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THE HERMENEUTIC PROBLEM POSED *by* DIGITAL HUMANITIES

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This article aims to present the hermeneutic problem related to the emergence of the research field widely known as digital humanities. In general, at the epistemological level, this problem involves the consideration of a theory of historical interpretation that articulates research methods and techniques with digital objects in their symbolic character. At the ontological level, it highlights the need to take into account the constitutive aspects that make this theory of interpretation possible. By examining the historical-philosophical foundation of the hermeneutic paradigm, as well as the engagement of human sciences at large — and history in particular — with digital technologies, we have come to the conclusion that a digital historical hermeneutics needs to go beyond epistemological and methodological reflections towards the questioning of the ontological conditions not only of human understanding but also of machine interpretation.

Hermeneutics – history – digital humanities

ARTIGO

O Problema Hermenêutico Colocado Pelas Humanidades Digitais

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Este artigo tem como objetivo apresentar o problema hermenêutico relacionado ao surgimento do campo de pesquisa amplamente conhecido como humanidades digitais. Em geral, no nível epistemológico, esse problema envolve a consideração de uma teoria da interpretação histórica que articula métodos e técnicas de pesquisa com objetos digitais em seu caráter simbólico. No plano ontológico, ele destaca a necessidade de levar em conta os aspectos constitutivos que tornam essa teoria da interpretação possível. Ao examinar o fundamento histórico-filosófico do paradigma hermenêutico, bem como o engajamento das ciências humanas em geral — e da história em particular — com as tecnologias digitais, chegamos à conclusão de que uma hermenêutica histórica digital precisa ir além de reflexões metodológicas e epistemológicas em direação ao questionamento das condições ontológicas não apenas da compreensão humana, mas também da interpretação realizada pela máquina.

Hermenêutica – história – humanidades digitais

THE HISTORICAL-PHILOSOPHICAL FOUNDATION OF THE HERMENEUTIC PARADIGM

The purpose of this article is to present the hermeneutic problem related to the emergence of the research field widely known as digital humanities[1]. In general, at the epistemological level, this problem involves the consideration of a theory of historical interpretation that articulates research methods and techniques with digital objects in their symbolic character. At the ontological level, it highlights the need to take into account the constitutive aspects that make this theory of interpretation possible. This is how Paul Ricoeur (1969) defines a long way of articulating the hermeneutical question to phenomenology, which aims, among other goals, at the foundation of historical sciences, and that inevitably must permeate the realm of language. At this ontological level, hermeneutics must undertake the theoretical-philosophical task of understanding the means by which the phenomenon of interpretation takes place, as formulated by Martin Heidegger (1988) and Hans-Georg Gadamer (1999).

However, before becoming properly philosophical, hermeneutics was first engendered from Classical Antiquity to the 19th century as a tenet of disciplines such as theology, law, philology and, finally, history. Johann Gustav Droysen dedicated himself, like few 19th century historians, to answering the theoretical, philosophical and methodological questions of his field. This reflection was compiled in the work called *Historik* (developed during the second half of the 19th century), which can very well be translated as "theory of history". Hermeneutics plays a central role in this theory of history, even if Droysen does not explicitly employ the term. The greatest evidence of his belonging to this tradition is perhaps the recurring references of Hans-Georg Gadamer, who places Droysen retrospectively in a prominent position in the history of hermeneutics: the "pioneering relevance of Droysen's *Historik* to the methodology of the human sciences [*Geisteswissenschaften*]" it is due to the development of an idealist-based historical hermeneutics that proposes an "adequate self-understanding of the historical method" (Gadamer 1993, 426; Maclean 1982, 349). This accomplishment was crucial for the later attempt at a hermeneutical foundation for the historical sciences that Dilthey sought to undertake. Despite recognizing the inspiration in Droysen, as in Böckh and Humboldt, Dilthey does not fail to state that "a theoretical structure [*Aufbau*] of the human sciences was not achieved by these thinkers" (Dilthey 1965, 114-115).

