

The nature of the media and the reading protocols of the digital book^a

Sobre a natureza da mídia e os protocolos de leitura do livro digital

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ABSTRACT

This article discusses the implications of the materiality of the app-book in the reading experience, recognizing actors who impose the updating of the reading protocols proposed by Chartier. Starting from the nature of digital book media, the article proceeds by presenting the system protocols, in the reading and in the space. Conceptual operators of bookish literature and media are articulated, especially notions about the reading protocols and the computational pragmatics of new media. Of an exploratory approach, from a literature review, the article points to results that indicate the nature of the media as a drive source of protocols that place materiality as the central point of reading transformations in a digital environment.

Keywords: App book, reading protocols, reading experience

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RESUMO

O artigo discute as implicações da materialidade dos livros-aplicativos na experiência da leitura, reconhecendo atores que impõem a atualização dos protocolos de leitura propostos por Chartier. Partindo da natureza da mídia livro digital, o artigo avança ao apresentar os protocolos do sistema, na leitura e no espaço. Articulam-se operadores conceituais da literatura livresca e da mídia, sobretudo as noções acerca dos protocolos de leitura e da pragmática computacional da *new media*. De abordagem exploratória, a partir da revisão de literatura, o artigo aponta para resultados que indicam a natureza da mídia como propulsora de protocolos que colocam a materialidade como ponto central das transformações leitoras em ambiente digital.

Palavras-chave: Livro-aplicativo, protocolos de leitura, experiência da leitura

THE NATURE OF MEDIA AND THE READING PROTOCOLS

The coexistence between the poet and the reader, in the silence of reading, in private. Alone, both of them. That is, book and reader. The latter does not want to hear from others, does not want them to interpret, to sing, to dance a poem. The one who truly loves poems, loves in silence... (Quintana, 1995, p. 535).

WITH SPECIAL CARE, Mario Quintana (1995) describes the relationships established between author, book and reader, woven by and in the reading done in silence, as if referring to something intimate, solitary, demanding the surrender of the one who, in love with books, take it into his hands with due care and respect. This gaze of reverence, eternalized in the poet's words, certainly reveals that the bookish object and reading form an inseparable binomial and that not only the book was shaped from the logic of writing, but, above all, the reading itself.

Electing the bookish universe as a pretext for investigating the revolutions suffered by reading in the digital context is justified, fundamentally, because books were the main depository of writing, of human history and, consequently, one of the first and main objects subjected to different readings. On this issue, Lafarge (2010, p. 17) stressed that the book has always been a means of accessing knowledge and culture and thus became and remained for a long time the essential material support of the text and therefore the main object of the reading experience.

Constituted through a game permeated by tensions that eventually raised the printed book to a hegemonic level and the writing to a degree of supposed truth, the reading experience, to a certain extent, manifested itself as a submissive practice by circumscribing instruments, places and practices that collaborated to create a reader previously willing to visit the lines and subtexts with their eyes, to subsequently peruse pages, volumes and titles. If the reading rooted in the heart of culture is that consolidated by the printed book, it seems impossible to take a look at this pragmatic in contemporaneity without searching for the books kept in old chests that made the activity of reading a mirror, a reflection of Western thought.

On this horizon, strengthening, over time, the cultural ballast that raised it to the condition of reference, the printed book demarcated agents involved in its production chain and, further, internalized reading practices and protocols (Chartier, 2011) that would establish the book-reader relationship, guiding the reading experiences throughout cultural formations and reverberating, strongly, on the practices mediated by the digital book.

In an attempt, then, to avoid the critical obscuration caused by the dazzle before technological advances and technical resources, and also recognizing that technologies directly interfere in the way of thinking of a time – mobilizing specific models in a general context of experience –, this article has adopted, as a theoretical-methodological premise, the assumptions presented by Chartier (2011) about the reading protocols established in printed books. In a second moment, we seek to identify the proper protocols provided by app books. In this respect, we recognize not only the materiality of the digital book as the propeller of transformations in the reading experience in a digital environment, but also the different subjects involved in bookish production and, therefore, demanding traces addressed to the experience itself.

On this issue, Chartier (2011, p. 10) suggested paying attention, in the subject to be read, to the existence of reading protocols, that is, traces or indexes capable of directing reading behaviors, as a set of devices that end up mediating the reading experience. Leading, a priori, to the proper use of the reading subject, while simultaneously outlining its ideal/model reader. (Chartier, 2011; Eco, 2008). Regarding these protocols, in the context of the printed book, Chartier identifies two types of privileged traces circumscribed in the bookish materiality and that would be, broadly, impacting the act of reading.

