Rethinking "Digital": A Genealogical Enquiry into the Meaning of Digital and Its Impact on Individuals and Society

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Abstract

In the current social and technological scenario, the term *digital* is abundantly used with an apparently transparent and unambiguous meaning. This article aims to unveil the complexity of this concept, retracing its historical and cultural origin. This genealogical overview allows to understand the reason why an *instrumental conception* of digital media has prevailed, considering the digital as a mere tool to convey a message, as opposed to a *constitutive conception*. The constitutive conception places the digital phenomenon in the broader ground of media studies, and it considers digital technologies as an interface between the subject and the world. In this perspective, the media is not added to the experience of the person, but it shapes it from within on a cognitive, expressive and communicative level. The article makes use of two powerful examples to show the shortcomings on an instrumental conception of the digital, and to affirm the value of a constitutive conception for current media studies regarding digital interfaces.

Key words: Digital, Epistemology, Philosophy of Technology, Philosophy of Language, Philosophy of Science, Media Studies, Communication.

1. Introduction

In the past century, the research on the role of technology in relation to human praxis had its roots in psycholinguistics, psychology and anthropology (Leroi-Gourhan 1993; Vygotsky 1987; Vygotsky and Luria 1993) and, in general, in those research fields that consider the use of external instruments as a *constitutive* element of human praxis and cognition. The availability of digital technologies profoundly impacts human practice, and the presence of new tools and devices brings back the need to inquire about a "constitutive conception of digital mediation". This conception describes the "digital" as a phenomenon that not only enables communication, but more generally provides individuals with an interface with reality. This conception, grounded in media studies, significantly overcomes the tendency to look at media (e.g.: verbal communication, writing, cinema, ICT, etc.) as neutral and transparent tools to convey a message, as it does an "instrumental conception".

However, in the current debate on digital technologies, the instrumental conception of media has not disappeared from the discourse at the level of common sense and public opinion. The theoretical effort to criticize and overcome the instrumental conception of media in the context of human praxis makes it essential (even if fundamentally inaccurate) to understand the theoretical reflections on technology and its impact on society. Cultural and anthropological studies need to connect with the current sociotechnical context and enrich the debate on digital technologies to definitely clarify and overcome the instrumental conception of digital. This implies recovering a tradition which inquired on communication and cognition from a technological perspective (see Havelock, 1963; Ong, 2002), and to study current digital phenomena in light of epistemological categories which are chronologically pre-digital but, as we shall see, particularly adequate to describe the current scenario.

This article aims to show that the common meaning attributed to the term "digital" is rooted in an instrumental conception of media and that, historically, the development of writing

and related technologies (which prepared for the advent of digital mediation) established the conditions for the affirmation of an instrumental conception of technologies. As a second contribution, the article suggests the constitutive conception of media as the approach *par excellence* to capture the dynamics of the current social and technological scenario. Section 2 undergoes a philosophical and historical review of the meaning of "digital" and describes the characteristics of the instrumental conception and why it prevailed over time. Section 3 describes the constitutive conception of mediation, reconstructed through a genealogical approach, and it shows its relevance as the epistemological presupposition of any study of digital technologies. This section also offers tools to distinguish between authentic constitutive conceptions of digital - that grounds constitutivity at the theoretical level - and "false friends", i.e. nominally constitutive conceptions at the ethical level that hide an instrumental conception at the theoretical level. The article concludes by offering two examples of how an authentic constitutive conception of technological mediation is the most adequate to account for facts found in social media practices and to describe the relationship of digital technologies with individual and societal dynamics.

2. The Common Meaning of "Digital"

This section reviews the meaning that the term *digital* acquired over time, taking both a philosophical and a historical perspective to unveil the alphabetical origins of this word. The goal is to understand how specialized and common-sense thinking has conceptualized one of the most significant technological changes of the last decades. An instrumental conception of the digital phenomenon is presented. This interpretation, prevailing in the non-philosophical contemporary debate, stems directly from studies of communication theory and it tends to reduce media practice to a mere content exchange. The problems addressed by this conception

are of an engineering and technical nature, conceiving technology as a transparent mean of conveying information.

2.1 The Instrumental Conception of "Digital"

The term *digital* has taken on a broad meaning in everyday communication. It is used whenever one refers to the web, computers, or, more generally, the latest technology. However, definitions such as the one from the Merriam-Webster dictionary captures its literal meaning: "of, relating to, or using calculation by numerical methods or by discrete units"[1].

The departing point of the instrumental conception is an understanding of "digital" as a method of representation. For example, an image on a computer screen can be analyzed in pixels, and the grid of pixels is a matrix of numbers, discrete units (digits). The characters aligned on the digital paper on which I write, and the song that I will later listen to (by streaming it), are series of discrete units read by a machine according to specific methods. According to the instrumental interpretation, the "digital" is a numerical encoding, a set of simple and calculable elements whose *reading* turns into unitary objects.

