

The book as a cognitive prosthesis

O livro como prótese reflexiva

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ABSTRACT

Beyond reader of books, the twentieth century saw the birth of a new kind of image reader in photos, advertisements, and movies: the moving reader. Then with the emergence of the internet, came the immersive reader, who navigates and interacts on the webs' information highways. Next, the advent of mobile media brought along with the ubiquitous reader, who has access to information wherever it may be. Given this sequential and plural framework, this article asserts the need to maintain, in educational environments, the cognitive skills of the book reader, here referred to as the contemplative reader, since the book, among all media, is the one that works as a prosthesis for the development of reflexivity.

Keywords: Contemplative, moving, immersive, ubiquitous reader

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RESUMO

Para além do leitor de livro, o século XX viu nascer um novo tipo de leitor de imagens na foto, na publicidade e no cinema: o leitor movente. Então, com o surgimento da internet emergiu o leitor imersivo, que navega e interage nas infovias dos ambientes da web. A seguir, o advento das mídias móveis trouxe consigo o leitor ubíquo, aquele que tem acesso à informação em qualquer lugar onde possa estar. Diante desse quadro sequencial e plural, este artigo propõe a necessidade de manter nos ambientes educacionais as habilidades cognitivas do leitor de livro, aqui chamado de contemplativo, na medida em que o livro, dentre todas as mídias, funciona como uma prótese para o desenvolvimento da capacidade reflexiva.

Palavras-chave: Leitor contemplativo, movente, imersivo, ubíquo

EXPANDING THE CONCEPT OF READING

DRIVEN BY MULTIMEDIA studies, some time ago I began to defend the idea that reading could not be understood strictly in the field of written verbal language, that is, as following, letter after letter, the sequential linearity of lines along pages (Santaella, 1980). The reading of newspapers has long shown the limitations of such a strict concept of reading, since the journalistic structure is, in its nature, diagrammatic, hybrid in its use of page space, in the combination of graphic types of different sizes, and in its composition with images. At that time, visual poetry has already made its history, advertising language advanced in sophistication, the city became full of signals and light signs. In sum: the act of reading has expanded visibly through other spaces and supports distinct from the printed book. My attention to this expansion, for reasons that do not need to be mentioned here, was dormant for exactly two decades, but after that time it was drawn again with double force.

Between the late 1990s and the early 2000s, the Internet was in its first steps in Brazil, and progressively the ever changing computer screens began to be accessed by users interacting via navigable clicks through shifting pages.

Between 2002 and 2004, we were still learning to navigate the cyberspace tracks. My curiosity about the profile of network users, regarding perceptual, motor, body and cognitive aspects, impelled me to conduct an empirical research, published in a book shortly after (Santaella, 2004). This research led to the realization that there was a new way of reading, another type of activity, distinct from book reading. Given this, the study began with an attempt to systematize the many different ways of reading, dividing them into three modalities that seemed to encompass the differences. Hence, the types of reader were classified into: the contemplative, the moving, and the immersive reader. This typology began to arouse interest, especially among educators. Given the need to recapitulate it in order to continue this article, a brief explanation follows, among others already published.

THE CONTEMPLATIVE READER

This is the reader of printed texts, whose practice accompanied the history of the book. Contemplative reading is a practice of intimacy between the reader and the text, characterized by silent, individual and solitary reading. This kind of reading requires seclusion for mental concentration, along with the ability to experience situations and share thoughts, enjoying the unique opportunity to penetrate another person's feelings and ideas. Not surprisingly,

the privileged place for reading is the library, an environment which favors the development of a cognitive, imaginative and interpretative state of mind induced by the text.

This type of reader has before them durable, immobile, localizable, and manageable objects and signs: books, pictures, maps, and sheet music. It is the world of letters and lines, inscriptions are made possible by the porosity and resistance of the paper. Since they are located in space and last in time, books can be revisited. Being immobile objects, the reader seeks them out, chooses them, and deliberates over the time they should dedicate to them. Although the reading of a book is sequential, the solidity of it as a physical object allows comings and goings, returns, and resignifications.