The first concerns the elements that a particular author spreads throughout the text to ensure, or at least indicate, “the correct interpretation that should be given to it” (Chartier, 2011, p. 10). It could be said, then, that these reading protocols – called author/authorship protocols – inscribe in the text the image of an ideal reader (Chartier, 2011), whose appropriate competence would decode the meaning intended by the author when writing it. Such perspective also indicates that these are the protocols that would be collaborating to inform the model reader, as “a kind of ideal type that the text not only foresees as a collaborator, but also seeks to create” (Eco, 1994, p. 15). The author would then be inscribing in the text a set of devices, such as “passwords, explicit or implicit” (Chartier, 2011, p. 96) that could finally direct the intended meaning, as a kind of reading authorized by him.

Besides the authorship protocols, Chartier (2011) also refers to another type of trace – which he calls editor/editing protocols –, that refers to what is produced in the subject itself, to favor a certain reading and outline its ideal reader. What this second protocol highlights is the relevance of the material support on reading practices and experiences. The materiality of the medium becomes, according to Chartier, “inalienable from the spirit of the representations to which its uses have given rise” (Chartier, 2011, p. 54).

¹The choice to stick to the app books stems from the fact that, when compared to file-books, they are not restricted, a priori, to formats or markers indicative of the printed culture, not safeguarding aspects that singularize the reading experience already consolidated by bookish culture. On the contrary, Belonging to the software universe, app books carry the same development potential as the new media, emerging as fertile ground for examining the impacts suffered by today's reading practices and experiences.

²According to Chartier (2011, p. 10) the terms refer to the reading protocols, as indexes or explicit/implicit marks that are outlined in the bookish materiality and that would be able to direct reading conducts

He also notes that, as a terrain of conflict of interests and values, the printed book points to a frequent tendency of protocol dissonances between authors and publishers that end up directly impacting the reading experience.

The relevance of the material support on the reading practices and experiences indicated by Chartier (2011), show that analyze such objects – printed and digital book – is to come across genesis that, although denoting a kind of continuum, fundamentally in the symbolic field, point to entirely different bases. This perspective proposes a kind of equivalence between products, which are not at all analogous, to understand phenomena that seem to be absolutely particular, unprecedented. In this sense, the investigation into the particular nature of the object, the digital book, was taken as a possibility to guide the first steps in the search to understand the phenomena involved in the complex book-reading relationship in contemporaneity. And this because the bookish object, like other cultural products in the digital environment, presents changes that derive from ontology, epistemology and computational pragmatics (Manovich, 2013) that ultimately impact its materiality and modes of conformation and informational record.

If the book has historically been recognized as the result of the combination of the characteristics and modes of recording writing – involving the instruments and techniques of fixing the verb – and the particularities of the support on which it was deposited, with the advent of information digitalization, the bookish material is placed on a base with properties that reconfigure the object and, above all, transform the verb into a visible and readable layer of a discrete language³.

The genesis of the changes in the forms of reading in contemporaneity points, first, to the paradigmatic rupture of the bookish materiality, since the transformations observed in the book indicate the displacement of the subject to be read from the supports of the past – when the technical particularities involved in its confection helped define its own attributes, as in the case of cinema, photography, painting and, also, of the book (Manovich, 2013, p. 23) –, based on a common basis expressed by the convergence of media and language, including computational, bringing together datafication logic and software properties.

Notably, this common basis indicates the encounter between computational logic and bookish culture, generating important transformations in the aforementioned object, since it is the very nature of the information that is modified when transmuted into bytes. This common basis allows contaminations of languages

³The expression is used to refer to the programming language that, covered by the presentation modes through the graphical interfaces, remains outside the perception of the system user.

and strategies, turning the app book into a hybrid⁴, thus requiring other skills besides reading, such as writing, playing, painting, speaking, among others. Completely transforming the notion of book crystallized in the imaginary of society.

Contaminated by computational syntax, the app book points to the combination of algorithms and data structure (Manovich, 2002), having the software as mediators, distancing itself from the constitutive basis of the past. The media properties of the object are no longer based on the type of support or even production and finishing techniques; on the contrary, it is the principles of software that start to structure the object, the digital book. The novelty, then, seems to rely more broadly on the nature of digital media that, in itself, redefines structures of historical cultural products, like the bookish object and the praxis around it.

When mediated by software, the book – now conceived from logical data and algorithms – tends to operate, according to Manovich (2002, p. 43), from five principles⁵ that, in turn, characterize the so-called genesis of the new media. If the numerical representation indicates the capacity for algorithmic coordination, to be programmable, its modular structure facilitates its manipulation to maintain the independence between its elements, allowing the information to be displayed in different ways in graphical interfaces. These two principles – numerical representation and modularity – allow the automation of process and viability for multiple versions of the media.