Within the instrumental paradigm, encoding is an essential part of digital mediation: during the transmission of content, information packets composed of bits, the basic units, are encoded by the sender and decoded by the receiver. It is possible to schematize the process in three phases: encoding, transmission, and decoding. The outline of this explanation has been repeated in countless forms; it is found in communication theory handbooks, in courses on effective communication, and in a great deal of literature on digital and ICT (Information and Communication Technologies). At first sight, this description is clear and self-evident, but a further investigation reveals its shortcomings and aporias.

[1] https://www.merriam-webster.com/dictionary/digital (Accessed January 21, 2022))

The premises of the instrumental interpretation are twofold:

a. A conception of message exchange as encoding and decoding of content. According to this assumption, informational content, independent of the transmission medium, is encoded by the sender and decoded by the receiver in a continuous analytical work similar to a process of translation or calculation. In brief, every communicative medium can be reduced to a species of the code genus (either linguistic or binary codification) (Sperber and Wilson 1996).

b. A reduction of the entire communicative practice to an exchange of messages, and transmission of content specifically packaged through the coding of the medium employed. This approach to media studies is defined by Ronchi (2003, p. 4) as "standard communication theory" or "pipeline model" (McLuhan and McLuhan 1988, 86).

According to the instrumental conception, the digital media is conceived as a channel that materially conveys information. This interpretation is functional to communication engineering studies, whose goal is to ensure the media's efficiency, reducing the noise as much as possible. The problems arise when this approach is extended to the digital as "anthropic technique", as a media that informs and characterizes the communicative exchange between living individuals who practice a distinctive technical determination of meaning (McLuhan, 1994, pp. 7 ff.).

In light of the instrumental conception, the purpose of digital mediation is merely the solution of a communication problem: representing any kind of content, conveying messages at high speed, at a minimal expenditure of information and at low cost (Shannon & Weaver, 1963, pp. 6–8). The most remarkable conceptual object of this solution is the code. The code is a method of encoding for both the instrumental and the constitutive conception (this latter will be presented in the next section). While this section clarifies that, in light of the instrumental conception, encoding is described in terms of translation or computation of

content and information, section 2.3 clarifies the meaning of encoding (or representation) in light of the constitutive conception of media. In order to fulfil this purpose, it is necessary to retrace the historical origin of the instrumental conception and account for its shortcomings, and this is the goal of Section 2.2.

2.2 Retracing the History of "Digital": The Affirmation of the Instrumental Conception and Its Shortcomings

This section aims at retracing the history of the meaning of digital in order to make the reader aware of the reasons why the instrumental conception of media (as described in Section 2.1) is the currently dominant conception in the common understanding of digital technologies. This section serves as a bridge to introduce the constitutive conception of technological media (Section 3) in light of this historical perspective.

Even if in contrast with the instrumental conception of digital just described, the encoded content can be characterized beyond its description as a product of mere analysis. Taking as example an image, a digital device "perceives" it as a set of numbers, while numbers are not present in the human retina that looks at the same image. This is to say that the minimal elements (bits) that constitute digital objects (Capone and Bertolaso 2021; Hui 2012) are not meant to be processed by the sensibility but by encoding methods and, in the case of digital encoding, by the representation techniques of machines. These minimal elements are logical and relational; they do not have an independent meaning in themselves but only in relation to the encoding (or representation) technique that provides them with intelligibility. From this point of view, the bit is very similar to the letter, to the point that one could say that the digital dates back to the birth of alphabetic writing (Ronchi 2003, 58).

The instrumental interpretation of media and the theory behind it has an ancient history that still inhabits Western culture. Only within this history, this conception can be understood

and deconstructed, establishing the constitutive role of media, and the understanding of the complicated relationship between cognition, materiality, and communication in human praxis.

At the dawn of history, alphabetic writing was not the first form of writing that came about: initially, signs moved on the ground of mimesis, trying to graphically imitate the represented content (i.e., the thing). Ideographic writings and early forms of notation for calculating and recording quantities witness this phenomenon (Schmandt-Besserat 1996, 117). The later syllabic writing seems closer to alphabetic writing, however, its signs are still connected directly to syllables to pronounce. For this reason, syllabic writing is considered a "cold medium" (McLuhan 1994, pp. 22–23), a medium that needs high integration by the receiver. In cold media, the message (the content) is strictly adherent to the medium (in this case, the ideographic and partially syllabic writing) and the communicative context. These forms of writing are not comparable to the code model previously described since, in these cases, the content is inseparable from the form, from the structure in which it is embedded. Although there are written evidences of articulated syntax dating back to 2500 BC (Schmandt-Besserat 1996, 66), it will still take a long time before the sign becomes an empty object, a mere abstract element capable of dividing the sounds of the spoken language, leaving definitively aside the direct reference to the things of the world. This means that, before alphabetic writing, those interested in being read and understood (and there were very few readers) could not write everything down. At that time, an author had to stick to known formulations and partially predictable patterns for the reader, who had to read in the absence of the author.