Droysen's reflection revolves around ideas and concepts such as understanding (*Verstehen*) and interpretation (*Interpretation*), but not only that: it is about the way in which such concepts are mobilized, the background on which they act. At first limited to the methodological ambit of historical research, along with heuristics, criticism and *Apodeixis* (in the *Historik* of 1857), or to representation (*Darstellung*, in the *Grundriss* of 1857-8), the concept of understanding comes to embrace a broader scope. Understanding is not only intended to acquire information through source criticism. It provides individuals with "true" historical knowledge, so that it becomes possible to carry on the collective process of developing history through the apprehension of the idea of

[1] Here, the term "digital humanities" does not in most cases refer to a field *per se*, but merely aims to point to the general engagement or adoption of digital technologies by researchers in the humanities. For an understanding of the term as a field with programs, research centers and publications see: Berry 2012.

its whole. In other words, through understanding — the appropriate way of presenting historical sense — history promotes *Bildung*.

Droysen establishes a dialectic between part and whole, between available parts and the general idea of the past as a whole in itself. In the *Historik* of 1857, he reproduces the hermeneutic adage: "only through the parts do we understand the whole, only through the whole, the parts" (Droysen 1977, 30-31). In the 1857 (1858) version of the *Grundriss der Historik* — as well as in the 1882 version — Droysen reaffirms: "the individual is understood in the whole and the whole is understood from the individual".[2] The whole, then, is recognized as the meaning found in the aggregate of collective manifestations that embody the ethical powers (family, language, religion, law, science etc.). These powers are instances that develop over time and that are present in society. They function as threads that organize history, through which individualities become relevant and from which the historian is able to interpret the past.

More ambitiously, Dilthey took upon himself the task of building the theoretical-epistemological foundations of the historical sciences (*Geisteswissenschaften*) and found in hermeneutics the path to achieve it. Despite the broad scope of his work, he maintained his (unfinished) reflection at a level similar to Droysen's, namely, of a theory of historical knowledge that, nevertheless, does not fail to point to fundamental ontological elements, such as the concept of life (Marcuse 1989, 363-368). It is finally with Heidegger that hermeneutics properly acquires a new philosophical status (Gadamer 1993, 102-103). In his early thought — until the publication of *Being and Time* —, the notion of a hermeneutics of facticity is posed as one of his main interests. That provides the philosophical program later adopted by Gadamer to support his claim concerning the universality of hermeneutics (Gadamer 1999, 1-5). Heidegger is a direct heir of the quarrel around the foundation of the historical sciences and contributed decisively with a certain solution to the problem of historicism. From central figures of this quarrel (Rickert, Dilthey, Husserl and even Droysen[3]), Heidegger progressively moves towards the claim of a phenomenological hermeneutics of facticity.

Facticity emerges as the multiplicity of concrete manifestations of the entity in face to the ontological unicity of the being of such entity. It is along the lines of this articulation, between phatic and philosophical experience, that the recognition of the historical emergence of ontologies becomes possible. In order to reinterpret the traditional problems of philosophy, Heidegger insists on the necessity of inserting oneself into the sphere of entities' concrete existence, that being, the worldly events that surround them. This world is a condition of possibility of such entities, but it is itself — in its condition of a worldview unity that contains the multiplicity of possible determinations and meanings — the result of a historical genesis. Only then the philosophical tradition can be properly seen as the progressive sedimentation of meanings that determines the domain of possible problems and their conceptuality. It engenders hermeneutic structures composed by the constellation of concepts that accompany the emergence of an entity and the way it reveals itself in the present. Therefore,

[2] "Das Einzelne wird verstanden im Ganzen und das Ganze aus dem Einzelnen" (Droysen 1977, 398).

[3] Heidegger held a seminar in 1926 called "*Übungen über Geschichte und historische Erkenntnis im Anschluss an J. G. Droysen, Grundriss der Historik"* ("Exercises on history and historical knowledge in connection with the *Grundriss der Historik* by J. G. Droysen").

such structures previously determine how entities and concepts should be interpreted, insofar as they are already inserted in previous frames of meaning, in regional ontologies (Heidegger 1988, 67-81).