If, on the one hand, the multiplicity of modes of presenting what is to be read protects, in the graphical interfaces, the well-known principles and laws of representation and the orientation of verbal-visual syntax established in culture – elements and their grammars; on the other, in the IT context, according to Manovich (2002, p. 63), the mechanisms observe a kind of cosmogony, with syntactic structuring logics proper to the computer-machine environment and modes of representation that arise from a set of tiny units – pixels – which, in turn, are susceptible to reading, measurement and, above all, manipulation in software.

These aspects point to the last principle highlighted by Manovich (2002), called cultural transcoding⁶, which stresses that cultural products – including the bookish – allow the coexistence of distinct constituent layers. On one hand, the cultural layer, given by the graphic interface of multiple gadgets; on the other, the computational layer, pointed out in its base structure.

Such issues indicate that today's cultural systems, because they are managed by software, make distributed readers (Ascott, 1997) – regardless of the ethno-linguistic group to which they belong – share the same computational syntax – with the same data structures – and, above all, share the same interfacial conventions, resulting, to some extent, in a reading pact pertinent to the current book modality and, moreover, in the expansion of a kind of collective

⁴We do not intend here to defend the novelty brought by current technologies, otherwise, the history of the book itself registers the association of other activities concomitant with reading, as can be seen, for example, in toy books.

⁵Manovich (2002) admits the existence of five principles that characterize the new media: numerical representation, modularity, automation, variability and transcoding. The author highlights, however, that not every new media object obeys these principles – they should be considered not as absolute laws, but as general trends of a culture that is undergoing computerization.

⁶According to Manovich (2002), the cultural transcoding process implies the translation of something into another format, that is, transforming the analog book into digital, or even transforming the machine language into something palatable, legible to the human repertoire. It is defined by the property of the new media, as it is structured from the resulting relationships between human language (culture) and machine language (data structure).



encyclopedia (Eco, 2008), previously restricted to a repertoire originating from printed culture. Regarding the interface conventions, over the computational-cultural layer of software, specific affordances are structured that allow distinct tasks, materializing (in)appropriate dialogues between humans and systems (Rocha, 2009).

Thus, considering the process of techno-cultural feedback, one observes that reflection on the nature of the support on which the informative material is focused becomes urgent, moving towards understanding that the aforementioned nature of the media has been promoting paradigmatic ruptures in communication processes and, more specifically, in the modes of bookish production and consumption. If the historical book has consolidated its own course of production-consumption, establishing models regarding how they are made, stored, distributed and accessed; on the other, the particular nature of the digital book impregnates the scenario with changes in all these spheres, consequently impacting the actors who transit in its flow.

If the author was tasked with weaving, through writing, the narrative, outlining, at the same time, their model reader (Eco, 2008) from reading protocols (Chartier, 2011), in the current context, this outlining is crossed by multiple readers who now claim – depending on the degree of openness of the *œuvre* (Plaza, 2003) – to collaborate with the bookish context. Its production can also be directly impacted by curator algorithms that start to create new data that, in turn, can guide updates and even extensions of the narrative, further expanding the possibility of the book to conform as space-time of a collective weaving, which is always expanded according to the momentary interventions of many readers and the book system.

The editor, who has always assumed the curatorial role of the *œuvre* – according to commercial interests –, defining editing protocols, can also now, when the *œuvre* itself allows the mediated participation of the reader, assume the curatorship of these many readers' productions⁷. Regarding the effective manufacture of the object, the printer is replaced by the programmer and the interface designer, articulating the grammars of the computational and cultural layer of the book, addressing, as will be discussed, conductive traces of/in the reading.

The reader⁸ had to assume, as a priority, the role of fruition and decoding of enunciation – as a material condition of the presentation of statement (Bougnoux, 1999) –, besides the material consumption of the bookish object, having their participation, most of the time, restricted to markings on the lines, annotations on the margins and before the interpretative gaps of the *œuvre*. Now, the reader's activity is marked by the rupture of the emission pole, by the generalized

⁷ Although it does not reflect the logics pertinent to the ideal of socialization of cyber culture, this type of participation given to the reader can be observed, for example, in the app book "The Silent History," an *œuvre* open to the participation of readers through a channel for receiving their texts (e-mail), which will be evaluated – considered for editing – for being incorporated, or not, into the narrative, through the publisher's work.

connection and, of course, by the nature of the book-media which, otherwise, has allowed the reader to contribute effective content in an continuous flow. Keeping connected has ultimately made this reader a constant producer of data, whether passively or actively created⁹, which definitely changes the scenario of the book and of reading, making the act of reading itself, as it will be discussed, also configure itself as a producer of traces addressed to many other readings.