From the sixteenth to the nineteenth century, books, encyclopedias and dictionaries were the privileged and almost exclusive means of transmitting knowledge, literature, cultured writing and culture in general. Thanks to them, European universities flourished. However, under the influence of the Industrial Revolution and of the new language-producing machines it originated (the photography camera, the telegraph, and the new printing machines), the sovereignty of the older media became be submitted to the competition of newspapers, magazines, and advertisements. Book culture began to coexist not only with these hybrid media, combining text and image, but also with the explosion of moving images in the movies. In this new environment, the moving reader was born.

THE MOVING READER

The cognitive profiles of the newspaper reader and of the cinema viewer are clearly different from the profile of the contemplative reader. This new type of cognition presents a rhythm of perception and attention adapted to the acceleration and vibration of large urban centers. Hence, this kind of reader is trained in fleeting distractions and evanescent sensations, whose perception has become an unstable activity of unequal intensities; this is a fast reader of the ephemeral, hybrid, mixed signs inaugurated by the newspaper. In sum: a fleeting reader, eager for news, a reader of short but agile memory.

In addition to the newspaper, the modern world brought in street advertising, which began to occupy the city with signs and messages. How is it possible to be oriented, how to survive in a big city without arrows, diagrams, signs, and immediate judgement, faced with the speed of the urban buzz? The book reader, a meditative observer anchored in time and space, who acts without urgency and endowed with fertile imaginative faculties, began to share their cognitive environment with the

D

The book as a cognitive prosthesis

moving reader, a reader of forms, volumes, masses, forces interacting, movements; a reader of directions, shocks, colors and lights that turn on and off.

There is a similarity between the way this reader moves in the big city - experiencing the movement of the train, the trolley, the buses and the cars -, and the movement of the movie cameras. Indeed, their sensitivity, adapted to the fleeting intensities of the incessant circulation of ephemeral stimuli is inherently cinematic. The speed of the cinematic rhythm and its audiovisual fragmentation of high impact parallels the shocks and intensities of modern life. Thus, while the book culture tends to develop logical, analytical, and sequential thinking, constant exposure to audiovisual content leads to associative, intuitive, and synthetic thinking.

In a retrospective view, we can see that this moving reader has been preparing human perceptive sensitivity for the emergence of the immersive reader, who navigates through the nodes and nonlinear connections of the Internet's informational spaces.

THE IMMERSIVE READER

The adjective "immersive" suits this kind of reader because, in informational spaces, the reader temporarily stops at screens and software for reading, in a universe of evanescent and eternally available signs. Cognitively prepared, this reader connects by nodes, following multilinear, multidirectional, and labyrinthine scripts that they also help to build by interacting with the nodes amidst texts, images, documents, music, videos, folders etc.

In the years following our publication on the immersive reader as the introducer of a new way of reading, many new studies have corroborated this idea. Nicholas Carr (2008) reports experiments showing that readers of ideograms and readers of alphabetic texts develop distinct mental circuits. Variations span across many brain regions, including those that govern cognitive functions such as the memory and the interpretation of visual and audio stimuli. This leads us to expect that, when one navigates the cyberspace, the brain circuits triggered differ from those that develop when reading a book.

In any case, it is worth underlining that the three types of readers - contemplative, moving and immersive - are not excluding, since the emergence of one does not make the previous one disappear. These ways of reading undoubtedly coexist and complement each other. However, in recent years, the transformations in digital culture and the acceleration of these changes have been astonishing. So much so that in that short time, thanks to the mobile equipment that makes

informational networks available in the palm of our hands wherever we are, a fourth type of reader, the ubiquitous reader, has emerged.

THE UBIQUITOUS READER

The ubiquitous reader emerged in the new spaces of hyperconnected hypermobility with an unprecedented cognitive profile that arises from the intersection of the characteristics of the moving reader with those of the immersive reader. The attributes of this type of reader appear in detail in Santaella (2013). This is a reader in a state of readiness, switching easily between two spaces: the physical, in which they move; and the informational, in which they transit by the gentle touch of their fingertips.

Ubiquitous is an adequate adjective because this reader is continually situated at the interfaces of two simultaneous presences, the physical and the informational, reinventing the body, the architecture, the use of urban space, and the complex relationships regarding ways of inhabiting. This has repercussions in the spheres of work, entertainment, services, market, access and exchange of information, transmission of knowledge, and learning.

From the moving reader, the ubiquitous reader inherited the ability to read and transit between shapes, volumes, masses, interactions of forces, movements, directions, lines, colors, lights that turn on and off, clues, and maps. . . This reader changed their pace, synchronizing with the nomadism proper to the acceleration and buzz of the world in which we circulate in cars, collective transportation, and walking fast.

