TOWARDS A HISTORICAL HERMENEUTICS OF DIGITAL INTERFACE

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Introduction

Years prior to the publication of *Sein und Zeit*, Martin Heidegger conducted a study on Plato's *The Sophist*. This endeavor culminated in a series of lectures delivered between 1924 and 1925 in Marburg. Heidegger's account of this classical text is anchored in the interplay between truth and being, aligning it with the core theme of his 1927 work, namely, the theme of the question regarding the meaning of Being. These ontological reflexions unveil methodological and heuristic possibilities that historians can effectively leverage.

Heidegger presents the concept of *alétheia* as a means of introducing the *Fragestellung* about the question of truth, in order to overcome a certain traditional interpretation of the concept — later circumscribed and claimed by the natural sciences. He does that as a way to contemplate the specificity of other forms of knowledge (such as historiography) with their respective modes of being of truth. This happens through the characterization of the concept of truth not from its Latin translation, as *veritas* (*Wahrheit*, in German), but through its Greek etymology, that is, as *unconcealment* (*Unverborgenheit*), as "no longer being veiled, being unconcealed" (HEIDEGGER, 1992, p. 16). Indeed, the concept of *alétheia* carries with it the mark of a characteristic negativity: the being which knowledge truly aims at is not immediately given in natural experience and, therefore, must be "conquered". This conquest takes place through language, whose concepts and propositions gradually settle down, forming the substrate of tradition. It follows from this that *alétheia* is a determination of Being coherent with its own mode of knowing, a "mode of being of Dasein" in its tendency to reveal the entities that populate the world and whose presentification takes place in discourse, in speaking. Speaking is the fundamental trait of *Dasein* through which it expresses itself when unveiling the objects of the world. Moreover, in the face of the plurality of speaking — which is often reduced to idle talk (*Gerede*) — *alétheia* finds itself surrounded by a double movement: the unveiling, like the encounter of a world, is, insofar as it is conceptualized, once again hidden, this time by language itself. Heidegger's quest to transcend idle talk towards the "things themselves" actualizes Plato's dispute against sophistry and rhetoric (HEIDEGGER, 1992, p. 17-18).

In *Sein und Zeit*, Heidegger returns to the topic of *alétheia*. Again, the mode of being of *alétheia* appears as a counterpoint to the traditional concept of truth that mono-

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polized philosophical and scientific discourse until the 19th century. This conception places truth in the enunciation, in the judgment, and can be verified in the adequacy or correspondence of such judgment with its object, later translated in the Latin tradition by the expression "*adaequatio intellectus et rei*". The path of Heidegger's argument leads to the conclusion that this principle brings with it a deceived ontological presupposition, given that "truth does not have [...] in any way the structure of an agreement between knowledge and object, in the sense of an adequacy from one entity (subject) to another (object)" (HEIDEGGER, 2012, p. 605). Instead, "the true being of λόγος [*lógos*, the reason that is expressed in speech, or even speaking itself]" is "a making one see the being (*Seiende*) in its non-concealment [...], bringing it out of hiding". αλήθεια (*alétheia*), in turn, "means 'the things themselves', that which is shown, *beings in the how of its being-discovered*" (HEIDEGGER, 2012, p. 607). As a result, truth takes place through the opening of *Dasein* to the world, which occurs "by finding oneself [*Befindlichkeit*], understanding [*Verstehen*], and discourse [*Rede*], and pertains, in an equally original way, to the world" (HEIDEGGER, 2012, p. 611).

Here, again, the double movement of *alétheia* takes on ontological contours: "falling prey [*Verfallen*] belongs to the constitution of being of *Dasein*. Initially and for the most part *Dasein* is lost in its 'world'". Indeed, "what is discovered and disclosed stands in the mode in which it has been disguised and closed off by idle talk, curiosity, and ambiguity", so that "what was previously discovered sinks back again into dissimulation and concealment". Finally, "occlusion and concealment belong to the *facticity* of *Dasein*" (HEIDEGGER, 2012, p. 613-615). Far from rendering it unfeasible, this original paradox enlivens the peremptory continuity of the philosophical enterprise — and, in a methodological sense, of the historiographic enterprise. The sedimentation that gives rise to fundamental concepts constitutes a foundational process against which hermeneutics must confront itself in search of increasingly refined meanings. It is precisely on the emphasis given to the aforementioned duality that rests the value of Heidegger's reflection in the present article, that is, on the hermeneutic problem engendered by the conception of *alétheia*, on the double character of language.

Since its systematization and elevation to the status of a philosophy by Hans-Georg Gadamer, hermeneutics sets itself the task of clarifying the structures that make the understanding of objects from the past possible. In *Warheit und Methode* — a work that, as the title indicates, takes up the theme of truth —, Gadamer proposes a reflection that starts from concrete forms of experience of the world, such as the experiences of art and history (in the sense of both historiography and theory of historical

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knowledge) in order to identify in them the hermeneutic principle. Here takes place the "transfer of hermeneutics to historiography", that is, "the historical application of the hermeneutic principle" (GADAMER, 1999a, p. 202), the actualization of the hermeneutic principle in (and through) historiography. In history, according to Gadamer, the effective historical consciousness is revealed in a privileged way: it takes place as the fusion of horizons that allows texts of tradition to be interpreted by historians, maintaining the ontological alterity of the former and, at the same time, taking into account the comprehensive assumptions of the historical situation of the latter (GADAMER, 1999a, p. 311-314). At the basis of historical research is the search for the meaning of the past, which can be apprehended by human culture in its most diverse manifestations. The hermeneutic task, therefore, lies in the pursuit of overcoming such manifestations towards their meaning, considering that such meaning is always created according to the fusion of the horizons mentioned above.