It is also observed that the “ubiquitous gadgets” have expanded the possibility of reading beyond the traditional limits of the old libraries, air-conditioned reading rooms or classrooms, reflecting in what was pointed out by the research “*Retratos da Leitura no Brasil*”¹⁰ – that reading, of printed and digital books, have been significantly effected in multiple spaces, bringing reading even closer to the individuals’ daily life.

This issue, of course, unfolds some brief reflections. First, that reading – first and foremost, silent and solitary – gains new air when carried out in the midst of crowds, either from the geolocalized space where the reader reads, or when one thinks of books whose reading-writing is built in network. Second, that the reading activity further invades the individuals’ routine, allowing for interconnection with other tasks, attributing new adjectives to the reading activity, such as dispersed, discontinued and fleeting. And finally, that, before the locativity of the reading hardware, not only the geolocation data of each reader feeds the system’s algorithms, but, through resources such as augmented reality for example, the geographic spaces – from the reader’s activity –, start to impute traces directed at the many interconnected readings, as will be discussed.

Based on the above, and recognizing the changes promoted in the instances of the book and in the cultural ballast in which it exists, one can see – about the reading protocols discussed above – that the digital book, from its nature, seems to claim the existence of contents that are quite particular to it. By investigating this nature, one notices that the book in digital includes, in the process of its construction and (re)construction – given the openness of the *œuvre* –, other actors who postulate traces or reading protocols addressed to the many readers, thus transforming the reading experiences.

By considering the peculiarities of the new media and recovering the reading protocols proposed by Chartier (2011), we note that reading experiences are now affected by other types of reading traces or protocols – prompted by new agents involved in weaving of bookish material – which now collaborate with the current ways of reading. The structural transformations of the book are crossed by information technologies and their related sciences, demanding not only the expertise of individuals/areas of knowledge that go beyond those required by

⁸ By locating the reader’s role in the reading experience, we do not wish to simplify or restrict the reading action discussed in extensive scientific literature, much less claim that writing was ever disallowed. Since this is not the focus of this work, we chose only to indicate aspects that served as a bridge to locate this reader and reading activity in the flow of the web and, thus, portray the reader, in the experience itself, as a maker of reading protocols.

⁹ According to Lima (2011), modern individuals produce intentional information (active production) as verbal-vocal-visual publications on the web, and also an endless amount of data from geolocation, likes, etc. (passive production). This data, produced voluntary or involuntary, incorporated into the narrative structure, will form a model reader who is, from the start, willing to join the logics of use of hardware and software.

¹⁰ Conducted by Ibope, the survey was commissioned by the Pró-Livro Institute, an entity maintained by the National Union of Book Publishers (Snel), the Brazilian Book Chamber (CBL) and the Brazilian Association of School Book Publishers (Abrelivros).

the productive processes of printed books, but also the collaboration of readers who, in the same way, start to participate in the bookish context.

Besides the already recognized protocols identified by Chartier (2011) – those of authorship and editing –, it becomes urgent to legitimize three other trace conductors involved in the digital bookish material: the system protocols, the protocols in the reading and the protocols in the space (Flexor, 2018), the latter linked to the protocols in the reading, since it depends on the subject-reader's action. To admit, in digital books, the system protocols, is to accept that their very nature, from the computational layer mediated by software, addresses traces to reading. Concomitantly, prompted by the rupture of the emission pole and ubiquity of the software, the bookish material opens itself to the appropriation of multiple readers, regarding the contribution of multimodal context and data, which, in turn, originate traces here called protocols in the reading¹¹, that is, traces generated by multiple readers – during the same reading experience –, from contributing contents of different natures¹². The latter can also be subject to protocols in the space, traces established during the experience and that arise from the individual's ordinary movements during the reading itself.

¹¹We have chosen to name the traces established by readers as protocols in the reading and not of the reader or/of reading, because we sought to emphasize the idea that these indexes are introduced into the bookish material during the reading experience itself, thus encompassing the readers in their process of reading-weaving.

¹²It refers not only to the possibility that readers have to attribute verbal-vocal-visual information in the software, but also to data that are absorbed by the system through the individual's displacement, time data, climate, relationship with others, etc.

SYSTEM PROTOCOLS: TRACE-GENERATING DATA

If it is forbidden to write on monuments, there should also be a law that forbids writing about Shakespeare and Camões. (Quintana, 2006, p.13).