Even after its introduction, alphabetic writing alone was not enough, as it was still embedded in a predominantly oral culture: the beginnings of written representation are tied to the rituals and rhythms of the oral medium, to its educational and regenerative purpose of social bonds within the community. Narrations, stories, myths, and even accountings for administrative or military purposes (Havelock, 1963, pp. 134 ff.) were made by drawing on

traditional plots, on ready-made elements present in the tradition. The kind of creativity, storytelling and analytical thinking characteristic of modern thought was unknown and unavailable in those times. Moreover, cultural expressions are not exclusively, nor primarily, related to communicative purposes, or at least not in the specified sense of coding, decoding and transmitting messages. *The hypothesis is that the problem solved first by alphabetical writing and then by digital encoding, projects its own solution on everything that was in the past ascribable to the phenomenon of communication, making heterogeneous and discontinuous manifestations a unitary phenomenon with a well-defined purpose* (Ronchi 2003, 16). The instrumental conception of media realizes this projection according to its assumptions: communication as media-independent message exchange enabled by digital encoding.

However, in contrast with the instrumental conception, it is not clear what the message conveyed by the Homeric narrative, a funerary inscription, or the iconography of a temple should be. It is certainly possible to say that the Homeric narrative conveys the story of the events of the Trojan War and the vicissitudes of the Achaean army, that an inscription depicts the person who lies in a grave and that the iconography of a temple refers to the deity to whom it is dedicated. Nevertheless, they would be captious descriptions aimed at reducing the practice of an entire culture to a fine game of labelling (Wittgenstein, 1986, §27; see also Wittgenstein, 2018, p. 44). All these expressions have in common the celebration and maintenance of a cultural heritage that exclusively relies on its practice and living manifestation. In an oral culture, there is no registration and fixation of a canon as in a typographic culture. Transmission, fixation, and practice are one and the same. In light of this, it is not surprising that more than one thinker (Havelock, 1963, p. 28; see also Nietzsche, 2013) considers the Greek poetry as a time for education and introduction to the life of the polis, rather than a moment of entertainment: a moment of care, maintenance and regeneration of the community

and its internal bonds. It is worth noting that only a typographic culture – such as the modern and then contemporary ones, where the instrumental conception of media prevails – is able to separate culture as a distinct domain from the rest of the practices of a community such as politics, science, religion, administration and commerce. All are dominated, separated and homogenized by the same encoding.

Oral cultures did not have a code, at least not as conceived by standard communication theory. They did not have a universal encoding system separated from content, and even after the introduction of alphabetic writing it took time for this conception of the writing medium to prevail. It is possible to frame this shift from oral to written media as a paradigmatic example of the way a media structures its content, as an illustration of McLuhan's famous phrase "the media is the message" (McLuhan and Fiore 2001).

Later on, alphabetic writing took hold in Greece (based on Semitic writing), but it was something that had nothing to do with earlier forms of writing. Its minimal elements are not copies of the spoken words. Just as it is not possible to find a list of numbers in the retinal image, it is not possible to find a list of letters in the oral speech. Alphabetic writing established itself as the optimal algorithm for the encoding of oral speech.

The alphabet produces a schematization of the spoken language, fixing something that moves within a temporal dimension, in a visible space. This fixation, however, does not only translate a temporal dimension (spoken word) into a spatial dimension (written word). Alphabetic writing, in its work of schematization and atomization of the continuum of spoken language, produces brand new discrete elements that are not for the senses, like the elements of syllabic writing or ideographic signs, but for the intellect. Alphabetic writing severed any remaining connection with the concrete enunciation, providing users with a powerful algorithm (Ronchi 2003, 52) for encoding oral speech into written form. It is considered to be a "hot medium" (McLuhan, 1994, pp. 22–23), which possesses the advantage of requiring little

integration on the side of the user, perfect for remote message communications, or information storage. Moreover, the shift from time to space provides an image of the writing medium that becomes hegemonic even with respect to oral language. The medium emancipates from the concrete content.

Understandably, this written medium (which is a re-mediation of oral language, the media *par excellence*) favored instrumental interpretations of communication as message transport and encoding-decoding of content. The alphabetic code has been able to detach the meaning from the concrete enunciation. The message is no longer adherent to the concrete act of communicating; it becomes a pure content, conveyed by an encoding meaningless on its own. In the case of writing, the alphabetic code; in the case of digital encoding, the binary code.

However, *the kind of problem that alphabetic writing solves is not the problem of communication as a whole, but only a part of it*, a small portion of what can be meant by communicating. In the instrumental conception, communication serves the purpose of giving an accurate representation of an already structured message, in a spatial form, transferable and durable over time, without losing information and without having to resort to context (or as little as possible at least). In this sense, the alphabetical writing anticipates more than two thousand years (Ong 2002, 24) the digital encoding. In both these forms of writing (digital and analogical), there is a code constituted by a set of discrete elements in finite number, combinable in positional series to give rise to infinite possible signs (De Mauro 2019, 70).

