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„Not Exactly Reading"

Digitalisation and technological innovations have confused our traditional theories of reading; key-concepts of literacy (e.g., reading and writing, text and context, comprehension, reception, and interpretation) have become slurred and vexed, including teaching and assessing reading. This confusion resulted in a debate that, among other issues, has provoked the question of whether digital reading can be considered as reading, or it is just a distraction from reading. (Coyle 2008; Badulescu 2016) To decide on this dilemma, I suggest three attributes: (1) act, (2) reading material, and (3) device that can determine the reading. Concerning their relation, the device (the third attribute) determines the reading material (the second attribute) and the act of reading (first attribute). The consideration of the significance of the device is in harmony with McLuhan 1967's ideas about the determining role of medium and technological determinism; however, it is not a necessary presumption of my ideas. Based on the above three attributes, I claim that digital reading is reading, but a special, extended version. Digital reading shows various similarities to print reading but also differences as well; however, these latter are not that significant that could validate the exclusion of digital reading from the category of reading or qualify it as a mere distraction. Moreover, applying digital devices for reading besides traditional reading means a new opportunity for comprehension and cognitive development, and these are essentials in improving the reading skills of future generations. Engaging children in the complex mental, physical, and sensual experience that reading can give, irrespectively of the type of reading, is the biggest challenge to accomplish in the field of reading in the 21 st century.

Keywords: *Digital Literacy, Attributes of Reading, Reading, Text, Reception, Comprehension, Digital Devices, Technological Determinism*

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"Not Exactly Reading" – The Nature of Reading in the Era of Screen

Krisztina Szabó

Abstract

Digitalisation and technological innovations have confused our traditional theories of reading; key-concepts of literacy (e.g., reading and writing, text and context, comprehension, reception, and interpretation) have become slurred and vexed, including teaching and assessing reading. This confusion resulted in a debate that, among other issues, has provoked the question of whether digital reading can be considered as reading, or it is just a *distraction* from reading. (Coyle 2008; Badulescu 2016)

To decide on this dilemma, I suggest three attributes: *(1) act, (2) reading material*, and *(3) device* that can determine the reading. Concerning their relation, the *device* (the third attribute) determines the *reading material* (the second attribute) and the *act* of reading (first attribute). The consideration of the significance of the *device* is in harmony with McLuhan 1967's ideas about the determining role of medium and technological determinism; however, it is not a necessary presumption of my ideas.

Based on the above three attributes, I claim that digital reading *is* reading, but a special, *extended* version. Digital reading shows various similarities to print reading but also differences as well; however, these latter are not that significant that could validate the exclusion of digital reading from the category of reading or qualify it as a mere distraction. Moreover, applying digital devices for reading besides traditional reading means a *new opportunity* for comprehension and cognitive development, and these are essentials in improving the reading skills of future generations. Engaging children in the complex mental, physical, and sensual experience that reading can give, irrespective of the type of reading, is the biggest challenge to accomplish in the field of reading in the 21st century.

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Introduction[1]

The main question of this paper is whether digital reading can be considered as reading or not. The significance of this issue is two-folded: (A) there must be a cause that query the nature and notion of digital reading, and it would be essential for reading research to

know it. (B) The answer has a huge impact on the future of reading, not just on the act and process, but teaching reading and creating educational material as well as on improving educational systems in the long run. Decisions on involving digital devices in everyday teaching and learning practices largely depend on (or should depend on) our knowledge about digital reading, on how we determine digital reading at first base.

To find the right answer and solve the definitional confusion concerning digital reading is a significant step in the field of technology as well. Today technological innovations of reading focus on two conflicting issues: making digital reading similar to *and* different from print reading at the same time. (Bennett 2020; Lamb 2011) On the one hand, it means innovations that try to copy paper-like *reading material* and book-like reading *devices* to imitate the *act* of print reading in a digital environment as much as they can. On the other hand, innovators tend to emphasise the opportunities, benefits and positive effects of going digital and show that reading in the traditional sense is outdated, and it is worth to switch on the screen to keep up with the rapid changes of the 21st century. The problem is that neither the first nor the second endeavouring seem to reach their goals at present – but in my concern, solving the definitional questions of digital reading could help in these processes.

