourse, in the technical sense of digital text encoding and structured markup' (Liu 2008: 210).

³ The term 'technics' belongs to Stiegler's partially Heideggerian philosophical vocabulary. I take it here as a synonym for what we commonly refer to as 'technology'.

⁴ For more on this, see *Nicomachean Ethics* 6, 3-4 (Aristotle, 1984).

⁵ During the ascent of Nazism in Germany, Husserl conceptualized the emergence of algebra (which had been ongoing since Galileo's times) as a technique of calculation that emptied geometry of its visual content. 'In algebraic calculation,' he wrote, 'one lets geometric signification recede into the background as a matter of course, indeed one drops it altogether; one calculates, remembering only at the end that the numbers signify magnitudes' (Husserl, 1970: 44-45). According to Husserl, by becoming viable to calculation, geometry renounces its capacity of visualizing geometrical shapes – or, in Husserl's terms, 'spatio-temporal idealities' (41). Therefore, as Stiegler comments, 'the technicization of science constitutes its eidetic *blinding*' (Stiegler, 1998a: 3). I want to point out here how the concept of 'calculation' is a constitutive part of the concept of instrumentality. For Husserl calculation seems to be the equivalent of formalization and algebra, as the technique of calculation is nothing but a formalism that allows us to manipulate numerical configurations and to forget their visual meaning. The emphasis here is not on the supposedly 'mechanical' character of calculation; on the contrary, Husserl highlights the fact that algebra still makes geometrical discoveries possible. Rather, the emphasis is on the forgetting of what Husserl understands as the visual meaning of geometry.

⁶ See *Phaedrus* 275 ff. (Plato, 1989).

⁷ I quote here from the English translation of Chapter 4 of Stiegler's *La technique et le temps 3. Le temps du cinéma et la question du mal-être* (2001a), published in *Culture Machine* (Stiegler, 2003a). Stiegler's

original take on the correlation between the human and the technological informs his rereading of Heidegger, as well as his divergence from Derrida's own reworking of Heidegger (Hansen, 2004).

⁸ Such an experience of the self is what philosophers have called 'self-affection' (Kant) or - and this is particularly important in Stiegler's thought, as I will show in a moment - 'internal time-consciousness' (Husserl).

⁹ Software has never been univocally defined by any disciplinary field. However, the definition of software provided by Software Engineering is a very general one - as it can be expected from a discipline that was established in the late 1960s with the purpose of helping programmers design software cost-effectively, regardless of the specific applications and programming languages they were working with.

¹⁰ It must be noticed that, in the third volume of *Technics and Time*, Stiegler speaks of the contemporary convergence between technics and mnemotechnics in the broad sense of the convergence of technologies of production with information and communication technologies. However, for him information and communication technologies undoubtedly fall under the rubric of mnemotechnics - or technology that has recording as its primary aim. I want to argue that, ultimately, in order to distinguish between technics and mnemotechnics, Stiegler resorts to the concept of the aim (or the end) of technology, therefore seemingly falling back into the instrumental conception of technology - which obviously contradicts his understanding of technology as originary.

¹¹ On the other hand, in the section of *Of Grammatology* about Lévi-Strauss, Derrida (1976) suggests that no definite distinction between writing in the 'narrow' and the 'general' sense can be traced, for one slips into the other.

¹² Stiegler's assertion mirrors Derrida's argument that we need to have a sense of writing in order to have a sense of orality.

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