Writing as a technology of thought (Ong 2002, 8) ushers in a truly new way of thinking: the intuition behind alphabetic codification has progressively served as a model for the understanding of various phenomena, such as the first atomistic theories, which were born in Greece, where the alphabetical writing took place. Moreover, the notion of code influenced in a clear way many scientific terminologies (e.g. "genetic code" and "coding") (Longo 2009). Taking this analysis a step further, it can be observed that writing, and the concept of code,

deeply influenced the relationship that human beings have with ICT and media, laying the groundwork for the standard theory of communication, imposing an image of technology and media as neutral instrumental tools.

3. The Constitutive Conception of "Digital": Media as Technologies of Thought

The historical review of the birth of alphabetic writing, conducted in Section 2, unveiled the path that led to the instrumental conception of both analogical and digital media. The culprit for the current affirmation of this conception is found in standard communication theory, which considers communication technology as a neutral instrument for information exchange.

However, there is another conception that goes beyond this characterization, and it leaves aside the instrumental conception of media, both in its alphabetic form of communicative domination of oral language and in its digital form as automated content processing. Indeed, it is possible to describe the phenomenon of communication in a broader sense, without reducing it to the mere transmission of messages. Moving forward, this section describes the "constitutive conception" of digital, as a perspective which is able to take into account the dynamics and the complexity of the cultural development of the concept of digital.

In order to do so, firstly, it is necessary to conceive all content as unavoidably mediated. The media acts as an interface between the subject and the selection of relevant traits within a reality that can be shaped according to infinite perspectives (Hjelmslev, 1969, pp. 51 ff; see also (Capone 2021; Capone and Bertolaso 2020; 2022). Natural language, the most important medium, is the paradigmatic example of this phenomenon. In oral communication, there is no labeling of ready-made content, but it is the language itself that provides concepts and classes for the identification of objects, events, relationships and, in general, of anything that can fall under the classifying action of language, and each historical language has its own categorizations (Hjelmslev, 1969, pp. 51 ff.; Saussure 2011, pp. 113-114).

According to this view, the content does not precede the media, but develops within it; the media "unveils" the content (Heidegger, 1954). In this way, the instrumental interpretation of the media is contrasted by a constitutive one (Gunkel & Taylor, 2014, pp. 26 ff.). If articulated language provides the most important mediation through which human beings come into relationship with things, further mediations can refine, expand, or modify the structure of this relationship. The feedback of literacy on orality is a striking example of this. The observation that the standard theory of communication is not concerned with the phenomenon of communication in its totality but only with a portion of it, and that consequently it is unable to exhaust the breadth of digital mediation is something that should be clear at this point. It is now a matter of describing the kind of mediation established by the digital interface and the kind of relationship with the things that it structures.[2]

3.1 The Digital Mediation In Light of a Constitutive Conception of "Digital"

Digital is a communication phenomenon only if we extend the concept of communication far beyond the mere transmission of content, which is often only a collateral effect. It is difficult to clearly define the content conveyed by a meme, an unboxing video, a social profile, a series, or the huge availability of products in online stores. Even the phenomena that at first glance seem more purely communicative, in the sense of transmission of content and information, at a closer inspection reveal themselves to be completely transformed by digital mediation, demonstrating that technological mediation is not an accessory, but a constitutive part of a form of life. An example can help illustrate what this means in practice: journalism is a witness of the way this conception works.

[2] As suggested by an anonymous reviewer, a reader would have expected the authors to make reference in this context to Derrida. However, this philosopher presents a specific perspective on Saussure's work, and this perspective could have been in contrast with what we affirm following Hjelmslev, Jakobson, and De Mauro. For this reason, we made the choice of not including Derrida.

Indeed, journalism is now completely at ease within social media. Articles are reposted on the main platforms providing unprecedented media coverage and, unlike the physical newspapers, news can be read simultaneously by a potentially unlimited number of people online. This seems like a full confirmation of the standard understanding of code (typical of the instrumental conception), however this example tells more. Along with the increase in speed and diffusion, the nature of editorial practice profoundly and inevitably changed (van Dijck, Poell, and de Waal 2018), pp. 51 ff.). The amount of news to produce and the fast pace needed to be competitive, force to standardize the format of the articles. Often the authors end up giving inaccurate news, giving preference to clickbait titles in order to increase visualizations and exploit advertising, now the main source of income of the information market. The lack of clear indicators of reliability, together with the loss of credibility of journalistic publishing, has contributed to the spread of the fake news phenomenon, which should be read not as a cause but as an effect of this trend. In addition, the opaque logic of feed management within the platforms and the filter bubbles that result should be considered (van Dijck, Poell, and de Waal 2018, 51). The business model of journalism is just one of the countless areas profoundly transformed by digital mediation.