These assertions point to the self-reflexive dimension of the Heideggerian hermeneutic project that takes place in *Being and Time*. When placing itself in such a hermeneutic endeavor, *Dasein* cannot forego its own facticity — i.e., the presuppositions behind its own questioning (*Fragestellung*) — , but can only become conscious of it. Therefore, this project commences and culminates in *Dasein* itself, so that there is a connection between the genesis of the presuppositions of such questioning and *Dasein's* own ontological possibilities. Interpretation, for Heidegger, is a fundamental trait of *Dasein*, founded on a previous structure of understanding (*Voraus des Verstehens*) that preliminarily determines characteristic aspects of the subject and anticipates their linguistic acts, given that the mere act of enunciation brings with itself a series of presuppositions. This structure is previously constituted by the facticity of the "subject", its existential situation, and, thus, is directly bound to what Heidegger denominates as care (*Sorge*). Care is *Dasein's* ontological attribute of being-in-the-world phatically from the very beginning, projecting its possibilities along with and *contra* entities in this world (Heidegger 1977, 254-255).

This is not an epistemological approach to hermeneutics, but rather an examination of a former, more fundamental dimension. Beyond knowledge itself or the act of knowing, hermeneutics must turn to the conditions that render both feasible, to their precise form of existence, the mode of being (*Seinsweise*) that characterizes them. Entities that inhabit the lifeworld, before being properly interpreted, are encompassed by this constitutive comprehensive structure. Therefore, not to a form of knowledge, the hermeneutics of facticity is bound to the existential, practical and unfathomable self-knowledge grounded on the structure of care. This, however, would not lead to an irresolvable determinism of tradition. Heidegger wants precisely to expose this dimension so that the horizons of meaning can be fathomed and the essentially historical nature of the pre-structure of understanding (*Verstehen*) can be unveiled. This procedure is called by Heidegger interpretation (*Auslegung*). Interpretation is the way of unveiling the situation and conditions in which *Dasein* is capable of being understood. For Heidegger, "interpretation does not consist in acquiring knowledge of the understood, but in the elaboration (*Ausarbeitung*) of the possibilities projected in the understanding" (Heidegger 1977, 197). At the same time, interpretation is also the "self-appropriation" of understanding, which is always connected to situational interpretive dispositions whose clarification is the first step towards avoiding "false interpretations". Heidegger's philosophical hermeneutics does not regard a "theory of interpretation", but rather interpretation itself. Theories of interpretation are the unfolding of *Dasein's* comprehensive ontological condition. Hermeneutics, in turn, is the self-reflective act of interpreting facticity, the act of rendering the fundamental structures of being visible (Heidegger 1977, 197-204). From these presuppositions, the emergence of the hermeneutic problem in the digital humanities begins to take on clearer forms.

THE DIGITAL FROM THE STANDPOINT OF THE HUMAN SCIENCES

As surprising as it may seem, the engagement of human sciences in general — and history in particular — with digital technologies followed their own emergence. This means that there have always been attempts to apply computational techniques to manipulate cultural artifacts with humanistic purposes, even if they were isolated cases (Ramsay 2011, 1). This is what a genealogy of the so-called digital humanities allows us to perceive. This manipulation depends, from the very beginning, on the transformation of these artifacts into digital files, on their discrete encoding, i.e., precisely on their digitization: the artifact is encoded in discrete numerical data that, as such, allow completely new forms of treatment and "a new level of efficiency and speed in processing, transmitting and interacting with media data and communication content" (Manovich 2013, 133). Through this transformation, computational resources become available to humanist scholars. At first, the employment of these resources indicated a purely instrumental relationship. Emphasizing still traditional research procedures, both the access to tools that aid in various activities of scholarship and the possibility of dealing with ever increasing amounts of sources available in digital databases, for a certain time, were not enough to suggest new ways of utilizing technology.

Part of the intentions surrounding the creation of the digital humanities' field is based precisely on the necessity to reflect on emerging ways of dealing with technology and on the development of computational techniques that are not only instrumental, but relevant to the unfolding of new branches of investigation. This is coherent with the realization of new problems whose conception was made possible only with digitization itself. Initially, the field of digital humanities was circumscribed by an agenda of both constituting a large digital database of analog materials and mobilizing the available technological structures with the purpose of promoting the treatment of the new *corpus* of digital sources, being still basically limited to text analysis. According to much of the literature, this was especially a quantitative effort. In a second moment, the focus turned to the imperative of building environments and tools proper for the treatment and creation of born digital files, as well as to new disciplinary paradigms, which implies the maintenance of more complex networks between different research contexts. Compared to the first moment, these new approaches are intended to be "qualitative, interpretive, experimental, emotive and generative in character" (Schnapp 2009, 2).