If the history of the printed book has consolidated reading protocols (Chartier, 2011), previously established by authors and publishers, the digital book, in turn, seems to summon other agents who also begin to interfere and collaborate with the context of the bookish material. These interferences are promoted by the modes of its production, before its nature that, moreover, incorporates into the book properties considered post-massive (Lemos, 2003), as the procedural (Murray, 2003; Bogost, 2007) and participative (Murray, 2003; Plaza, 2003) character that are presented to the reader through affordances of the graphical interfaces that, finally, guide the modes of exploration of the book. It is the very nature of the app book – supported by the procedural structure of the Internet and its set of rules contained in the TCP/IP protocols – and its ability to run a series of programmable rules that recognizes the so-called system protocols, which, in their way, address traces to the reading activity.

If the procedure predicts a process of performing tasks and actions performed by the software that define what can be used when interacting with the book,

then we recognize that it is the rules written in the programming code in the computational layer that address indexes that guide the reading experience through their representation in the cultural layer of the graphical interfaces.

Notably, one can affirm that the modes of access to the book as software are rather the result of choices made by developers and/or companies that design the app. This issue sometimes points to common principles and protocols that guide the computing environment, such as the possibility of “copy and paste,” and sometimes illustrates a particular function of certain software. We note, however, that specific tasks or even interface metaphors that become popular are now reproduced – as long as the algorithmic solution is open – in innumerable implications.

Undoubtedly, its training base – algorithms and data structure – makes the digital book a third-party that incorporates in its production-consumption logics protocols that are particular to it and proper to the nature of its material formation. If the data – imputed when writing the system or collected during the reader-book interaction – enable the algorithms to build patterns and organize the contents to be presented to the individual through the graphic interface metaphors, then the algorithms themselves start to govern the modes of operation of the book, as software, allowing the gathering of data produced by the user, providing anticipations based on recognized patterns and profiles. Moreover, the algorithms allow the customization of the book, which, in this perspective, becomes capable of adapting, in its own agency, to their readers’ particular contexts of use.

In this way, the system protocols conform as continuous process of demarcation of conductive indexes of the reading correlated with the protocols in the reading. Different, then, from the protocol logics described by Chartier (2011), in which the overlapping of authorship and editing protocols does not occur so closely, we see here an relationship of interdependence that signals a self-eco-organized recursive process (Morin, 2005).

The participative property (Murray, 2003) of the digital book – with its levels of participation and degrees of openness of the *œuvre* (Plaza, 2003) – is rather inscribed in the computational layer that authorizes the reader to collaborate according to preestablished guidelines in the code. The data inputs – active and passive – from many readers feed the system and feeds back into the participatory gaps in a continuous process, making the contents, habits and behaviors during reading raw material that can be mined algorithmically to produce new information (Mayer-Schonberger; Cukier, 2013). That said, we infer that the interaction is supported by machine procedures that, when interpreted by interface processes, evoke conducting indexes of the reading experience in a digital context.

¹³The term coined by Pierre Lévy is borrowed here to denote the universal-totalizing scope of the machinery inscriptions.

In this respect, despite the supposed freedom attributed to the reader in the dynamics of interaction with the bookish object, we could state that the post-massive properties of the book promote a kind of universal proceduralized or parameterized experience¹³ (Lévy, 1999) that would be corroborating the construction a sort of contemporary protocol modeling. This indicates that the binary pattern of cultural products underlining their common base has been expanding and reinforcing the access metaphors that have gradually been forming a contemporary mindset. If in analog reading modes a book required flipping through its and watching a movie implied turning or pressing buttons to search for channels, today reading a book or watching a movie on the screens of many devices requires rules of access and knowledge of graphic metaphors that converge. This reveals that, if before the repertoire acquired by handling brochures would serve similar products such as leaflets, textbooks, among others, today the repertoire accumulated with digital booklets, a priori, lends itself to enable the contemporary individual to consume almost all cultural products available.

This also indicates that the modes of representation in the graphical interfaces – of what is inscribed in the computational layer – create patterns of access through grammars that become common independently of the cultural artifact. In this way, the editing protocols of the digital book, through the traces delimited by interface designers, would be standardizing icons and even dictionaries of gesture, illustrating graphic patterns that guide the forms of access to almost everything that is produced and made available in digital media, directing the aforementioned protocol modeling. Added to this perspective is the recognition of a kind of algorithmic modeling, as highlighted, which has been crossing different cultural products, thus collaborating with universal parameters that guide bookish production and consumption.