Thus, the digital cannot be considered as a mere encoding, nor does it deal only with *the way* one listens to music, enjoys cinema or goes shopping. Media structure a model of relationship with things and these relationships are bearers of peculiar kinds of agency, as in the case of journalistic practice. The kind of representation typical of digital media structures different power relationships, with things[3] and with others (Gunkel and Taylor 2014, 130). For example, while writing was something sophisticated and complex in ancient Egypt, the

[3] The term "things" makes reference to any kind of entity, phenomenon or event which can happen digitally; it does not only make reference to goods or services provided through and/or by the digital platforms. As the examples will show, "things" can also be practices, as the practice of journalism just described, or information or social awareness campaigns.

simplicity of alphabetical writing made it a task for slaves in Greece. Even a child could learn how to master it, although free men refused to engage in such a degrading practice (Ronchi 2003, 57). Plato provides an eminent example at this regard: both in the *Phaedrus* and in the *VII Letter*, he does not hesitate to criticize literacy, precisely because of the type of access to knowledge that it offered (Plato 1973).

Similarly, digital technologies shape the society in which we live. Even today technologically educated elites are in possession of the means of production through which they can impose their economic interests on entire nations (Zuboff, 2019, pp. 184 ff.). At the opposite end of the scale, there are legions of unskilled workers, such as riders or warehouse workers of online stores, crumbled by the "on-call" modalities of employment implemented by platforms, at the mercy of the modes and rhythms of production of the new digital industry.

All these platforms are media, which function according to the interface model that has been referred to so far, but to whom standard communication theory has provided the image of a neutral instrument. In addition, the understanding of digital mediation as a neutral encoding, allows platforms to describe themselves as mere mediators, translators of analogical instances in a digital version. In this way, not only they decline ethical responsibilities, but also avoid heavy fiscal obligations. From this perspective, the digital seems to fully realize that science of control foreshadowed by cybernetics (Heidegger 1977), and this control, this calculability, is now in front of our eyes in the form of artificial intelligence-based systems and digital mediation.

The following Table 1 sums up the key points regarding the two conceptions of digital described in this Section 2 and 3.

Table 1: Key Traits of the Instrumental and Constitutive Conceptions of "Digital"

	Conception of communication	**Conception of content**	**Approach to media**	**Conception of "digital"**	**Measure of success**
Instrumental conception of digital	Message exchange (pipeline model)	Encoding, transmission, and decoding of pieces of information	Standard communication theory or pipeline model	Neutral channel	Technological efficiency
Constitutive conception of digital	Media structure a model of relationship with things and others, and these relationships are bearers of peculiar kinds of agency	Content develops within the medium, which has its own way of producing meanings	"The media is the message"	A non-neutral interface with reality	Relational efficacy

3.2 Some Distinctions Within the Constitutive Conception: The Theoretical and the Ethical Level

The concept of "constitutivity" can be explored according to different levels of enquiry. The choice is usually between the theoretical and the ethical level. The theoretical level considers the general structures of the experience of a subject. In this sense, technologies are an artificial interface between the subject and the world, something that allows the subject to experience, categorize, and make sense of different phenomena.

The ethical level always presupposes a theoretical level, and it deals with responsibility, and with the use of technological tools in the context of an experience already defined in its core elements. The ethical dimension considers how technologies relate to human freedom, and it does so by assuming a theoretical position not always explicitly embraced.

There are works which can be categorized as promoting a constitutive conception of digital, as for example the article by Russo (2018), who considers the constitutivity at the ethical level, but in way that unintentionally replicates the instrumental bias. For example, Russo states: "The ability of processing information belongs to both humans and computers and, today, to smartphones too" (Russo 2018, 662). This statement raises suspicion regarding

a potential infiltration of the instrumental conception at the theoretical level: indeed, on the one hand, it is clear that a computer (and a smartphone, which is essentially the same kind of object) and human beings do not rely on the same strategies, the same interfaces of mediation with reality. While human beings live reality through a primarily linguistic mediation, machines have a problematic relationship with this kind of mediation (see Floridi & Chiriatti, 2020).

Moreover, the article presents the following statement:

> "Integrating ethical analyses into a global (i.e., ontological and epistemological) understanding of the digital phenomenon allows us to highlight the fundamental difference between human beings and digital artifacts. It is not a question of intelligence or of information processing. What marks the difference between human beings and digital artifacts is our ability and capability to entertain a relation with the world through *specific ethical choices*. We do not have a privileged place in the infosphere because of our ability to process information, but we continue to have a central place because we have a *responsibility* towards all the inforgs and the infosphere, and that we cannot delegate to others" (Russo, 2018, p. 665, emphasis in the original).

This point helps clarify that, according to Russo (2018), the difference between human beings and digital artifacts does not concern the capability of processing information. However, if the capability of processing information does not make any difference, so the processing is reduced to something "added", to an accessory, i.e. it is not "constitutive". And if the difference lies in the ethical dimension, so this dimension is something that is externally added in the information processing, which would otherwise be independent, and so ethics is not a constitutive trait of the relationship between human beings and digital technologies, but it is merely an added layer.