Those distinct moments do not fail to point to a broader disciplinary process in which they are both encompassed. Digital humanities were progressively able to produce new methods and approaches, although initially restricted to conceptual constellations, disciplinary divisions, and research and publication models of traditional humanist disciplines — largely determined by the paradigm of print written culture. The relevance of print written culture — the discourse system that prevailed until at least the second half of the 20th century — delimited the field of possibilities for dealing with culture at large in accordance with the metaphor of text and its assumptions (Krämer; Bredekamp 2013). The scope of digital humanities was initially limited by research practices that basically reproduced traditional scholarly labor still in effect or that were based on its models, notwithstanding the advantages provided by digital technologies that substantially modified the speed of documental search (with the searchability and findability paradigms) and access to vast amounts of

empirical sources (Manning 2013). Therefore, technologically mediated research was still restricted to a certain analysis of texts using systems of classification, aggregation and comparison of data sets, such as the so-called *text markup* — a set of tags assigned to elements of a text to indicate its relationship with the whole or determine its mode of display —, yet guided, in a way, by the canon of close and deep reading typical of traditional criticism. If, on the one hand, renouncing these guidelines and methods does not offer a concrete solution to the problem of digital humanities (on the contrary), on the other, the challenge is to place the digital at the center of humanities reflection and, therefore, to put into question not only disciplinary boundaries, but the very concept of human sciences.

Further research with and on digital tools and techniques contributed to making this reflection even more complex. The emergence of artifacts engendered in the digital environment — which in principle do not exist in the analog world — and of new digital technologies enacted a new set of problems, methods and concepts that were hitherto inconceivable for humanities. At the research level, these technologies enable new ways of combining and seeing relationships between data that depend on the logical capacity of computers to propose and analyze deductions and to test hypotheses. That is the intellectual effort undertaken by Nancy Katherine Hayles. From the problem of the metaphor of the text as a imperative for the composition of a research agenda in the humanities, Hayles elaborates a series of analyzes on the matter of reading and on the constitution of subjectivities in the context of adopting digital technologies (Hayles 2004). With regard to reading, Hayles claims that it „is so intimately related to meaning that it connotes much more than parsing words; it implies comprehending a text and very often forming a theory about it" (Hayles 2012, 46). As of the matter on the modes of reading, the first issue that arises is the availability of data. Traditional historiographical methodology and literary criticism have a model of establishing and perpetuating canons that largely depends on the intersubjective values of a scientific community, whereas historiographical and literary criticism supported by digital technologies can investigate an extremely broad *corpus* of texts that allows distinguishing style and convention characteristics from which the exceptionality of a text (a literary canon or a "official" source) can be, by means of comparison, clearly defined — or even ratified, heuristically taking advantage of traditional criticism based on their own values.

This type of research depends on a specific mode of reading, distinct from the traditional form — guided by notions such as attention and depth — whose realization is unattainable in digital archives and databases, given that in most cases they store millions of books (billions of pages) and other kinds of sources still restricted to the text format. This different mode is called *distant reading*, and it is made possible by the use of software, thus, a form of *machine reading* (Moretti 2007). Through it, the text is overlooked as a unity in favor of the database to which it belongs, which is analyzed based on criteria of comparison parameters, revealing patterns and presuppositions that enable us to think of a database in different original ways. The emergence of this form of reading contributes not only to questioning the theoretical-philosophical assumptions on the very idea of reading, but also, and through such questioning, to the possibility of thinking about the place and relevance of attentive (or human) and distant (or digital) reading. This means rethinking the priority given to modes of reading in the research process or even considering an conciliation

between them: whether "assuming that human interpretation constitutes the primary starting point", or "that human interpretation misleads and should be brought in after machines have 'read' the material" or, finally, that, regardless of the mode of reading that brings about the research process, its modification or replacement is carried out according to material requirements. For Hayles, this indicates not an opposition, but rather an complementation between opposites represented by these two modes of reading (Hayles 2012, 45-47).

Even if it is still a matter of applying traditional theoretical-conceptual frameworks to research with digital media, the possibility of emplying these technologies to produce material and to provide different modes of visualization points to new interpretive paths. At the same time, it is in the common ground of coexistence between the new and the traditional — between digital and human — that the conflict of values between human sciences and digital technologies reveals itself. Recognizing the value of humanities allows this relationship to be thought of in a reciprocal way, that is: not only in the way technology changes humanities, but how, by suspending a kind of "natural attitude" bestowed on the ideal of the scientific method, the employment of technologies can change our own notion of science and the interpretation of its effect on the human world.