While being bodily present, roaming the physical environments – home, work, streets, parks, avenues, roads – and reading the signals and signs that they emit nonstop, the moving reader, without having to change gears or places, is also an immersive reader. At the slight touch of their finger on the cell phone, under any circumstances, they can penetrate the informational cyberspace, just as well as they can talk quietly to someone or to a group of people that might be twenty centimeters or continents away. What characterizes this reader is the unique cognitive readiness to be orientated among the surrounding people and multimedia connections, without losing control of their presence and of their surroundings in the physical space (Santaella, 2013, pp. 265-284).

It must be emphasized once again that one type of reader does not replace the others. Since each one of them develops different cognitive profiles, they are more complementary than excluding. This means, among other things, that the informational structure of the book and the contemplative reader it requires both remain alive and active.

CONTEMPLATIVE READING AND OTHER TYPES OF READING

The digital revolution is increasingly omnipresent, overwhelming our lives with the most varied cognitive prostheses. However, none of them perform the reflexive function that we can only experience by reading a book. When we refer to books, we do not necessarily mean the paper objects. The reading devices can be of other kinds: an iPad, a Kindle, it does not matter. What matters is the way information is formatted and made available for a specific act of reading, which requires a calm and focused diving into a textual content that unfolds over time. This is the type of activity that cannot be performed without the silent resting of the body. A silence capable of activating the mind for the incorporation and memorization of a content that is being built step by step, in webs of meanings that grow after the reader gives in to the text.

In the face of the flood of information that gets to us through devices connected to networks, contrasting with the cognitive processes inherent to reading a book, Carr published an article of great impact in 2008, in which he argues that the internet is transforming our brains for the worse. In 2010, he published a manifesto book, a bestseller that, under the title of *The Shallow: What the Internet is Doing to Our Brains*, made him a Pulitzer Prize finalist in 2011, the same year in which the book was translated to Portuguese.

To justify his position, Carr (2008) draws on a series of studies, which he completes with the considerations of Maryanne Wolf, author of the book *Proust and the Squid: The Story and Science of the Reading Brain* (2008). For this author, according to Carr, the style of reading promoted by the internet places efficiency and immediacy above all, a condition that may be weakening our ability to read deeply, which emerged along with the book. Wolf is peremptory: “When we read online... we tend to become ‘mere decoders’” (quoted by Carr, 2008, p. 9). This impairs our ability to reflect and interpret, that is, it fails to develop the mental skills that deep reading provides.

The works of Carr (2008, 2011) and Wolf (2008) generated great repercussion. The ideas of the latter gained continuity in her latest book, *Reader, Come Home: The Reading Brain in a Digital World* (2019). Less sensationalistic and more thoughtful than Carr, Wolf, a recognized cognitive neuroscientist, takes up her concern with what she calls the “reading brain” as we move from a literacy-based culture to a culture based on radically different forms of communication. Her questions are clear:

will the combination of reading on digital formats and daily immersion in a variety of digital experiences - from social media to virtual games - impede the formation of the slower cognitive processes such as critical thinking, personal

reflection, imagination and empathy that are all part of deep reading? . . . Or will these new technologies provide the best, most complete bridge yet to ever more sophisticated forms of cognition and imagination that will enable our children to leap into new worlds of knowledge that we can't even conceive of in this moment of time? (p. 17)

Along the book, the author avoids binary solutions, emphasizing her decision to work for a global literacy, which involves the use of tablets, as she considers to be “of utmost importance to be informed by the growing knowledge on the impact of different media” (Wolf, 2019, p. 21). According to her argument, the Internet is full of reports of empirical researches on the cognitive transformations in cyberspace users, all of which come to conclusions confirming that an unprecedented way of reading has been inaugurated on the web.

On the same subject, Chafee (2014, p. 459) refers to a research conducted by the University College London during five years, based on the observation of the habits of users of two popular websites. The study found that people who used the websites exhibited a fragmented form of activity, jumping from one source to another and rarely returning to any source formerly visited. They usually do not read more than one or two pages of an article or book before clicking at another website. Sometimes longer articles are saved, but there is no guarantee that they will be read afterwards. The conclusion of all this is obvious: reading online is not the same as reading in the traditional sense of the word.