These are common aporia that we encounter when the theoretical level is not invested with constitutivity. Franz Boas, German anthropologist, contemporary of Roman Jakobson, explains

this concept clearly when he affirms that grammar (as the structure of a specific language) "determines those aspects of each experience that *must* be expressed" (Boas in Jakobson, 1971, p. 489, emphasis in the original). The same Jakobson comments on "grammar, a real *ars obligatoria* […]. The grammatical concepts of a given language direct the attention of the speech community in a definite direction and through their compelling obtrusive character exert an influence on poetry, belief, and even speculative thought" (Jakobson 1971, II:492). One might add the ethical dimension to those shaped by linguistic mediation (and technological mediation in general).

It is exactly in this sense that can be said that *things shape the mind* (Ihde and Malafouris 2019; Malafouris 2016). Things, in their materiality (phonetics, for language) restructure the way subjects experience. Wittgenstein icastically affirms: "if people had always painted their geometric figures with the brush, they would never have come up with the concept of a class of points". And geometry would have not developed in the way we know it today (Wittgenstein, 1980, § 435).

The theoretical remarks addressed so far can clearly be associated with the concept of *radical mediation*, proposed by Grusin (2015). Specifically, the concept of radical mediation challenges the instrumental paradigm, and assigns a twofold mode of operation to media. On the one hand, media technologies operate "epistemologically as modes of knowledge production" (Grusin 2015, 125); on the other hand, they operate more radically as generators and modulators of "individual and collective affective moods or structures of feeling among assemblages of humans and nonhumans" (Grusin 2015, 125).

According to Grusin, radical mediation is not peculiar to any particular media but should be read ontologically. Therefore, mediation does not merely associate or connect the terms of the media relationship; on the contrary, it constitutes the entities participating in the relationship (the example illustrated in the last section of this article on the Myanmar coup

exemplifies this concept). In this respect, we agree with Grusin's point, that mediation constitutes an unavoidable and constant state of experience. Moreover, we are also consonant with Grusin's claim that mediation can also be characterized in terms of semiosis. In this context, semiosis is understood as a praxis that continuously interprets its symbols; or, in Grusin's words, it *remediates* its contents (Grusin 2015; see also Bolter and Grusin 1999).

However, we are cautious in stating, as Grusin does, that "these activities of radical mediation [...] constitute the ontological character of the world" (Grusin 2015, 142). We disagree with this assertion if it is to be understood in metaphysical terms, whereby mediation becomes an operative force of nature, as sometimes it seems to emerge in his analysis. We agree with it if it is understood in transcendental terms, whereby mediation is the condition of possibility for having contents in general, and thus a world.

That is, the possibility of having a world, of making the world a content, and of having a world populated with contents, is radically dependent on some kind of mediation (operational, ritual, social, linguistic, technical). This does not mean to place subject-object dualism at the beginning of experience (which is Grusin's concern), but simply to place the heterogeneity of human medial praxis as a point that cannot be traced further. In these terms, we would prefer to refer to Grusin's non-human mediation as a non-subjective-mediation (see the Myanmar example in the last section of this article). In these terms non-subjective does not mean non-human.

In the same way, the concept of constitutivity characterized by this article needs to be conceived at this fundamental level of articulation of experience. One of the contributions of this article is to open avenues for research in the other levels of enquiry (for example the ethical one) in light of a theoretical constitutive conception, which thus extends to human praxis. Having made these essential distinctions, next section clarifies how a constitutive conception of digital at the theoretical level is able to account for existing phenomena.

3.3 Digital Interfaces and the Mediation of Reality. Two Application Hypotheses.

Two examples taken from social media help shedding light on the reason why an instrumental conception of digital cannot explain current phenomena. As we shall see, only a constitutive conception of digital can explain the dynamics involved in the examples reported in this section. This section is not meant to provide a theoretical foundation of the constitutive paradigm, but to show how it works in practice through two examples.

The choice of reporting two examples taken from social networks has two main reasons: i) social networks are "places" of maximum visibility of the way people exercise their agency through digital technologies, so these examples are highly representative of what a great number of people currently experience; ii) the role of social media users is one of the most explored topics in academic literature, so it is possible to compare different interpretations, which are discussed below.

Among the various interpretations proposed by the recent literature, it is claimed that platforms exploit the users, directing their attention to the production of *behavioral surplus* (Zuboff, 2019, pp. 65 ff.). Simply put, it is possible to affirm that the monopoly of digital resource supply (information, entertainment, calculation or archive) ensures platforms a large pool of users whom, happy to receive a service free of charge, and often obliged by the lack of concrete alternatives, will end up increasing the attractiveness of the platform in the market for advertising space, usage data and, in general, for the resources and services supplied. Moreover, social networks as a place of experience commodification is also an element already enucleated by the reflection on digital (van Dijck et al., 2018, p. 37; see also Capone, 2020). The amount of data and metadata produced by the interaction between subjects and interfaces makes it possible to re-qualify the individual as the semantic engine of what Floridi defines syntactic machines (Floridi 2014, 146).