This is, in a sense, Stephen Ramsay's claim when reflecting on the possibility of an *algorithmic criticism* (Ramsay 2011). Ramsay applied a program similar to that developed by Gadamer in *Truth and Method*, namely, one that starts from a critique of the attempt by the human sciences to incorporate the scientific model of investigation represented by the notion of method and, at the same time, one that seeks to find alternatives regarding the problem of knowledge and truth in the experience of art. This program is reinstated in the context of digital humanities, in which the phantom of scientism with its appeal to objectivity returns to the discussion on the definition and foundation of human sciences, as it promotes the tendency to bring about a new sort of "canonical reading", based on the trope of *intentio auctoris*. This reading is now supported by the paradigm of computation, backed by the ideals of calculability and logical-mathematical accuracy, in which the values (true or false) of propositions need to be determined previously. The purging of this phantom — more precisely, the harms of using ideas bound to a certain scientific metaphor guiding a specific combination of humanities and computing — must be pursued in the exploration of humanist models (such as art and literary criticism) that, without relinquishing the resources of digital technologies, "enable critical engagement, interpretation, conversation and contemplation". This is why Ramsay resorts on the notion of *Pataphysique* — coined by the French writer Alfred Jarry — in order to indicate how pattern recognition can be considered as a practice that brings art, science and criticism (or interpretation) closer together (Ramsay 2011, 20-25). The objective of these humanistic explorations it is to arrive at an algorithmic criticism that attempts to reformulate programming "as the enactment of a critical reading strategy" (Ramsay 2011, XI). This represents an opposition to the idea of a "scientific literary criticism" subordinated to the logic of experimentation and refutation of hypotheses based on evidence in the data — and raised to a superior status that is independent of interpretation — which must falsify and correct human readings.

The possibility of algorithmically determining parameters based on definitions and establishing an experiment restrained by a set of data allows that certain hypotheses could be elaborated and tested in the domain of humanities, that is, it allows certain claims to be supported by what is taken as "facts". Simultaneously, this possibility reveals immediate advantages — such as answering objective questions from the systematic organization of data sets extracted from the text —, and it also denounces their limits: the impossibility of proof or falsifiability of claims that define the particular form of questioning of the humanities or history. After all, an isolated information about a past event serves no purpose without the articulation between event and meaning. The mode of inquiry proper to humanities does not mostly seek as an answer a "fact", a proof or refutation. It is a way of posing problems in which facts, metrically defined and verified, are not the primary object of investigation (Ramsay 2011, 7-9). As an example, Ramsay cites an analysis that employs digital techniques on Virginia Woolf's *The Waves*, and concludes that even when resorting to "text analytical procedures" that „do rely on empirical facts about language (or on statistical and mathematical laws in general) [...] we often find ourselves unable to point to the truth of the procedure as the basis for judgment" (Ramsay 2011, 15). Thus, the real proposal of an algorithmic criticism, as a "criticism derived from algorithmic manipulation of text" (Ramsay 2011, 2), is to transform, to create *deformance* on the text through algorithms, in order to emphasize estrangement and defamiliarization as ways of bringing new meanings. This mischaracterization of the text, however, follows algorithmic-logical criteria.

What brings humanities closer to digital technologies and allows the development of an algorithmic criticism is not solely the display of verifiable facts, but also the elaboration of patterns and conjectures — supported by such displaying — that complexifies the question and defines debate terms in the search of knowledge and its truth. The nature of computational logic to reduce reality by means of its numerical coding, measurement and verification contributes in a decisive and hitherto unattainable way to broadening the scope of historical investigation and humanities at large. Far from constraining "understanding" to the scientific metaphor, computational resources can leverage the "heuristic of radical transformation" (Ramsay 2011, 16) that is at the heart of the hermeneutic endeavor. It concerns the set of procedures used in interpretation through which the source is no longer presented in its original form, but as a set of data resulting from a process of selection, displacement, contextualization and re-elaboration. The radical transformation of sources undertaken by algorithms takes certain properties of analysis — such as identifying patterns of style and vocabulary — to another level, no longer limited to parts of the text or a selection of sources in a large repository, providing an analysis holistic in character. Furthermore, the results of this analysis can be visually represented in completely different models from those originally presented[4], so that these data can be observed in new ways, which, therefore, undoubtedly enable entirely new interpretive paths (Ramsay 2011, 15-17). [5]

[4] The idea of visualization in the context of digital technologies „usually refers to an image that is derived from processing information—often, but not always, statistical information—and that presents the information more efficiently than regular text could. Scholars quickly recognized the potential of computers to help process information and display the results in an easily interpreted format" (Theibault 2013, 173).