With Dilthey — who "consciously takes romantic hermeneutics and extends it into a historiography and even into a theory of knowledge of the human sciences" (GADAMER, 1999a, p. 202) —, hermeneutics overcomes its theological and philological origins and begins to take as its object not only written texts but human culture as a whole. In his nineteenth-century vernacular, Dilthey claims that history, as the primordial human science, "is based on the relationship between experience, expression, and understanding [*Verstehen*]", in which prevails the "extension of understanding to all objectivations of spirit", that is, "the rescue [...] of the spiritual element from the various manifestations of life [*Lebensäußerungen*]", i.e., its meaning (DILTHEY, 1965, p. 131). The object of hermeneutics henceforth is "the individual, the communities and the works [that] form the outer realm of the spirit", that is, "every word, every phrase, every gesture or formula of etiquette, every work of art and every historical fact" (DILTHEY, 1965, p. 146). For a substantial part of the 19th century, however, this variety of manifestations was inevitably reduced to its conversion into a textual mode of representation and, consequently, to the implications and limitations inherent to the materiality of this specific form of mediation.

In line with his aspiration for a universally applicable hermeneutic philosophy, Gadamer echoes Dilthey's perspective on broadening the scope of subjects to which hermeneutics is directed — both as ontology and as a theory of knowledge. However, despite having published *Wahrheit und Methode* in 1960, a context in which the technical landscape had already profoundly changed with new technologies of recording and content production, Gadamer insists on adhering to the textual metaphor (KRÄMER; BREDEKAMP, 2013). He claims: "not only do sources come to us as texts, but historical reality itself is a text that must

be understood" (GADAMER, 1999a, p. 202). As one of the main figures of this tradition, Gadamer represents how the hermeneutic paradigm in general in the 20th century did not properly address the questioning about the character of cultural manifestations in their new media formats. This does not mean, however, that the question of the materiality of the text was ignored by him. Gadamer deals, for instance, with the way in which the dynamics of meaning production are affected by material aspects inherent to texts, such as, in the case of poetry, metre and declaiming itself (GADAMER, 1999b, p. 392-394). Here Gadamer employs the Aristotelian notion of "speaking", taken up firstly by Heidegger, as the combination of "sound" (*Geräusch*) and comprehensible language: a "sound that reveals something" (HEIDEGGER, 1992, p. 18). Gadamer, therefore, recognizes that every text has a certain "volume" (*Volumen*) (or "magnitude") in which a primordial non-semantic dimension subsists (GADAMER, 1993, p. 353-354). However, as pointed out, this recognition does not respond satisfactorily to the emergence of new media and their own ways of representing and treating cultural objects.

Hermeneutics, as a historical paradigm, emerges from the basis of a certain "discourse network", that is, a structure comprised of various technologies ordered in a specific manner that defines the precise ways of a certain epoch to determine the dynamics of production, processing, storing and circulation of information (KITTLER, 1985, p. 501). The ecumenical character of printed written culture, which prevailed until at least the second half of the 20th century, circumscribed the field of possibilities for ways of dealing with the culture based on the metaphor of the text and its assumptions. However, the historical elements of this system no longer prevail in a hegemonic way in contemporary culture, engendering new problems. Hermeneutics must be confronted with the digital discourse network, which implies renewing its conditions of possibility and its limits. This does not mean, therefore, that history should (or could) renounce hermeneutics. If, on the one hand, the claim that "meaning is just a way of relating to the world" is unavoidable (GUMBRECHT, 2004) — which, in fact, makes it possible to consider the limits of hermeneutics — on the other hand, this relationship remains at the base of human behavior and, consequently, of culture and human sciences.

The purpose of this article is to contribute to a digital historical hermeneutics, that is, to a reflection that indicates paths for historiography in the digital age. The focus lies on two key aspects. Firstly, it explores how the present culture is digitized and how contemporary cultural production depends on digital tools. Hermeneutics, therefore, must turn to the manifestations of cultural content in its digitality. Secondly, it delves into how the digital renews and complexifies in a primordially

heuristic sense the reflection on the concept of *alétheia* through the idea of *digital interface*. Interface, as a linguistic entity, presents an actualization of the dual character of *alétheia*: while it unveils a series of functions that allow users to operate digital technologies, interface also conceals a whole world in which other functions are performed in an invisible, and even inaccessible, way by the vast majority of these same users. The heuristic character of this reflection is due to the fact that the concealment brought about by interface occurs not in the "things themselves", but in other ontic entities, that is, within the realm of facticity. Understanding digital culture presupposes a deep dive into the essence of the media shaping it. Ultimately, the questions remain: what does the interface reveal? And, above all, what does it conceal and what is implicated in accessing this concealed world?

Culture after software

Culture has been increasingly digitized, emphasizing the digital dimension of all aspects of contemporary society. The digital has progressively become the hegemonic means by which people think, speak, and act, the means by which culture is produced. For this reason, it largely determines the limits of what is possible to say and think (in the historian's perspective: the possible statements about the past). Software — as a unit formed by code with a specific purpose or set of purposes — is increasingly a condition of possibility of culture, as it has progressively become the main media by which most people relate to the world. At the same time, culture is shown to be a privileged locus of analysis, insofar as digital cultural manifestations are often the only visible layer and, therefore, the only dimension that can be manipulated and interpreted by users, including those who work with digital technologies routinely, such as graphic designers and researchers. However, understanding how culture works in the digital society cannot be merely restricted to its consideration as an expression — more precisely, as what an interface displays — or limited to the cultural dimension of software inherent in all technical processes (WARDRIP-FRUIN; MONTFORT, 2003).