All these existing interpretations are helpful in shedding light on the way digital technologies are changing relationships, work, leisure and subjects experience. However, this article aims to apply the reconceptualization of communicative praxis, already applied to alphabetization in Section 2, to contemporary phenomena: we aim to show how the study of these phenomena can be framed and conducted in light of the explanation of the polarity between the instrumental and the constitutive conception. Moreover, our focus for this analysis is on the theoretical aspects, and on the framing of the experience in general, not on the ethical aspects (which will be considered as a consequence). In this sense, the concept of constitutivity is applied at the theoretical level, as explained in Section 3.2.

The application of this method of enquiry to two concrete examples should help clarify that digital technologies i) are able to reshape traditional practices and to start new ones, creating a new role of the subjects within their experience in the world; ii) can generate "borderline cases" in which the subjects not only operate in totally new contexts which put themselves in an environment characterized by inedited scenarios, but they are also "operated", "acted" by the interfaces themselves, which take the subjects as elements of a wider praxis whose ownership does not belong to the subjects. Section 3.3.1 describes a case that covers what stated in i), and Section 3.3.2 offers an example of what is meant by ii).

3.3.1 Feroza Aziz Use of TikTok[4]

The first example regards a seventeen-year-old American girl of Afghan origin, Feroza Aziz. On November 27, 2019, Feroza posted a video tutorial on TikTok, the popular Chinese social network. At first, the video looks like a regular tutorial on how to use an eyelash curler;

[4] This example comes from Montani (2020).

however, after a few seconds, it turns into a condemnation of the Chinese government's persecution of the Muslim Uighur community.

> "They're getting concentration camp, throwing innocent Muslims in there, separating the families from each other, kidnapping them, murdering them, raping them, forcing them eating pork, forcing them to drink, forcing to convert […] this is another holocaust […] please be aware, please spread awareness. So, we can grab your lash curler again".

The video lasts a few tens of seconds and before the end, the girl goes back to her tutorial, which on a gestural level she had never interrupted, not even during the explanation of the situation in China. The post received many visualizations, was deleted by TikTok, reposted on Twitter, and restored by TikTok with an apology and notification that it was an error. Feroza Aziz declares that she knew very well that the video would be removed and that she used a ploy to avoid censorship by the platform.

In this case the user is a person who is extremely aware of the functioning of the media and its potential use, whose cry for help could not have been formulated if not through this instrument. Although in this case the communicative aspect is undeniable, it would be naive to believe that the media did not play a leading role in the modalities and outcomes of Feroza Aziz's behavior (see Montani, 2020, p. 13).

Looking at Feroza Aziz's TikTok video, we are not just informed about what happens in China. Her performance, the risk of being censored, the potential virality of the video, the country where this platform is based, the thousands of users unaware of what they are about to listen in the middle of a make up tutorial, are essential part of the message. Somehow, Feroza's video does not only (nor mainly) convey information, but gives access to a specific experience. All that considered, it is not possible to retrieve a message which is independent from the digital channel it uses, as the pipeline model would argue. The way in which Feroza performed her communication and what she decided to communicate cannot be considered in isolation.

Feroza's choices witness the relevance of the complex network of reasons and circumstances connected to TikTok, the country where this platform is based, the shifts made by activists thanks and through technology, the issues related to censorship, and the large echo that these platforms are able to generate. Feroza could have posted her video somewhere else, or she could have written an article. But in these cases, the message would have not been the same. It would not have had the same diffusion and efficacy; even more remarkably, it would have not put TikTok managers in a difficult position. These are constitutive parts of Feroza's communication, or better, of her performance. This is the reason why the digital media is the message. The choices of Feroza are strictly linked to the level of digital literacy of her generation.

As Section 2 highlighted in the description of the constitutive conception of media, the digital technologies do not call for a translation of the analogic phenomenon into a digital one. In the case of Feroza, the media essentially transformed the concepts of communication, activism, information, censorship.

While this example focuses on the interpersonal relationship (one-to-many), the next example will show how the digital imposes itself in the experience of the individual.

3.3.2 Myanmar: Dancing the Coup

A further example, perhaps even more interesting in terms of the autonomy with which the interface model structures the content to which it gives access, is provided by the case of Khing Hnin Wai. She is a physical education teacher from Naypyidaw, the capital of Burma or Myanmar. On February 1, 2021, as it is well known, a coup was staged in the Burmese capital by military forces to overthrow the government. That morning, Khing Hnin Wai was filming herself dancing for an aerobics competition. Unaware of what was taking place behind her, the

video shows armored vehicles and black SUVs passing on the Royal Lotus Roundabout near the country's parliament.