The digital book, in this way, has been building in its surroundings conventions (Murray, 2003) that are its own, outlining social reading practices that have their parameters crossed by many other cultural products, in a convergence process. If these conventions create routines and ritualize repeated interactions – providing a familiar way to approach new situations – the procedural property of the digital book, then, has been expanding and unifying the already mentioned universal encyclopedia (Eco, 2008) that, generally speaking, breaks with what one day conformed as a linguistic barrier.

If, from Chartier (2011), we infer that different versions of the same story – with editions revised by the author and/or variations of graphic design – would already signal for different consumptions and receptions, in the context of the digital book such issue is severely aggravated when faced not only with the

possibility of customizing the bookish information given by algorithms and data structure, but above all by the control of visualization (Manovich, 2013) of information and the multiplicity of hardware that require responsive modes of conformation of content. This implies saying, more broadly, that the book-media produces not only multiple types of media (Manovich, 2013), but, above all, reading protocols that, although written in the code, dance on the screens according to the readers' choices, multiplying ways of experiencing the *œuvre*.

PROTOCOL IN THE READING AND IN THE SPACE: DATA GENERATING TRACES

Double delighting. The book brings the advantage of being alone and, at the same time, accompanied (Quintana, 2006, p. 306).

What would happen if the story you are reading reacted to where you are? This question was elaborated by the creators of *Writing in Place: an "Ambient Literature"*¹⁴, a collaborative research project, developed in the UK, that aimed to explore the relationship between digital technology and literature, promoting an open narrative to the participation of its many readers and integrated into the space where they circulate. The idea of the "ambient literature" project refers to writings that are, in some way, contextualized by/in the place where the individual experiences them, allowing the building of a bridge between the narrative and the place where the reading happens.

¹⁴To know more about the project see Horne (2016).

The proposal developed, besides capturing private data of the many individuals who keep reading, also calls them to participate effectively via verbal-visual content contributions. This issue pushes us to recognize that the computational layer of the hardware – which supports the manifestation of the object – allows the accomplishment of the bookish ubiquity, promoting impacts on the task of reading, such as the displacement of the old reading spaces and the reader's more effective participation, which overcomes the interpretative gaps to effectively collaborate with the weaving of the book from contributions of multimodal content.

The movements of collaborating and displacement – in the individual's ordinary daily life during the reading activity – point to new traces that affect the reading experience in a collective sphere, distinct from the modes circumscribed by the books of the past. On the other hand, to accept the unfolding of participatory ownership (Murray, 2003) of the book is to recognize that the implications lead to the recognition of new protocols that impact

on the bookish material and, consequently, on reading. Thus, based on the theoretical framework proposed by Chartier (2011) on reading protocols – in addition to the system protocols already discussed –, the existence of indexes here called protocols in the reading is admitted. As already discussed, we chose to name the traces outlined by distributed readers (Ascott, 1997) thus because we consider that these indexes are notably demarcated in their own agency, during the reading experience itself.

Additionally, this participative notion – corroborated by the locativity of the reading hardware – leads individuals to bring the reading activity further into their daily life, relating it to other ordinary activities, bringing the reading experience, first and foremost reclusive, closer to the many activities carried out during the daily displacements of those who read. In doing so, one notices that the space through which the individual circulates, during the reading activity, imputes traces on the software book.

We also recognize a set of indexes here called protocols in the space, traces delimited by the wanderings in which today's reading is circumscribed. Regarding these protocols, we emphasize that by admitting that the displacement of the book and the reading depend on the effective action of the one who reads, we assume that the protocols in the space are spheres or ramifications of the protocols in the reading. We chose to name such indexes as protocols in the space and not of space for reasons similar to those that led to the naming of the protocols that take effect during the reading activity. Thus, although the indexes are rather specific to the particular space/place of reading itself, the preposition and article “in the” indicate that they are also constituted in the reading itself, in other words, protocols effected in the space-time where the experience is conformed.

From this perspective and about books borrowed, Manguel (2010, p. 29) state that they explain the history of their previous readings, impacting each new reader and, in doing so, what becomes evident is that these practices demarcate traces previously deposited by readers that, in turn, influence successor reading practices. If the printed book, borrowed or bought at a used bookshop already presented markings or annotations in its margins as marks from other readers, this issue, in the digital book, is enhanced when it not only allows but, in some cases, invites its readers to collaborate with content contributions so that the book can actually be accomplished.

If the reading protocols to which Chartier (2001) refers are stored in the bookish material in its production and if the weaving of the book includes overwriting¹⁵ by multiple readers who inscribe indexes in its warp, assent to the participatory property (Murray, 2003) as potential for the continuous production

¹⁵Overwriting, according to Flusser (2010), among many aspects that the author highlights, are fleeting writings applied on surfaces.

of bookish material is to accept that the reading activity goes hand in hand with the writing process and that the gaps observed in the book are instead written in the programming code. Thus, the individual is invited to read and write, collaborating with *verbal-vocal-visual* contents and their digital traces, always within the limits imposed by the algorithms, obeying the particular procedural logics of the object being enjoyed.