To define digital reading, we need to identify the attributes on which the decision something is considered as reading or not depends. Reviewing the contemporary literature of reading, I conclude that there are three attributes necessarily describe reading: *(1) act, (2) reading material, and (3) device.* I suggest an examination of digital reading according to these three attributes to decide whether digital reading is reading or not. I consider the answer essential in reading research because of the followings: *if* digital reading *is not reading*, then how should we call, what and how should we think about the process of – let us refer to it as – 'digital content consumption' that, due to technological devices, exposes people's everyday life? *If* digital reading *is reading*, then what are the reasons that question its notion and cause as deep theoretical confusion as the threat of separating digital reading from print reading entirely, exclude it from activities commonly considered as reading, moreover label it as an activity that distracts one from reading?

If we put an end to the debate of print vs. digital reading and make a well-established decision on the notion of digital reading, technological innovators would be free from the constant compel of fulfilling the two folded requirements of making digital reading similar to or different from print reading. Then they could start to focus on what matters: to ensure the opportunity and increase the quality of reading with the help of technological innovations. From the viewpoint of educating future generations and raising the level of people's literacy skills word widely, this seems to be a reasonable and preferable aim.

Accordingly, the first part of this paper (*Section 1-3)* discusses the three attributes of reading, demonstrating how they define both print and digital reading and proving that digital reading, in contrast with other opinions (Badulescu 2016; NEA 2007), *is reading.* Then, in the second part (*Section 4-5*), the focus is on the role of technology in 21st-century reading, by showing the determining force of the third reading attribute (*device*), that influences the second (*reading material*), and together with the third (*act*) reading attributes as well. After a summary of the print vs. digital debate, the paper ends with a discussion of the challenges of reading in the *Digital Age*.

The narrow target group of the paper is one of the researchers and teachers who are constantly working on the improvement of teaching reading, creating digital educational material and digital reading platforms. In a broad sense, the paper addresses all researchers and teachers who are interested in the enhancement of teaching reading literacy skills among children.

1. Three Attributes that Define Reading

Imagine a child sitting in an armchair with a book in her hands, staring at the pages, occasionally turning them, and following the lines on the paper with her eyes. Now, what is she doing? How can we define this activity? Probably, we answer that she is reading a story. Since she is smiling, we could estimate that the story has an impact on her thoughts and feelings, she is constructing some meaning from it, and thus she comprehends it somehow.

Now, let us imagine another child, who is not holding a book, but a technological device, a tablet that can display the story on its screen digitally. The child is staring at the screen, occasionally touching it, pressing a button, and following the lines on the screen with her eyes. Question: what is she doing? How can we define this activity – individually and in contrast with the child-with-the-book-case? One can estimate the answer that she is reading a story, too. Since she is smiling, the story has probably an impact on her thoughts and feelings, she is constructing some meaning from it, and thus she comprehends it somehow. According to this, both children are reading, one is doing a print reading, while the other one is performing a digital reading.

The opinions that label the first case (child-with-the-book) as reading are common; however, in the second case (child-with-the-tablet), judgements are divided. For instance, according to the *National Endowment for the Arts (NEA)* study that discusses the issue of reading of American children in 2008, reading digital contents or learning online is "not reading", but „activities that distract one from reading" (Coyle 2008, 3-4). Moreover, in the newest 2018 study (NEA 2018), NEA still holds to this statement. In line with this, a 2016 study states that digitalism will give us a new experience, "which is not exactly »reading«". (Badulescu 2016, 148) Thus, 'digital reading' intrinsically refers to a distracting activity or new experience, and these are in contrast with reading. However, if children who are consuming digital content are doing something that is "not exactly" reading, then what are they *exactly* doing?

There are those – including me – who claim that digital reading *is* reading as well, and we should handle it accordingly in research, surveys, improvements, and educational practices. The supporters of this opinion do not claim that digital reading is entirely similar to print reading, they are aware of the significant peculiarities of digital reading, but claim that the total exclusion and separation of digital reading from traditional reading is not an intelligible consideration. (Coiro and Dobler 2007; Bolter 2001; Cull 2011; Dougherty 2011; Dyson and Kipping 1998) However, if we would like to go beyond the suppositions mentioned above and decide on the notion of digital reading to separate it or, on the contrary, handle it within the category of reading, it is necessary to discover the attributes that have the defining force to determine an activity like reading. Examining the contemporary literature on literacy and comprehension theories, I suggest three possible and sufficient attributes in the process of defining reading. These are (a) the *act* of reading, (b) the *material*

of reading, and (c) the *device* of reading. Let me demonstrate the significance and necessity of these three attributes with the two cases (child-with-the-book and child-with-the-tablet) presented at the beginning of this section.