The teacher guarantees the authenticity of the video and the absolute non-intentionality of the contingencies of the recording that perhaps for this very reason has become immediately viral. All over social media the video of Khing Hnin Wai doing aerobics while a coup is taking place behind her has been reposted, and the editing that have followed have seen her photoshopped into various historical events, the most recent of which is the assault on Capitol Hill. Platform users have edited this video with no specific purpose, but there remains the evidence of the absolute originality of the content provided by digital mediation, the juxtaposition of events that are distant from each other but close in the medial reflection of platform users, and the absolute helplessness of platform owners with respect to the dissemination of this content.

If in the example of Feroza Aziz (Section 3.2.1) the media transformed the relationship between subjects, in this case the media is a quasi-autonomous interface of relationship with the world. A historical event was casually picked up by the daily routine of a person unrelated to the facts, even against her intentions. The digital media in this case took Khing Hnin Wai's aerobics class and made it something totally different, as well as other users who continued to do so by working on the original material. The editing work in this case can be compared to a reflexive elaboration, to a digestion and appropriation by the media of a phenomenon no longer independent, but now made a constitutive part of the overall communication. In this case, the subject of the action is clearly ambiguous. Khing Hnin Wai, her smartphone, the users who made that video a meme, the platforms that allowed its diffusion, are all actors with blurred outlines, whose movements and intentions mutually encroach on each other in a game of interfaces and mediations where communication, as understood by the pipeline model, plays a very poor role.

Summing up, the key point of these two examples is not the information capacity of digital media, but their potential for uncontrollability and unpredictability in structuring content and thus the relationship between users and the world around them that it provides.

An instrumental perspective looks at a phenomenon and asks "Is it a good use of technology?", "Can it be improved?", "What are its consequences?" But a theory of this kind, based on these questions, is never possible, since at least as many things can be done with the digital as can be done without. A proper understanding of the phenomena that are articulated through digital media requires a constitutive theory of these technologies that does not extrapolate them from their practical context. By sticking to the context of use, there will be no risk of producing abstractions such as the idea of a pure and ideal communication, regardless of the media, as in the instrumental conception. As a result, there is a need for a conception of human actions through technology that does not reduce the former to an additional layer of the latter.

Therefore, the adoption of a constitutive conception of digital as described in this article will require a field-specific study for each digital application. The case of journalism mentioned in section 3.1 will require a study of the way in which digital attacks traditional business models, of the economic rationale it favours and of those it hinders and suppresses. The case of Feroza is an interesting example to understand how communication and political and social activism can move in the field of censorship and private information media, and how these practices can be re-shaped according to categories of marketing and engagement rather than according to information logics. The example of Myanmar can serve as a case study to rethink the concept of historical source in contemporary society. We easily see that none of these research areas require an examination of the good or bad use of the digital: what they have in common is an acceptance of the hybrid character of human practices in their many and irreducible forms. The best way to make this multiplicity of forms emerge is to conduct the

dialectical passage from an instrumental perspective to a constitutive perspective of human technical praxis.

4. Conclusions

In light of the current technological and social scenario, this article worked towards a characterization of the constitutive conception of digital as the approach *par excellence* to understand its dynamics. Section 2 took a historical and cultural perspective to explain the affirmation of an instrumental conception of digital. A description of the instrumental paradigm was provided, the two assumptions of which are: a reduction of media to transparent means of communication and a conception of communication as mere transmission of messages. Opposite to this interpretation, Section 3 presented the constitutive conception of digital: this conception recognizes the indissoluble link between representative form (the medium) and content, raising the digital from being just a medium to an enabler of a peculiar expressiveness of the human being. Section 3.2 specifies that the constitutive conception can be considered authentic only if the constitutivity is framed at the theoretical level, not only at the ethical one. The examples provided in Section 3.3 show how the constitutive conception explained can be found in current situations, confirming that the digital constitutes a meaningful interface with reality. The examples help revealing how the digital, as a peculiar space and time instantiation, is a powerful interface of mediation of reality. In this sense, digital, as part of media studies, can be regarded as a technology of thought: it unveils reality and it structures a specific relationship with things, as media do, constituting a relational infrastructural interface. The second example reports the borderline case in which the media is elevated to active actor of the mediation work, in which the communicative praxis, stretched at its limits, blurries the boundaries between subjects and objects in a paradoxical game of "acted" subjects and "acting" media. The example is meant to show how the role of media needs to be considered in their

respective disciplinary fields, as if they were a quasi-subject, and framed within their own methodologies. This article provides the epistemological tools for this necessary integration and prepares the groundwork for field-specific studies.

Given this understanding of the digital, the article reflected on the appropriateness of a constitutive conception of media to account for the role of technology in culture and to serve as a theoretical pillar for an authentic understanding of the human technological practice.

Conflict of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Data Availability Statement

The manuscript has no associated data.

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