It is, on the contrary, a question of presenting the *digital dimension of culture* and showing how software changes the way we deal with cultural artifacts. According to Lev Manovich, "we live in a software culture — that is, a culture where the production, distribution, and reception of most content is mediated by software" (MANOVICH, 2013, p. 39). The digital, then, must be held as a discourse network (KITTLER, 1985), with all the implications that the notion brings, which, far from rendering it unfeasible, will contribute to a hermeneutics, in this case, a digital historical hermeneutics. Conceiving a digital discourse network means considering it from the perspective of the dynamics that it establishes between production (processing), storage, and transmission of information and from its processes of constitution of subjectivities. Rather than emphasizing the

"non-hermeneutic" aspect of the digital discourse network — for instance, the high-speed flow of binary code unintelligible to the human intellect —, the objective is to reveal its proper hermeneutic dimension.

Cultural software is software that, within the broader category of applications, enables, supports, and shapes the acts that engender culture, that is, that incorporate "symbols, meanings, values, language, habits, beliefs, ideologies, rituals, religion, codes of etiquette and behavior" (MANOVICH, 2013, p. 32). The incorporation of culture by software cannot be considered just as the inclusion of a new element — more precisely, of a new medium — in the broader landscape of human phenomena, but rather as the part that changes the nature of the whole, precisely by including to the field of culture a new dimension.

Within this broad domain, the categorization proposed by Manovich (2013, p. 23) is particularly useful. This categorization is thought less of the software itself than of the specific function it performs at a given time in order to develop an activity or cultural artifact, that is, in its specific way of implementation, since the same software can perform multiple functions — not all related to cultural production. On the one hand, functions associated with the creation, editing, and organization of cultural artifacts (for example: text writing, editing videos, and creating websites — *Microsoft Word*, *Photoshop*, etc.), as well as publishing and accessing those artifacts (for example, the webpages that host those artifacts: *Blogger*, *Pinterest*, *Vimeo*, browsers, etc.). On the other hand, functions linked to practices of online creation and sharing of knowledge and information (*Wikipedia*[1]), as well as communication between users (e-mail, social networks, etc., which also includes "participating in the online information ecology by expressing preferences (likes) and adding metadata" and interactive participation in virtual experiences (such as online computer games[2]). Moreover, to all these functions must be added the development of software tools and services on programming platforms, which makes all these practices possible in the first place.

The first set of functions, especially with regard to the creation of cultural artifacts, comprises the scope of what Manovich qualifies as "media software". Media software makes it possible the "creation, publishing, accessing, sharing, and editing different types of media (such as images, moving image sequences, 3D shapes, characters, spaces, text, maps, interactive elements" (MANOVICH, 2013, p. 26). The second set comprises the functions specifically aimed at "communication and sharing of information" on social platforms and media, the so-called *social software* — even though, increasingly, all media software will become, at some level, social software and, in turn, all sharing software will offer possibilities for creating and editing content. The notion of cultural soft-

1. For an account of experiments with Wikipedia in historiography, cf. WOLFF, 2013, p. 64-74.

2. For an analysis of how "video games influence human cognition at a basic and structural level", cf. GUALENI, 2015, p. 80-98.

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ware is contemporary and intends to "cover a wide range of products and network services, as opposed to only *single desktop applications*", typical of the 1990s and 2000s. Indeed, it is no longer possible to think of cultural software without considering the intrinsic networking aspect that increasingly characterizes it, in other words, without considering the World Wide Web[3]. In the current context, managing and sharing content is as relevant as producing it. Manovich speaks of the "co-existence of authoring and access functions" as an "important distinguishing feature of the software culture" of the present (MANOVICH, 2013, p. 27). The once well-defined domains that divided applications, operating systems and data have their borders blurred, as well as those that distinguished production, distribution, and access (consumption). In its place, new domains emerge, such as the client-server model (like the e-mail server), in which servers provide the processing resources for several individual devices.

The historical process that characterizes current cultural production represents the transition from isolated software installed on personal computers (the so-called *desktop software*) to web programs or applications (*web-based software*) whose processing takes place on remote servers (*cloud computing*). This also applies for applications on mobile devices. This means that both digital media and the artifacts they engender, that is, content created and preserved in digital form, present new forms of organization compared to analog media, hegemonic in the 20th century. The dynamics of production and manipulation of digital cultural artifacts enable a fundamentally performative conception of cultural software media. Whereas analog media relatively clearly divide the functions of production, distribution, and consumption (or access)[4] — within which the content produced and transmitted becomes fixed, stable and, in a sense, definitive —, digital media provide an experience in which artifacts are modified in real-time. Therefore, "pre-defined static documents" give way to "dynamic outputs of a real-time computing happening on our device and/or the server" (MANOVICH, 2013, p. 33-34). Even the treatment of a static document does not eliminate the fact that the "media experience constructed by software" involves other mediating elements and, thus, cannot correspond to the supposed isolated file in which such document is stored, as if it were a painting or a physical book. Through software, the treatment of a digital artifact is defined by the various functions, tools and concepts presented by the interface and which are beyond the artifact itself. This is visible, for instance, when a digital book is displayed by a software that provides features that allow searching for words, as well as text editing and sharing.[5]

The conception of an artifact that represents a complete unit that is integrally consumed — and that is perceived, e.g., by the analog paradigm of television transmission in the 20th century — may end up suggesting a model of unidirectional

3. The Web, as the most widespread form of the internet, brings with it a series of philosophical problems linked to its architecture (of identifiers, protocols and languages), its status as a networked media platform, and its communication values to such an extent that claims a Philosophy of the Web: "The Web is not just protocols and naming schemes; it is also a broad transformation of our relationship to the wider 'outside' world, to the ontology of the world itself. It is precisely this engineering aspect that makes Web philosophy qualitatively different from traditional language philosophy, where natural language is assumed to be (at least for philosophical purposes) stable and therefore 'natural'. In contrast, the growing nature of the Web and digital technologies undoubtedly calls into question the contemporary transformation of our entire way of life." Cf. HALPIN; MONNIN, 2014.