Krane (2006) reports a study conducted by the Neag School of Education, at the University of Connecticut, which discussed what happens to people when they do not engage in deep reading. This study also debated the implications of a society in which individuals have access to a large amount of information from the Internet but lack the skills to analyze it. This is certainly a matter of great concern. Anyone can post anything on the Internet, and today's users are not prepared to evaluate the information they find there. The lack of criticism is intensified because people do not develop the habit of checking the sources and accuracy of what they read online. This is even more worrying when considering young people in the process of education.

What we have called the new attention economy (Santaella, 2010, pp. 311-322) refers to the effects of modern information technologies on our mental states. An endless stream of phone calls, many of which are now made for free on WhatsApp, combined with e-mails, text messages, tweets, accompanied by updates from friends on Facebook or Instagram, all in the midst of everyday chores, are part of an institutionalized culture of

D

The book as a cognitive prosthesis

interruptions that hinders concentration and creative thinking. Although each era is challenged by its own technologies, the current technologies are programming us to be continually interrupted. New stimuli trigger our adrenaline, and our body thus rewards us for paying attention to what is new. However, living in a dominantly reactive manner minimizes our ability to pursue goals.

In an interview with a 32-year-old executive from a transnational corporation, as part of a research project, López-Ruiz (2018) reports one of the interviewee's responses: "I used to enjoy reading," she said, "but I haven't been able to get to the end of any book" (p. 309). In fact, not only executives, but also researchers and academics are beginning to suffer from the same symptoms.

However, without jumping into catastrophes, we must consider that the nature of the digital world is increasingly revealed as characterized primarily by ambivalence. On one hand, the accumulation of informational gadgets offers us extraordinary opportunities, the potential for connection and learning. At the same time, there is no shortage of criticism for the fact that they undermine our capacity of paying attention. The image of the successful person is often that of a frantic multitasking person who suffers from lack of time and is constantly interrupted. However, it is not difficult to predict that if we continue to forget how to use our abilities of understanding, we will become increasingly dependent on extreme thoughts, superficial ideas, and frivolous relationships, which open the way for tyrannies and misunderstandings.

On the other hand, it is necessary to consider the possibility of an appropriate and effective use of what is sought in the digital networks. Such use requires skills sometimes more complex than those mobilized when reading a book. This is what was found, for example, in a research conducted at the University of Connecticut (Leu et al., 2014). These skills involve reading search engine results, critically evaluating the accuracy of online information; summarizing information from multiple hyperlinks and communicating clearly, via e-mail or WhatsApp. New reading and writing skills are needed for the new times.

For this and other reasons, we should not cultivate prejudices or constraints concerning the current mental state of readers who scramble uninterruptedly in the networks, quickly passing through textual and multimedia fragments. However, at the same time, we need to defend the maintenance, especially in educational processes, of the contemplative reader, that is, of the mental concentration required for the development of cognitive skills that are only developed by reading a book.

REFLECTIVE SKILLS PROVIDED BY BOOK READING

Roger Chartier (2007) makes a similar argument, considering that, far from the emergence of a war among the different ways of reading, there is a tendency towards complementarity that, in the case of book reading, should be encouraged through attractive and effective educational strategies.

In addition to its aid in learning, technology circulates texts intensely, openly and universally. I believe it will create a new kind of literary or historical work. We now have three forms of text production, transcription and transmission: hand, print and electronic - they coexist. (Chartier, 2007, p. 3)

It is not a coexistence by similarity, but by complementarity. We should bear in mind that network reading “happens in a fragmented way, in a world where each text is thought of as a separate unit of information.” The book, on the contrary, “gives the reader the perception of totality, coherence and identity - which does not happen on the screen” (Chartier, 2007, p. 18), because the book requires a slow and reflective reading practice. “And this is different from jumping from one piece of information to another, as we do when reading the news or a website. Therefore, I have no doubt that print culture will continue to exist” (Chartier, 2007, p. 20). The survival of the book form is guaranteed, first of all, because

the electronic text deprives the reader of the criteria for the judgment of value that exists in the print world. Historical information published in a book by a respected publisher is more likely to be correct than information published in a magazine or website. (Chartier, 2007, p. 30)

It cannot be ignored that there are qualified websites and unqualified books. Nevertheless, “a system of references hierarchizes the possibilities of success in the printed world.” The same procedure is not present in the digital space. “This allows the existence of much plagiarism and false information. We need to provide critical tools for tracking and correcting information on the Internet, preventing the machine from being a forgery vehicle” (Chartier, 2007, p. 30).