Importantly, despite the apparent freedom given to each individual who participates in the fruition by book devices, even the protocols in the reading and in the space are, rather, interventions guided not only by the author and publisher, in the face of the protocols they designed, but, above all, by the programmer – system protocols – that inscribes predictable horizons in the computational layer of the book. Such issue also refers to an established relationship between book and reading that seems to denote a kind of symbiosis¹⁶, as we observe that the data of the system are configured as traces that lead the reading experience, whereas, in a reciprocal process, reading itself conforms into traces/trails that generate new data, which feeds back the meaning of the book and, consequently, the relationship. In other words, the book-reading connection in contemporaneity takes place in a course of data generating traces and traces generating data.

Additionally, reading is woven into the interstices of spaces of flows¹⁷ (Castells, 1999), aligning protocols in the space and in the reading scattered, reintegrating signs into resignification networks. A reading that claims in its own action a set of protocols conformed in the flows of interaction between different actors, in dispersed places and, at the same time, making this locus a space-time of social practices.

An experience that takes place between spaces and times at the individual's choice, making the reading of the book, little by little, an ordinary practice, such as those which take place in an urban environment – the reading of traffic lights, street signs, commercial signs and billboards, and everything else that circumscribes the individual in his wanderings. A reading that not only superimposes the narrative on the territories, but also incorporates them. A reading experience that, although particular – because each individual is a passer-by¹⁸ –, is also collective and interconnected to the spaces that, in themselves, imply protocols in the space.

Spaces that enhance the spatial property¹⁹ (Murray, 2003) of the book as software, insofar as, added to the many *flâneurs* wanderings and the reading hardware properties, they impregnate the context of the book with traces, a priori, disconnected and that only make sense when incorporated into the composition. They are, therefore, contemporary ways of conforming enunciation

¹⁶The term coming from the biological sciences does not intend to focus on the naturalization of the book-reading relationship, but only to detonate the association of two parts where both receive benefits and/or suffer harm in a interdependence process.

¹⁷For Castells (1999, p. 436), the idea of flow is based on “intentional, repetitive and programmable sequences of exchange and interaction between physically disarticulated positions maintained by social actors in the economic, political and symbolic structures of society”.

¹⁸Passer-by, here, refers to the reader subject who moves during the act of reading, denoting, more broadly, the idea of a momentary, transitory and transitive reader. However, we must highlight that despite the ephemerality of the passing, these individuals leave trails that register, in a system, their actions before the book and space where the reading takes place.

¹⁹According to Murray (2003, p. 84), digital environments are spatial, that is, they have the ability to represent navigable spaces, implying an environment where individuals can move.

that certainly impact the appropriation and meaning regimes of empirical readers. Readers who, at the same time, impute, through the cultural layer of the software, a production essentially visual created not by their own authorship – from multiple languages –, but by the displacements and landscapes, besides, through the computational layer, incorporate data that deals with numerical representations and Cartesian data of geolocation.

Otherwise, the locativity of reading devices starts to dialogue with these spaces where the individual circulates, collecting data and allowing the information about a certain place to be visualized through the device – as in the case of augmented reality – “increasing the information” (Lemos, 2010).

Locative functions such as mapping and tracing²⁰ can also imply traces that alter modes of representation previously linked to the visual narratives of books, imputing logics closer to the synthetic representation of maps, flows and movements, and further, images constituted by and in the paths that, in themselves, build a differentiated experience with the bookish object and with the *œuvre*.

Moreover, the geotags²¹, for example, can also produce traces that imply producing, sharing and accessing geolocalized information in a global sphere, making the book and the reading rather a form of deterritorialization and construction of new territorialities. Places of reading, places of affection and meaning, locus of experience that implies belongings and appropriations and that claim time and experience to constitute themselves.

A national example is the app *Trip Book Smiles*²², “the book that changes to take place where you read it”, written by the Brazilian writer Marcelo Ruben Paiva and first of its kind in the country. The creators’ idea is to make readers feel part of the story, no matter where they are. Recognizing the reader’s location, the app adapts the story to the place where the reader is, incorporating data, by GPS, of his wanderings during the reading activity. The narrative tells the traveling adventures of Theo and Maria Manuela, a couple in their forties who, live in São Paulo and decide to take a break from their daily routine by traveling to the same city where they spent their first honeymoon decades before, in an attempt to revive passion. From then on, the destination of the novel changes to wherever the reader is. The story is the same, the couple and the plot too, only the references of the places where the story takes place change, since the book detects the place and changes the references of streets, parks and tourist points, keeping the main plot.