4. For example, traditional television has an analog mode of clear division of functions: "TV studio, cameras, lighting, and editing machines (production), transmission systems (distribution) and television sets (access)" (MANOVICH, 2013, p. 28).

5. For an analysis of the change in the materialities of reading, cf. DRUCKER, 2013, p. 71-99.

communication that divides author and his work (seen as a message) of the consumer, who performs the function of a mere passive receiver of the message. Even at the level of traditional hermeneutics, this model would be refuted, as it overlooks the interpreter's ability to reframe and re-signify the received message. Beyond that, digital media not only depart from this hermeneutical axiom, but also offer the possibility of managing files in such a way that the linear communication model is broken. Through the available resources, users are able to subvert the supposed narrative order characteristic of this model that is responsible for largely determining the user experience by presenting its elements in a fixed order. Content can now be accessed randomly through search engines and, once found, can be viewed and reproduced according to the user's needs, which also breaks with the idea of the unity of the cultural artifact: "the user is free to navigate the document [PDF — Portable Document Format], choosing both what information to see and the sequence in which s/he is seeing it" (MANOVICH, 2013, p. 38). The material distinction between the resources made available by software and the media it produces or displays allows for keeping the original documents, which is another new aspect.

Moreover, even if it is possible to claim that analog media make similar resources available, the distinction presented by digital media with the advent of *Web 2.0* goes much further: not only management but creating and editing content online becomes possible. The content of a medium is no longer completely defined in a precedent way by its manufacturer, as it can be constantly changed by interventions and updates by users (and by the producers themselves). Thus, digital media in the context of *Web 2.0*-based applications are no longer simple communication channels: they become platforms for content development. The depth of the rupture with the paradigms and technical landscape of the 20th century can be identified by the emergence of a series of new practices: the modification and growth of content provided by services and websites on the web, mechanisms that facilitate navigation through portals and interaction between users, the possibility of creating and editing authorial and collaborative content from content already available, as well as easy access to original developers, which gives a new meaning to the logic of feedback. Social networks, therefore, become in fact cultural software when the functions of producing and editing content are made available and added to those of sharing. Ultimately, with the replacement of traditional technological media by software platforms — in which such media, once idiosyncratic, are now amalgamated — the very concept of media underwent a significant change.

This approach to software as a *metamedium*, as the media of media, was formulated between the 1960s and

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1970s by computer scientists and software developers[6]. It already embodied the idea that the objective was not merely to assemble and replicate the existing analog media and simulate their functions, properties, and possibilities. Instead, it was about forging new media that only operate through a computer, possessing functionalities and possibilities non-existent until then — e.g., through the creation of new relationships between media techniques already present, giving shape to new media hybrids[7] —, which "represents a fundamentally new stage in the history of human media, human semiosis and human communication" (MANOVICH, 2013, p. 46). These ideas were implemented over the following decades in a process in which the developed applications were progressively made available to media professionals and, finally, to users in general. During the 1990s, the process of simulating analog media and creating exclusively digital media was accompanied by the combination of their functions, techniques, and interfaces. These advances had media professionals as immediate beneficiaries. Throughout the beginning of the 21st century, with the development of applications aimed at incipient media and social networks and mobile devices, content creating and editing media was made available to all users. In any case, the ideas elaborated from the 1960s and implemented until the 1990s still determine the basis of the main media software used today[8], which indicates that the nature of recent changes, at least at the technical level, is primarily incremental.

These ideas represent the transformation of the computer from a machine for calculating and solving equations into a device for cultural production. These ideas are also directly linked to the creation of the graphical user interface — mediated by mouse, keyboard, and touchscreen — and the establishment of networks like the internet and, especially, the development of media creation applications that took advantage of (and depended on) such resources — text editors, images, sounds and animations — and, finally, programming languages that made this process less complex, as well as hardware that made it faster and more efficient. Until the 1980s, all these elements began to be integrated into a single device. Seen from this model, the personal computer under development seems to have been conjectured only as a simulation unit of existing analog media, the representation of media through another one. This assumption is true only in a very limited sense: when, for example, one thinks of certain forms of externalization of media — like printing of images, the reproduction of music on speakers, etc. — which function, at the level of perception, in basically the same way. However, when considering these artifacts still in the software, in addition to specific reproduction cases, certain functions emerge that make the computer a completely different medium from the previous ones. Digital artifacts can be modified

6. Considered as "pioneers of cultural computing". These are figures such as J. C. R. Licklider, Ivan Sutherland, Ted Nelson, Douglas Engelbart, Seymour Papert, Nicholas Negroponte, and Alan Kay. The point, for Manovich, is that "people worked systematically to transform a computer into a machine for creating and manipulating media" (MANOVICH, 2013, p. 43).

7. In this line, *Google Earth* combines "traditional mapping techniques, concepts from the field of Geographic Information Systems (GIS), computer graphics and 3D animation, social software, [mechanism of] search and other elements and functions" (MANOVICH, 2013, p. 45).