In the child-with-the-book case, the *act* is the physical and mental process of receiving the reading material, the *reading material* is the printed text, and the *device* is the book. Without the *act* (reception), the child is just handling the *device* (book) with the *reading material* (text). Without the text, the child cannot do the reception, just handling the book. Besides, if there were no book, there would not be a surface or display for the text; therefore, the reception would not be carried out.

In the second, child-with-the-tablet case, the *act* is the physical and mental process of receiving the reading material, the *reading material* is the digital text or content[2], and the *device* is the tablet. Without the *act* (reception), the child is just handling the *device* (tablet) with the *reading material* (digital text or content). Without the text or content, the child cannot do the reception, just handling the tablet. Besides, if there were no tablet, there would not be a surface or display for the text or content; therefore, the reception would be impossible to carry out.

Now, at first glance, it seems that both activities share all three attributes of reading; thus, we can state that both children are reading. We could add the label 'printed' in the child-with-the-book case; however, reading in the traditional understanding means reading *printed* materials; thus, this additional label seems unnecessary. In contrast, the label 'digital' in the child-with-the-tablet case seems an adequate refinement, since there the reading material is a digital one and displayed on a digital surface – what is a significant difference comparing to traditional reading. Yet, what is this 'significant difference' that makes an additional specifying label necessary and adequate? Let us have a closer look on the first attribute, namely on the *act of reading*. To do this, the question 'what does it mean to read something' – for the sake of example, to read a printed or a digital book – seems to be the right one.

2. The Act of Reading

In the case of the print, we have several probable alternatives that are easily labelled by the verb 'to read a book' such as to open it and read its full *text* with all the appendixes, footnotes, table of contents from the beginning until the very end (when each letter counts). Alternatively, to open a book, and read *certain parts* of the text according to an exact intention (when only certain parts and information count), either, to open a book and read the full *story* (when the story, the message counts as a whole).

Printed and online literature about the definitions of reading varies according to scientific fields and purposes, no matter whether we talk about printed or online sources. Nowadays, when one would like to know something, the easiest and fastest way is to search for it on the Internet. Doing this, one can found almost 4 billion results for the notion 'reading' via Google and 5 million via Google Scholar. To get a sensible grab on these find-

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[2] Section 3 will discuss the issue of the notion of content in the case of digital reading.

ings, it is worth to narrow the focus on online dictionaries, as the most basic literature for someone who intends to find the meaning of a certain notion. Let me do this, and present three examples.

The first one is (a) the *Cambridge Dictionary*, which says that reading is "to say the words that are printed or written […]; to understand and give a particular meaning to written information, a statement, a situation, etc. […]; to look at words or symbols and understand what they mean." ("Reading" and "Digital Reading" definitions 2020) Briefly, *to say words*, *to understand and give meaning to the written*, *to do something with the written*. In another phrasing: performing an *act* oriented to the printed or the written. In contrast, (b) *Merriam-Webster Dictionary* refers to reading as "to perform the act of reading words: read something". ("Reading" and "Digital Reading" definitions 2020) Thus, performing an *act* oriented to words. The third one is (c) the *Longman Dictionary*, which considers reading as "perceiving a written text in order to understand its contents" ("Reading" and "Digital Reading" definitions 2020) This can be silent or oral, and this latter can be done with or without understanding the content. Briefly, reading is the *act* of perceiving the written.

If we put these three definitions next to each other, we get the following: (a) performing an *act* oriented to the *print* or the *written*; (b) performing an *act* oriented to *words*; (c) the *act* of perceiving the *written*. One can see that they share the keywords of act, print, written and words, and that they refer two out of the suggested three attributes of reading: (1) *act* (act) and (2) *reading material* (print, written and words). Let us go further with the first one and discuss *act* in detail.