[5] For a more in-depth analysis, cf. Nicodemo; Cardoso 2019.

These aspects remain equally (or even more) relevant in situations in which scholars intend to overcome the archetype of research determined by the textual metaphor. This is the case of Lev Manovich's research, based on computational visualization techniques of images and methodologically supported by the notion of *Cultural Analytics* (Manovich 2012). The problem that comes forth regards the possibility of analyzing databases composed of vast amounts of images and videos in contrast to human cognitive limitations revealed, on the one hand, in the adversity of dealing with scales — both at the level of minimal details of a unit, suggesting a new type of attentive reading, and at the level of extensive sets of units. On the other hand, in the adversity of creating classification systems capable of covering the diversity of details in such sets. Manovich's method consists, first of all, in a broad computational analysis of databases, through which numerical descriptions are generated to represent detailed visual aspects of images (such as shading and texture properties). In a second moment, it consists in a technique of exposing (or visualizing) the complete set of images from an arrangement determined by the aspects formerly distinguished in the computational analysis (Manovich 2012, 256). Analyzing the details obtained from the images makes it possible to determine the relations and patterns through which similarities and differences can be revealed. That contributes to a detailed understanding of the general process of transformation — that being, the delimitation of patterns and relations provided by the second phase of analysis. This understanding refers not only to the perception of transformation, but to the capacity of pointing out which details specifically underwent alteration. In the end, this analysis makes it possible to "map the full spectrum of graphical possibilities" (Manovich 2012, 253).

Resorting to computational techniques through Cultural Analytics offers the immediate advantage of allowing an accurate comparison of images, given that it operates from metrics that meticulously define aspects of visual language. This allows for an extensive and thorough examination of particular cultural artifacts to be carried out against a background composed of its wide repertoire. While the understanding of a single cultural artifact is improved by its visualization against large-scale defined patterns, the possibility of propositions about the whole — the wide but delimited space to which the artifact belongs — acquires concreteness and is no longer based on sampling techniques in which the whole is mainly an approximate and inexact idea. Close reading and distant reading are actually not mutually exclusive, but just different moments that belong to the same research process (Manovich 2012, 252-253). Furthermore, the traditional classification of images implies the elaboration of a vocabulary of concepts that functions as a set of tags/labels that allow the comparison and distinction of images. However, the analysis can reach a level of depth regarding details in which variations in texture, composition, lines and shapes become so numerous that this model renders insufficient, namely, the model in which the "use of one representational system (a natural language) to describe another (images)" takes place, so that "natural languages do not allow us to properly describe all the visual features of images or name all their possible variations" (Manovich 2012, 261-262).

This diversity of details can only be perceived through the technological mediation of reality: digitizing an image represents the process of transforming it into pixels, which are then translated into decimal numbers. In this way, details invisible to the human eye now have a numerical representation and, therefore, can be computationally manipulated. It is only through these procedures that

large amounts of visual artifacts can be analyzed. Once analyzed, these images are submitted to a visualization model based on criteria related to the numerical values of their characteristics (e.g., brightness and saturation) that work as coordinates on a map, so that "the differences between images along a particular visual dimension are translated into their positions in space". For Manovich, Cultural Analytics "makes it possible to bypass the problem which haunted visual semiotics in particular, and all human descriptions of the visual in general: the inability of language to adequately represent all variations which images can contain". Despite solving a fundamental problem, this method still requires complementation: the iconographic cartography yielded by this two step process needs to be read and interpreted, that is, a meaning needs to be attributed to it. In other words, for this process not to turn into a vast amalgamation of incoherent data, a "question needs to be posed" (cf. Gadamer 1999, 375-384), taking into account that the very scope of questions that can not only be asked, but actually answered, has increased considerably (Manovich 2012, 262-264).