8. "Between 1970 and 1981, the Learning Research Group at Xerox PARC, led by Kay, systematically articulated the paradigm and technologies of the vernacular media computing as it exists today" (MANOVICH, 2013, p. 57).

(their shapes and quality) and combined, as well as shared over the internet. Thus, "only some of the 'new DNA' of a digital [artifact] [...] is due to its particular place of birth [...], inside a digital camera" or a voice recorder. To stay in this metaphor, most of its DNA is "the result of the current paradigm of network computing in general" (MANOVICH, 2013, p. 62-63).

The computer as a metamedium (aggregating old and new media) is the combination of input media data (text, vector and image sequences, audio, etc.) with techniques that produce, modify and represent this data. These techniques can be both creation, manipulation, and access of specific media to certain types of data (*media-specific techniques*), as well as software techniques that deal with digital data in general (*media-independent techniques*): search engines, *hyperlink*, and several other algorithms created for processing information in general — e.g., displaying the same information in different ways, cutting, copying, and pasting, etc. Software capable of processing different types of media is actually composed of several algorithms, each capable of processing a specific type of data, being, in the end, a "general concept translated into algorithms" (MANOVICH, 2013, p. 113-114), an interface that unifies such algorithms under a certain function. This becomes clear through some techniques and principles widely used today: *searchability*, *findability* (determining the location of media production), and the ability to generate representations of data and their relationships, such as *visualization* (e.g., transformation of textual data into graphical representations).

This reveals how much the concept of media has been renewed with the advent of software, insofar as it has a "direct material effect" on the way the user interacts with digital cultural objects, changing their "understanding of media through operations of creating, editing, interacting and sharing" media content, "regardless of its aesthetics, semantics, authorship and historical origin". Furthermore, the idea of combining media through certain techniques is not, in fact, a novelty. Both in technological innovations and in artistic movements, there were projects that aimed to produce artifacts that would take shape in different media and that would be manipulated by different techniques, which never occurred in an integral way, never mobilizing all available media. Only with the advent of software did the ability to create techniques — as ideas embodied in technologies — that relate to all types of media become possible. While the distinction of such media (text, sound, image) remains unsurpassable, with software they come closer in a way that has not occurred previously, as they begin to "rely on a set of common software techniques for data management, authoring, and communication" (MANOVICH, 2013, p. 122-123).

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Beyond the distinctions that separate previous media from digital media and multimedia techniques from specific media techniques, it is necessary to lay emphasis on the fact that cultural software, in its particular way of mobilizing functions and tools, is responsible for inaugurating a new period of cultural production. This is the case even if such media refer, on the one hand, to the simulation of precedent analog options, in which the user performs a kind of manual control — for example, typing a text in *Microsoft Word* follows, more or less, the same logic as typing a text on a typewriter — or, on the other hand, that they perform functions that, despite being inspired by precedents, do not find a counterpart in the analog world[9] (typically called *born-digital*), which are capable of presenting much more considerable levels of automation from the input of certain details by the user or by the application itself — such as generating a chart in *Microsoft Excel* from the insertion of some data.

Thus, no matter how much the digital simulation of an analog function indicates an idea of similarity, its engendering process follows completely different guidelines, namely, digitization: the artifact is encoded in discrete numeric data that, as such, allow completely new forms of handling and "a new level of efficiency and speed in processing, transmitting, and interacting with media data and communication content" (MANOVICH, 2013, p. 133), from which the simulation is always accompanied by possibilities of *enhancement* and *augmentation* that simply depend on changing input data (MANOVICH, 2013, p. 135-136). Furthermore, at the software level, the tools and techniques made available by digital applications in general bring together a series of specificities that characterize the degree of original functionality of a new media, of a new type of technology. These functionalities refer to resources that provide a distinct experience of interactivity and control and that allow different levels of customization through the availability of interfaces generated according to conventionally established standards (MANOVICH, 2013, p. 141).

In the end, the conclusion that software has significantly and decisively transformed human culture is evident, which makes it legitimate to question what culture has become after the advent of software. Here, Friedrich Kittler's controversial claim that "there is no software" (KITTLER, 2013, p. 219-229) must be opposed to Manovich's claim that what exists is precisely software, what people interact with and what gives media their properties. Kittler's point is clear, namely, that software depends on hardware, so that, ultimately, computation boils down to the flow of electrons on silicon wafers. This reduction, however, does not account for the specificity of the series of practices that allow identifying the digital dimension of culture.

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9. Consider, for example, the technologies developed in the second half of the 19th century that, in a certain sense, already carried out a kind of codification of physical reality, such as the transformation of sound into analogue electromagnetic signals in the recording process by the gramophone. From this coding, some rudimentary control options emerged, such as specifying the volume. At the same time, however, the sound recording and editing capacity that exists today is of another nature (digital) and obviously offers completely new functions, even if it also follows the coding principle. Cf. MANOVICH, 2013, p. 155-156

Kittler's claim that media largely determines the nature of the message — reinterpreting McLuhan's motto "the medium is the message" (MCLUHAN, 1965) as "the media determines our situation" (KITTLER, 1999) — has a new meaning within digital interactive applications, especially when thinking at the level of the software (and not of the code): in addition to the digital content that an artifact originally has in itself when stored in some memory unit, the possibilities of manipulating the content of media depend largely on the software program used to create, modify or visualize such artifact. They depend on the characteristics implemented in that program and that were initially defined by its developers, just as different programs aimed at the same media usually have functions in common, but also different ones. In addition, these programs undergo several updates that incorporate or exclude functions according to certain objectives. It is in these terms that the reflection on the "software culture"[10] takes place, on the ideas and values behind the choices made by developers, be it software companies, laboratories at universities or user communities.