It seems appropriate to call the book reader “contemplative” because this reader profile is, in fact, the one that best fits the skills of this attribute. Such a nomenclature must be on the right track, since a number of authors have resorted to it. It is also adopted by Wolf (2019), and even by the authors she refers to, as in the following quote:

D

The book as a cognitive prosthesis

To read, we need a certain kind of silence... which seems increasingly difficult to find in our society, overly subjugated to communication networks... and in which what you want is not contemplation but a strange kind of distraction, a distraction disguised as information seeking. In this scenario, knowledge cannot be a victim of illusion, even if it is a profoundly seductive illusion, with its promise that speed can lead us to enlightenment, i.e. that it is more important to react than to think deeply. Reading is an act of contemplation ... an act of resistance in a landscape of distraction. It makes us adjust our accounts over time. (Ulin quoted by Wolf, 2019, p. 221)

“Contemplative” is also the term used by Beres (2017a), author of the book *Whole Motion: Training Your Brain and Body for Optimal Health* (2017b), when he calls our attention to the mental benefits provided by contemplative activities. This kind of reading, according to the author, helps in the development not only of fluid intelligence but also of emotional and intellectual intelligence. Beres (2017a) mentions a research conducted at Stanford University on the difference between reading for pleasure and focused reading. Blood flows into the brain through distinct neural areas according to the way the reading is conducted. This means that focused, careful reading implies specific mental abilities.

In her article “Power of Thought: Towards a Political Philosophy of Reading,” Tiburi (2016) also refers to the act of reading a book as “contemplative.” According to her, “the concept book does not imply only one size. We can edit micro books, macro books, books with texts, books with images, but the book is an object that requires contemplation” (p. 22). The author continues:

A book is always an object of contemplation. Contemplation is the first reflexive gesture. When I contemplate, I can think, it means that I become potent to think. So far, there is no written book that has not provoked or that is not yet to provoke – as authoritarian as it may be or seem – the chance to think. Therefore, when a book that promotes stupidity or authoritarianism emerges, it always evokes the precariousness of its own content, because the act of reading implies the attention and concentration – in a word, contemplation – that lead to thinking in the sense of analysis and criticism. The book is, regardless of its support, thought power. (p. 23)

It is quite curious to note that Tiburi (2016) also introduces the term “reflective” – which, by the way, we used before being aware of her article, in a preface of the book *Digital Communication in the Age of Participation* (Santaella, 2016) as follows:

There seems to be no stop for the exponential changes in the technological curve: lives synchronized to physical spaces and informational clouds, internet of things, robot communities, affective computers, emotion readers, sensors everywhere, sentient environments and cities, wearable computers, nano robots. All this consists in a whole disturbing and disconcerting set of transmutations in the ecology of our existence, which is approaching us. The technological prostheses that sneak ever more intensely into our lives lack of reflective prostheses, of thoughts that dwell and linger, amidst this very complex state of affairs. This is necessary not only to describe our situation, but, above all, to think about it, to evaluate it, in order to promote a critical and ethical adaptation of human beings to these unprecedented conditions of existence. There is no prosthesis of more reflective powerful than the book. That is, thinking heads lovingly dedicated to the task of understanding things so that we can act better. (Santaella, 2016, p. 13)

The correspondence of the ideas of both texts is quite evident, especially when Tiburi (2016) also refers to the prosthetic function of the devices in our lives, advocating that the book “makes us relate to a time that escapes us by other means,” becoming our chance to “return us to ourselves” (p. 27).

READING SKILLS

Reading specialists often categorize two types of reading: intensive and extensive. The first concerns short texts and, as the name suggests, is a very close reading of the text, careful and detailed, attentive to the microstructural factors that ensure the cohesion, coherence and unity effect of a text. In turn, extensive reading has as object long texts, implying three levels of competence: comprehension, interpretation and dialogue. Therefore, these reading “levels” can be seen as steps of increasing complexity, from understanding to interpreting and from critical to creative dialogue.