Based on the above, one can infer that if the aforementioned protocols in the space are effectively carried out by moving through the informational territories where the experience is built, they would ultimately be transforming

²⁰They refer to the locative functions applied to forms of mapping and tracing in the urban space through mobile devices (Lemos, 2010).

²¹They are properties of the locative media that allow to aggregate information to maps, which can be accessed by mobile devices (Lemos, 2010).

²²This project invited Marcelo Rubens Paiva as the first writer, to participate in the platform, which is promoted by the Smiles mileage program of the airline Gol. The *Trip Book Smiles* is the reason no. 239 of the “365 reasons to Smile” campaign, which celebrates the 20th anniversary of the travel reward program. The campaign unfolds on the website <https://365motivos.com.br/> and the trailer of the platform can be seen in <https://bit.ly/32BljhM>.

“the spaces of cities into clouds of data” (Lemos, 2010), like a thin informational layer that, nebulous, covers the imaginary of cities.

If, on the one hand, projects such as *Trip Book Smiles* and *Writing in Place: an “Ambient Literature”* broaden experiences that, besides promoting approximations between stories and spaces, on the other, they elucidate the conformation and impact of protocols in the reading and protocols in the space as conductors for the enchantment with the *œuvre*. Ultimately, however, we must remember that such enchantment strategies are first structured from system protocols that, covered by the cultural layer of the graphical interfaces, hide their own procedures for conducting the reading task. In particular, the circumscription outlined by the system’s protocols has been reinforced throughout this text, not only because these are the source of the other protocols recognized here – in the reading and in the space –, but also to point out, once again, the reverberation promoted by the change of the bookish materiality, thus returning to the initial discussions, vehemently unravelling its relevance in relation to the studies of the bookish object and other cultural products that, in their own way, are also crossed by the logics of software.

FINAL CONSIDERATIONS

By way of some final considerations, from the reflections achieved with the development of this work, one can infer that the nature of the book in a digital context has gradually reconfigured, in a profound and unprecedented manner, not only the object itself and the practices around it, but, above all, the ways of valuing the bookish culture as a whole.

In face of the effort undertaken to glimpse the current transformations and impacts on the reading experience in a digital environment, although the study presented has borrowed the symbol-object of reading as a pretext for this investigation, the results achieved here allow for a brief generalization, noting that many of the issues raised here concern repercussions on reading in a broader sense. This perspective is also justified by the very nature of the new media which, besides all the characteristics highlighted along the text, allows to recognize the common digital basis of different cultural products. Although we admit that distinctions can be perceived in the close examination of each of these traditional cultural products – noting how the particular historicities make different stages of development tilt –, the path of convergence and fluidity of the media and narratives seems to allow the defense of this generalization.

Still in defense of the possibility of expanding the results achieved here to the general context of reading, as already discussed, we highlight that the modes of representation in the graphical interfaces create access patterns through grammars that have become common, regardless of the cultural product, by traces delimited in the graphical interfaces that would be standardizing almost everything produced and made available in digital media. As emphasized, the standardization of algorithms that have been crossing different cultural products is also recognized, thus contributing with universal parameters responsible for guiding reading in a digital context.

Based on the above, then, it is possible to indicate the very nature of the media – and, particularly, of the app book – as a drive source of reading protocols that place materiality as the central point of reading transformations in the digital environment.

If on one hand we can recognize that, throughout story, certain cultural manifestations – and their relations with the technological and social warp – have crystallized as a strong paradigm for a long time, the current context mobilizes social, technological and subjective vectors in a flow that is renewed at unprecedented speed, reframing the relations between individuals and cultural objects, besides their consumption, always keeping the debates heated. If this issue is nurtured by the nature of the new media, mediated by software, the reading protocols pertinent to the context also live according to the updates based, first, on the constant changes between the cultural and computational layers.

Thus, operating passages, today's book echoes discussions that certainly do not exhaust the research on reading, but puts it into a perspective of problematization and, minimally, characterization of the present. By understanding the constant process that every cultural object undergoes when establishing a relationship/interaction with the individuals and the space to which they belong, we comprehend the updates that the bookish object has been suffering before the digital culture and its particularities regarding the profile of the individuals that coexist in this space, certainly reflecting on the reading experience itself. If the book still configures itself as a becoming, awaiting the space-time of its proper digital conformation, reading, a practice subjected to the reading object, answers and will continue to answer to the demands based on culture. ■

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