The properties that characterize a cultural artifact of a digital media, rather than the effect of its innate and static digital attributes, are the "result of the gradual development and accumulation of a large number of software techniques, algorithms, data structures and interface conventions and metaphors" (MANOVICH, 2013, p. 152) that determine, among several possible options, the process of creation, editing, representation and access. In this sense, to the extent that culture becomes software and software, in turn, works as means of access for users to media content — the means that represent it and that present commands for its functions — the problem of the interface becomes central.

Digital interface as a hermeneutic problem

The relationship and engagement of users with software is mediated by interface, more precisely, by the so-called *Graphical User Interface* (GUI) which, in turn, should also be considered cultural software, that is, a set of applications whose objective is to present the commands that correspond to the original functions of the program. In principle, it is through the mediation provided by the software interface that the functions of the "original" software are revealed to the user. The interface delimits the scope of functionalities presented to users that allow them to create, edit and share cultural content. Indeed, there is a distinction between the functions of a computer program and the functions that are actually externalized by means of the interface. These digital interfaces are not only graphic (made up of images of icons and menus) but also sound, audiovisual, and tactile. This makes the phe-

10. For a software criticism program, cf. FULLER, 2003, p. 11-32.

nomenon of mediation, the interaction between user, interface, and computer, more complete and complex.

The concept of interface is deeply embedded in human history. Basically, an interface acts as a mediation that erases the apparent distance between two entities (observers or objects), often utilizing the signs and artifacts[11] that encompass our surroundings for this purpose. The interface, in fact, is in its most fundamental sense a language and, therefore, as argued, it actualizes the double character of *alétheia*. The *Graphical User Interface* model, commonly associated with computing culture, can be genealogically traced back to the emergence of certain technologies over the last half of the 19th century and the first half of the 20th century. At this time, the telephone was invented, enabling dialogue between two geographically distant parties, and also the television, presenting, through a screen, a graphic image of signals sent by wave transmission.

Within the field of computing, the term *interface* comprises a series of forms of mediation, from the most basic level of interaction between different hardware devices to the most abstract level in which commands are made available in symbolic forms so that humans can relate to software. There is an interface in the connection between users and hardware, such as a button pressed to unlock a door, as well as between different hardware, such as the conductive wires that connect the computer to peripheral devices (e.g., the printer). When considering software, interfaces are conventionally classified in at least two manners. Firstly, the division between hardware and software is accomplished by an interface in which the software *constrains* the scope of tasks that the hardware must perform. Hardware inherently has virtually infinite possibilities, spanning from the processor to the keyboard. However, these possibilities are only actually realized through a set of instructions, a control language. In this manner, software designed for text editing, for instance, establishes an interface with the hardware by engaging specific resources while simultaneously constraining its capabilities to specific tasks — namely, those related to generating and editing text files (CRAMER; FULLER, 2008, p. 149-150).

Secondly, there are the actual software interfaces that adhere to the same logic of scope constraining. These interfaces have a division chronologically defined based on conventions that distinguish the so-called *Application Program Interface* (API) from User Interfaces. This distinction is chronological because, until the beginning of the 1980s, the interface that made it possible for users to interact with the computer were programming platforms. These platforms employed languages primarily designed for the development and maintenance of programs — in which the commands are situated more or less at the level of abstraction of programming languages. These platforms gradually changed as more abstract languages were created until the emergence of graphical interfaces. These graphical

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11. For an interesting reflection on the sheet of paper and the pen as interfaces, cf. EMERSON, 2014, p. 129-162.

interfaces could arguably be seen as the most abstract programming languages, rendering the aforementioned distinction a convention as well. In any case, today the so-called Application Program Interface has its scope very well defined, predominantly concerned with establishing connections between different applications. This functionality shapes the foundation for the possibility of application networks, which now underpin nearly all digital activities and operations.

An example of this can be found on search engines, applications that need communication (i.e., the interface) with several other applications and servers that have access to the initially searched data. Naturally, these mechanisms only work to the extent that there are interfaces between them and other applications, namely, when a channel is established in which a language is organized by protocols that allow the standardization of communication. User interfaces, then, emerge as a development of programming languages, which aims to make the computer accessible to most users, enabling it to be a means of cultural production. This accessibility is characterized by the symbolic and metaphorical character of the user interface, the attempt to simulate familiar patterns or to create representations that resemble such patterns through the use of text, image, sound, and tactile resources. In a sense, it is about enabling a dialogue (GADAMER, 1999a, p. 387) through the interface.

Despite being properly invented only in the 1980s, the ideas behind the concept of computational user interface already found a formulation in 1945. At the heart of this formulation was the possibility of facilitating access and storage of information: "a record if it is to be useful to science, must be continuously extended, it must be stored, and above all it must be consulted". Vannevar Bush presented in *As We May Think* the conception of a *desktop* called *memex*[12] (acronym for memory and index), composed of a series of tools and monitors that would allow both search and access as well as copying (for photography) and data storage. These tools work as an analog interface that would allow consulting large amounts of stored material "with superior speed and flexibility" (BUSH, 1945). In 1968, Douglas Engelbart presented a series of recent inventions that expanded interface possibilities, such as the mouse connected to the screen, hypertext, the ability to create links to files, and video communication[13]. A few years later, the prototype of one of the first personal computers, the *Xerox Alto*, was launched. It had an interface composed of a black and white display, text bars, low-resolution images, some graphic icons, and the capacity to overlap windows with different functions.[14]