Towards a Digital Historical Hermeneutics

The engagements formerly presented indicate a general hermeneutic character in the investigation undertaken by human sciences with digital technologies, even if in most cases this paradigm is not explicitly claimed. These reflections reveal paths towards a digital historical hermeneutics, pointing out relevant themes to be further examined that relate to hermeneutic aspects both at an epistemological and ontological level, such as the distinction between the relation with digital objects in the condition of data or texts and the relationship between quantitative and qualitative approaches and their respectives modes of reading and interpreting.[6] Furthermore, these discussions point, on the one hand, to the recognition of the necessity for human interpretation and, on the other hand, to the recognition of a certain interpretive capacity of digital technologies, not only in the specific context of research, but in the ubiquitous presence of these technologies as an active agent of human experience.

Attempts to adumbrate conceptions of a digital hermeneutics date back to the 1980s, i.e., even before the personal computer popularization and the globalization of the internet. In 1986, John Mallery, Roger Hurwitz, and Gavan Duffy (1986), scientists at the Massachusetts Institute of Technology's Artificial Intelligence Laboratory, published an article entitled *Hermeneutics: From Textual Explanation to Computer Understanding?*. As the context indicates, the focus of this hermeneutics is not (and could not be) the global digitized culture, but the theoretical foundations of the artificial intelligence field. From concepts and ideas developed by the main philosophers of the hermeneutic tradition, the authors discussed the possibilities and interpretative limits of artificial intelligence in contexts determined by natural languages (as opposed to programming languages). In other words, they take into account the possibility of interpreting texts by machines in face of the claim that postulates understanding as a fundamental human attribute. In a sense, the 1986 article contributed to determining some of the terms that would define the posing of the problem of a digital hermeneutics, such as the questions related to a theory of text interpretation and digital artifacts, and to the difference in modes of

[6] For a broad survey of reflections that claimed some kind of digital hermeneutics, cf. Romele 2018.

interpretation between humans and computers. As defined by Ricoeur, this theory ought to deal with the relationship between an interpretive intelligence and a set of symbols in their multiple meanings (Ricoeur 1965, 33).

As a theory of interpretation, digital hermeneutics, at first, considers as its subject matter the set of computationally delimited texts in relation to which a given text, in its unity, can be understood, that is, this hermeneutics seeks to think of a basic digital linguistic unit from the whole it belongs. Nevertheless, a digital hermeneutics must also consider beyond the nuclear notion of text towards the one of information[7] and data, which can be defined as information that can be processed by a computer — that is, in the same way that information can be defined as the product of converting data into something meaningful to something or someone — which, in turn, can take different forms and reach different ranges. Considering a digital hermeneutics of data presupposes "de-emphasizing the narrative[8] in favor of illustrating the rich complexities between an argument and the data that supports it" (Gibbs; Owens 2013, 159), as well as using such data not only as evidence, but as a means of "discovering and framing research questions" (Gibbs; Owens 2013, 162).

Hermeneutics also needs to turn to less fixed entities, such as digital traces, whose structure is linked less to the static idea of stored data than to the temporal act of inscription, the event that represents the movement of leaving traces, which point to the record that something took place in a certain space and time[9]. In the context of computing, everything leaves traces and all traces are supposedly recorded. These records delineate interpretive paths that consider the data from computational systems as a whole. Despite referring to it, this indicates an attempt, on the one hand, to go beyond the text towards the materiality of the apparatus that contains its record. On the other hand, this attempt points to the necessity to overcome the text's own limitations. Print text is the primordial technology of traditional hermeneutics, a technology whose self-questioning — as a material means of transmitting meaning — has been infrequent, and whose monopoly made hermeneutic thinking unfeasible by means other than written-textual language. However, this general idea of language makes room to media technologies as materializations of language, the „new" mediators of human engagement with the world, which attests to the imperative to go beyond textual media towards all media formats and their respective digital data.