Marcuschi (2000) listed the conditions involved in the reading of various types of texts, fundamental both for intensive and extensive reading; they are: (a) textual basis - presupposes the sharing of the same linguistic system between text and reader; (b) shared relevant knowledge - this step is more complex than the mere mastery of language rules, as a textual basis loses its effectiveness if the reader does not share the relevant knowledge contained in the text; (c) coherence - built not only in the production of the text but also in the act of reading, for even a coherent text can be read incoherently, and vice versa; (d) cooperation - implies bilateral negotiations and mutual collaborations between text and reader,

in concrete and real situations; (e) textual openness – the text opens in a range of interpretive possibilities; (f) contextual basis – when the range of meanings opens indefinitely, however, there must be a condition controlling interpretive excesses, insofar as contexts situated in time and space are present in the text and carefully considered by the reader; and (g) typological determination – implies that each type of text has its own restrictions and openings, for example, one can perfectly let their imagination fly in a fictional text, but an argument is expected to be faithful to the data or concepts in which it is based.

What the description of these conditions makes clear is that they are not isolated but create bonds. We can conclude from this that reading is not limited to the simple apprehension of literal meanings; understanding a text is not memorizing it and it is not a guessing game. To read is to handle inferences, to understand what the text implies, to perceive relevance and to establish various relations. Ambiguities and vagueness are highly valid in some types of text and unacceptable in others.

From the examination of these conditions, valid for both intensive and extensive reading, it is worth specifying what is particular to each of these reading modalities. Let us start with the intensive reading. The network of relationships that ensures cohesion, coherence and unity, that is, the perfect articulation of a text, has three levels, also articulated among themselves, namely: (a) the articulation of thematic elements; (b) the integration of the different parts of the text (title, paragraphs, discursive articulators, meta enunciative organizers); and (c) the variations in structure or superstructure that determine the overall order of the text and constitute the modalities of discourse (description, narration, dissertation) (cf. Santaella, 2014, pp. 83-87).

Knowing how to read, therefore, is discovering, by a nontransferable path, the true pleasures of reading: the passages that generate thrill, because they pinch the most sensitive nerves of our sensibility, or those that disturb us by expressing truths from which we try to hide. In other words, passages that bother us because they provoke our discordance or that encourage us by instigating our consent; In short, passages that disconcert us because they go beyond our comprehension, requiring the effort of transformative learning (Santaella, 2014, p. 84).

As for the extensive reading, its levels of complexity grow from the comprehension to the interpretation and from this to the dialogue with the text. The first step does not mean simply repeating what the text says, but rather giving it the respect it deserves by following in its footsteps, the tracks of its meaning. As Borges (1971) states, “reading is still a post-writing activity: more resigned, more civil, more intellectual” (p. 8). This does not mean that comprehension should be confused with the simple capture of meanings, but

that it is about interacting with the text in a meaning-making process that largely depends on the reader's activity.

We only go from the understanding to the interpretation when we have some confidence that enough attention has been given to the first level. In her reflections on "reading in continuing education," Cintra (2008) suggests that "the elementary school has been working with the notions of comprehension and interpretation almost as synonymous" (p. 41). In her explanation, the author discusses the difference between these two abilities, in a very similar line to what we defend here. Only after understanding "does the reader interpret, that is, broadens the meanings of the text" (p. 37). Thus, interpreting is entering into bilateral negotiations with the text. This is evident in the exploring of the openness that the text offers, or not, for alternative comprehensions. The passing from the interpretation to the critical dialogue with the text is made clear by Lajolo (1997):

Each reader, in the individuality of their life, intertwines the personal meaning of their readings with the various meanings that the text has accumulated throughout its history. Each reader contains the history of their readings, each text, its own history. A mature reader is one who, in contact with a new text, merges the meanings of all the texts previously read into its meaning. In addition, knowing the ways a text has already been interpreted, they are free to accept or reject them, being able to superimpose the interpretation that arises from their dialogue with the text. In short, the meaning of any new text pushes away, affects, and resizes the meaning of all others. (pp. 106-107)

From the comprehension to the interpretation and from the latter to the dialogue there are stages of increasing maturation that can transform distracted and dispersed readers into "even blacker and rarer swans than good writers" (Borges, 1971, p. 8). This is what said Jorge Luis Borges, a great teacher of all masters, with his offerings for the lovely activity of reading. ■

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