Creating an operating system with a user interface necessitated the development of a new programming language capable of translating encoded commands into

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12. For a simulation of its operation, see: https://youtu.be/c539cK58ees

13. This presentation can be seen at: https://youtu.be/yJDv-zdhzMY

14. For a critical commentary on the use of metaphors in interfaces, cf. FULLER, 2003, p. 100-102.

visual elements, thereby serving as the means to access these commands. This visual programming language, called *Smalltalk*, was composed of a programming platform (code editor, compiler, and debugger) with a graphical interface, which allowed object-oriented programming, that is, a mode of development that enabled the organization of code into icons representing attributes and methods. The possibility of visualization made the logic of organization and access much less complex. In 1981, the first commercial Personal Computer with a graphical interface was launched, the *Xerox Star*, whose operating system had an interface with a model of icons for objects, applications (text and table editor, etc.), and files that were attached to the desktop background and could be moved, copied, and deleted. In addition, the interface was composed of windows, scrollbars, black and white screen and virtual keyboard, and offered the possibility of printing what was displayed on the screen. In 1983, further advances were achieved with the *Apple Lisa*, with a 720 x 364 resolution screen and whose interface had a drop-down menu (like the *Microsoft Windows* Start menu) and metaphorical icons with a more complex design. In general, it was an interface that offered the user more options, with the possibility of moving, maximizing and minimizing windows. The colorization of the screen in 1987 (*Mac II*) provided a new visual experience and opened up several possibilities for information visualization, requiring the development of new graphics, software (*Adobe Illustrator and Photoshop*)[15] and programming languages (*Postscript*). This process contributed decisively to the adoption of the computer by artists and designers, expanding the computerized dimension of cultural production. This represents the emergence of new media (new software) for creating and editing images that have revolutionized various areas of society, from medicine to the visual arts (COLEMAN, 2018, p. 6-16).

The expansion process took place especially from the second half of the 1990s and early 2000s, with the internet and the creation of new devices and, therefore, with the emergence of different interface possibilities. The Personal Computer established itself in the market (*Windows 3.1* in 1992 and *Mac OS 6* in 1998) and a range of portable devices was created or relaunched (laptops with color screens). Regarding interface innovations, the iPod stands out in 2001, with a small screen, buttons and scroll wheel, smartphones, from 2002, with applications and internet connection, tablets, in 2010, *Google Glass* in 2013 and the *Apple Watch* in 2014, the last two being results of *wearable computing*. The success of these inventions was due not only to processors and operating systems capable of sustaining different functions, but also, and perhaps mainly, to the creation of interfaces that allowed the management of numerous applications and files on a portable device.

This trend persisted over time, aligning with the growth of *web*-based applications and cloud computing, which led to

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15. *Adobe Illustrator* and *Photoshop* "were the first of their kind, providing an iconic set of tools, a virtual document, and a large set of options for tweaking vectors and pixels. The new virtual environment extended beyond a user's desktop, provided applications, and opened up a new set of virtual tools" COLEMAN, 2018, p. 14.

a substantial surge in the number of applications in general from the late 2000s to the present day. The temporality of computing powered by the internet and microprocessors is one of constant updating, rendering interfaces intrinsically dynamic. The established hegemony of the conventional interface model built around fixed screens is now challenged by recent advancements transcending these limitations. These developments enable the utilization of gestures and sound (MAJOR; HUANG, 2019), as well as embrace virtual reality to facilitate task execution (COLEMAN, 2018, p. 17-24).

The general process of development and expansion of computing techniques — from processors and operating systems to increasingly complex software applications — depended (and still depends) on the ability to create interfaces capable of making available the resources that the computer offers to users in general. A computer with fast processors and efficient operating systems is, thus, not enough. These powerful resources require a mediator capable of, at the same time, making such resources accessible (with menus, icons, and windows suited to their particularities) and organizing them in a coherent, interactive, and aesthetically pleasing form. In this sense, the user interface could not be seen only as the representation of internal processes: it is a fundamental part of computing precisely by making such processes possible for users, from programming platforms that create new software to applications of content editing. Moreover, "the way the computer makes this use [of its resources] available and the assumptions made about what possible interactions can develop are both fundamentally cultural" (FULLER, 2003, p. 12). These issues, seen from the perspective that the graphical interface is the only channel of relationship for most people with computers — given its visible dimension, its unconcealment act — make it a hermeneutic problem that requires in-depth reflection.

Such a reflection, at the same time, needs to go beyond a notion that attributes a purely instrumental and unambiguous character to the interface, that is, that overlooks its dual character as language. Recognized as a technology, the interface becomes the center of different forms of relationships that shape and change the experience of users in a decisive way. It cannot be seen only as a tool that reacts to the actions of users, considered as subjects who manipulate computational resources as simple objects. Instead, "the digital interface […] becomes an active and integral part of the relationships contained therein and remedied by it" (SHANBAUM, 2020, p. 34). On the one hand, this reflection takes place to the extent that the double mediating character of the interface is recognized as a means of unveiling, but, above all, of concealment and

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invisibility, that is, to the extent that it is recognized that the interfaces "not only extend from the screen and keyboard but are also designed to disguise their function as interfaces". They "describe, hide and condition the asymmetry between the elements" that they connect, namely, between the human limitation of processing and that of the computer. At the same time that it is about the "representation and re-articulation of a process that occurs at another level of scale", of another magnitude, it is also about the control of functions made possible by the availability of symbolic resources that give access, mediated and limited (since representative) to computational structures and processes. This control, however, does not go beyond the fact that the interface "imposes and enhances certain workflows, ways of thinking and modes of interaction on or in combination with human users". They define "the syntax for all possible interactions within the domain they describe" (CRAMER; FULLER, 2008, p. 150-152).