The multiplicity of ways to approach the objects of a digital hermeneutics does not necessarily elect one method of interpretation over another. On the contrary, it mostly demands a set of techniques mediated by computers that share the once exclusive position of the human interpreter — with its own mode of reading and interpreting. Furthermore, as the human relationship with the world becomes largely mediated by digital technologies, human thinking and interpreting are also shaped by the specificity of this new mediation. According to Capurro, especially with the internet, digital technologies have an impact "not only at all levels of society but also with regard to the self-understanding of human beings, i.e., with regard to the ontological or

[7] For a hermeneutic approach to the concept of information, cf. Romele 2020, 35-42.

[8] Hayles claims that " the use of tools unsettles traditional assumptions embedded in techniques such as narrative history, a form that necessarily disciplines an unruly mass of conflicting forces and chaotic developments to linear story-telling, which in turn is deeply entwined with the development and dissemination of the codex book" (Hayles 2012, 48).

[9] This is, according to Ricoeur, the way in which the concept of trace (or trail) can be really useful to the historian. Cf. Ricoeur 1985, 171-183.

existential foundation of the digital construction of reality" (Capurro 2010, 36). Thus, the distinction, within the scope of research, between the moment of technological information processing and a second independent moment of human interpretation is illusory. For Van Zundert, „the hermeneutical act" is often reduced "to a post-processing of what remains of the data after the processes of curation, analysis, and visualization. However, those processes [...] have a hermeneutics of their own" (Van Zundert 2016, 335) oriented and determined by the assumptions that guided the constitution of these methods in the first place. Indeed, the recognition of the interpretive capacity of digital technologies allows us to see the various procedures of digital data processing as genuinely hermeneutic. In Manovich's experiment with *Cultural Analytics*, interpretation takes place not only with the result of the set of images arranged according to certain patterns, but in the very determination of such patterns in the algorithm. Algorithmic analysis and careful reading come to be seen as complementary. A digital hermeneutics must enable a balanced (but not necessarily equivalent) and dialectically corrective articulation between modes of reading: the traditional linear human mode and the large-scale quantitative mode of the machine, without forgetting that "human interpretation necessarily comes into play in at some point, for humans create the programs, implement them, and interpret the results" (Hayles 2012, 47).

These reflections rest primarily at the epistemological and methodological level of a digital hermeneutics and reflect the general debate on the subject. However, for a digital historical hermeneutics to actually become feasible, this level has to be overcome. One of the fundamental tenets that define hermeneutics — in comparison to other philosophical paradigms of the human sciences — is precisely the incessant questioning of the ontological conditions of human understanding as a path to clarifying its assumptions towards a critical and self-conscious interpretation. Therefore, it is only with this breakthrough stimulated by such questioning that the primordial elements of this hermeneutics are revealed in its computationality and digitality, that being, in the computational and digital character of culture in its own materiality, namely, in code writing processes. The elucubrations presented above — referring to algorithmic criticism, cultural analysis, modes of reading and interpretation, all of them employing computational and human techniques — were all limited to the analysis of texts and other artifacts by the technical mediation of algorithms. They constitute only part of a digital hermeneutics precisely because they do not question the materiality of software and algorithmic code at play. Code is the means of accessing the functions provided by software and displayed by its interface, the means of understanding how they operate and, therefore, what they mean.

Hermeneutics must confront digital technology as a kind of pre-structure of understanding, a structure that makes understanding in (and of) the contemporary world possible. Putting code under scrutiny, therefore, does not just mean a methodological indication, although it implies methodologies of treatment and interpretation of code. In this context, it is essential to maintain a dialectic between part and whole. That means, to understand computing as an integral operation between software functions, algorithms and cultural artifacts, and, above all, their code. This approach, in a broader sense, contributes to understanding digital culture and cultural software and, in a specific sense, it contributes to the self-awareness of historians regarding techniques and methods involved in their digital research practices. The problem of objectivity

can reach a type of solution based on the attempt to clarify the assumptions of such techniques and methods. This necessity becomes paramount when considering that the vast majority of humanities researchers involved in these scholarship practices still do not have the necessary competence both to read and to write the code of the software they use in their research. On the one hand, the inability to read code makes it impossible to perceive the precise way in which functions are implemented (and hence interpreted) and which of them operate in an "invisible" layer. On the other hand, this brings out into the open that the software employed by them was not originally designed for academic purposes, ultimately revealing a conflict of epistemic values. These problems point to the inevitability of an ontological inquiry: both on the nature of the digital itself and on the programming languages that shape the code. An inquiry that brings the text back to the center of reflection.

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