The behavior embodied by most individuals in relation to digital technologies is as a user — even if the distinction between user and producer is often blurred. For the common user (a category in which many researchers in digital humanities fit), the interface, with its various dimensions and layers, hides all the mechanisms of data processing. What is immediately displayed is merely a specific form of output, a representation that generally discloses only the "necessary" information and that provides merely a limited amount of functionalities while concealing the most of them. The operational aspect of a digital computer engages numerous imperceptible entities that may not necessarily align with what the interface's "surface" portrays. This interface is the main means of access to various applications and computational devices. After all, the interface is not just a surface. Much like the art of sophistry in classical antiquity, digital interfaces are intelligent mechanisms for deterring and concealing worlds. By offering instigating resources to users, the perception of concealed elements becomes increasingly elusive.

Conversely, acknowledging the constitutive and active role of the interface should not lead to a technological determinism that recognizes it as an entity endowed with ubiquity and invisibility, while reducing the subject to a mere passive user. In this sense, reflecting on interface also raises questions about themes related to agency, materiality, and subjectivity. In fact, by mediating and translating the actions of individuals, interfaces command experiences in the virtual world and in the worlds that are connected to it. They constitute and reconfigure forms of relationship between the subject and the world mediated by technology. This intermediation is a cultural and hermeneutic process that enables not only access and control of functions and information, but also works as mediation between the entities involved in the constitution of a cultural object, whe-

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ther machine or human components. By creating these relationships, the interface bestows precise forms of interaction that, in turn, define modes of perception, thought and behavior. Instead of considering that humans shape their experience through the interface, "one must ask which model of persona, which 'human', is engineered by the Human-Computer Interface" (FULLER, 2003, p. 12).

However, the interface itself, as a technology, is a component and outcome of a discourse network. Its ability to shape subjective experiences is, in turn, the result of the combination of technologies built upon certain concepts propagated within specific contexts, which revolve around processing, storing and transmitting information in a certain way. Consider the very context in which the notion of the digital interface was formulated, as described earlier, with its specific subjects, institutions, and technologies. The issue becomes more complex when taking into account that the interaction provided by the interface establishes a hermeneutic circle (GADAMER, 1993, p. 57-65; RICOEUR, 1983, p. 85-87) that involves cultural artifacts, their creators, the interface itself and the users who consume such artifacts.

While it is undeniable that the capability of the interface to transform and delimit the cultural experience holds immense importance, users are concurrently participants in this experience by absorbing the material structure of the interface through sensory engagement (visual, auditory, tactile, etc.). This engagement transcends the simple act of information access, encompassing a participation wherein the technology (interface) is in a way incorporated with the individual unique corporeality. This *embodiment* is a component of the general process of shaping subjectivities, where self and world experiences occur through technologies and where the act of employment (use) is perceived as an incorporation. Consequently, the "relationship between body and technology" can also be characterized as "an experience produced in a co-constitutive and collaborative way" (SHANBAUM, 2020, p. 58).

The interactive nature of the connection established between recent digital interfaces and individuals within cultural software is accountable for generating different and new forms of agency that can no longer be confined solely to the human realm. These forms of agency are extended to technical entities as the interface comes into play. The existence of diverse forms of agency and agents, which now encompass not only humans but also technological entities like artificial intelligence within the digital sphere, is a consequence of the new avenues of agency that have emerged in the digital era. These avenues relate with the human world through interfaces.

At the present time, culture is the backdrop for multiple

actors and agents, whose relationships have significantly determined the formative experiences of individuals. Historiography, guided by a hermeneutics of the interface, is challenged to not only recognize the practices that occur at its level and who (or what) carries them out, but must also delve into what is beyond it (and which also has its practices and agents), in order to make this relationship between "outside" and "inside" (or veiling and unconcealment) visible and, then, understandable.

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RESUMO

A partir do fio condutor do duplo caráter da linguagem ilustrado pelo conceito de *alétheia*, este artigo procura problematizar a questão das interfaces digitais em direção a uma hermenêutica histórica. Em um contexto no qual a produção cultural tem sido cada vez mais digitalizada, essas interfaces, como mediadoras de mundos, ao mesmo tempo que desvelam e apresentam as possibilidades de lidar com ferramentas digitais, também ocultam um conjunto de funções que, assim, permanece invisível à maioria dos usuários. Nesse sentido, após apresentar uma reflexão sobre o conceito de *alétheia*, o artigo demonstra como a produção cultural contemporânea depende de software e quais implicações isso traz para a cultura de um modo geral. Por fim, argumenta-se que a plena compreensão dos fenômenos culturais contemporâneos depende de um entendimento do funcionamento dessas ferramentas, o que significa ultrapassar suas interfaces.

PALAVRAS-CHAVE

hermenêutica digital; interface; cultura digital; historiografia

ABSTRACT

Based on the double character of language represented by the concept of *alétheia*, this article seeks to problematize digital interfaces towards a historical hermeneutics. In a context in which cultural production has been increasingly digitized, these interfaces, as mediators of worlds, while revealing and presenting the possibilities of dealing with digital tools, also hide a set of functions that remain invisible to most users. In this sense, after presenting a reflection on the concept of alétheia, the article demonstrates how contemporary cultural production depends on software and what implications this brings to culture in general. Finally, it is argued that a comprehensive interpretation of contemporary cultural phenomena depends on an understanding of how these digital tools work, which means overcoming their interfaces.

KEYWORDS

digital hermeneutics; interface; digital culture; historiography

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