According to the previous definitions of the chosen three online dictionaries, *act* refers to
(a) say (words); understand (meaning); give (meaning), and look (at words or symbols);
(b) perform (reading);
(c) perceive (written text).

If we specify the discussion and turn the focus on scientific studies instead of the selected online dictionaries, we face various tenors of defining reading. Including but not limited to, here are four examples that are worth mentioning here. According to them, reading is:

(a) "a number of interactive processes between the reader and the text, in which readers use their knowledge to build, to create, and to construct meaning." ("What is Reading?" 2020)

(b) "a process undertaken to reduce uncertainty about meanings a text conveys. The process results from a negotiation of meaning between the text and its reader." ("Reading" 2020)

(c) "the act of constructing meaning from *text […] The act of reading is supported by reader motivation and positive reader affect.*" (Afflerbach 2017)

(d) "a temporal activity, and one that is not linear". (Iser 1974, 277)

From these definitions, the following keywords are important:
(a) interactive, processes to build, to create, to construct (meaning)
(b) negotiation (of meaning)
(c) the act (of constructing meaning)
(d) not linear activity

The importance of this brief definitional analysis is to demonstrate that reading by nature is not a passive reception, but a complex and constructive mental activity. Readers

actively do something with the reading material both in a physical and in a cognitive sense. There are parts of this activity that are explicit, mostly the physical ones (such as saying, performing, looking), while others, the cognitive ones, are hidden (e.g., understanding, perceiving, giving, creating, constructing meaning). These latter were in focus for a long time when debates were about the mental activity of readers. Theories about the reader who is a passive receiver, who do not have any influence on reading, accept the reading material as it is, are exploded notions – especially in the case of digital reading, where the increased mental activity is needed to keep up with the dynamic reading environment. (Snowling and Hulme 2007)

Although these above presented reading definitions did not refer directly to print or digital reading, at this point we do not have any reason to think the contrary, because they say nothing specific about the medium (e.g., book, newspaper, and flyer) or the genre (e.g., high-quality literature, poem, letter, and essay) of reading, but a live mental and physical activity, that creates a connection between the *reader* and the *text* while constructing meaning. But what if the definitions exclude digital reading indeed? Let us have a closer look at the child-with-the-tablet case.

The question and the possible answers seem to be the same: what does it mean to read a book? To open a digital book on an electronic device and read its full text (with all the appendixes, footnotes, table of contents), from the beginning until the very end (when each letter counts)? Alternatively, to open a digital book and read *certain parts* of the text according to an exact intention or read the full *story* of it (when the story and the message do count as a whole).

By conducting the same research in the dictionaries mentioned above for definitions, as in the case of print reading, one can find the following concerning digital reading. (a) *Cambridge Dictionary*: "You can also search for digital or reading." ("Reading" and "Digital Reading" definitions 2020) (b) *Merriam-Webster*: "The word you've entered isn't in the dictionary." ("Reading" and "Digital Reading" definitions 2020) (c) *Longman:* "Did you mean capital gearing; digital native; sight-reading?" ("Reading" and "Digital Reading" definitions 2020) Surprisingly, it seems that (online!) dictionaries do not consider the notion of digital reading. However, searching for the keyword 'digital reading' results in almost 3 billion via *Google* and 4 million via *Google Scholar*. According to these findings, digital reading is

    (a) reading digital or electronic text via screen where the bearer of the text is a digital/electronic device.

    (b) reading in a digital environment.

    (c) online reading. (Coiro and Dobler 2007; Brown 2001; Nicholas and Clark 2012)

The first thing to notice here is that digital reading is reading *by definition*; it is originally described with the notion of reading. The second is that the reading material (digital, electronic, online text) and the reading device and environment (digital/electronic, online) seem to have an important part that it is worth to make a distinction between offline and online digital reading, as follows:

Offline reading is reading digital or electronic texts, which are not connected to the Internet. They are mostly interpretations of printed texts or texts where hyperlinks do not lead readers out of the text. In contrast, *online reading* is reading digital or electronic text, which is connected to the Internet. They are not just interpretations, but interactive texts

where hyperlinks lead out readers from the text. "Online reading is the process of extracting meaning from a text that is in a digital format. Also called digital reading". (Nordquist 2019) Here three issues do need further discussion:

(a) process,

(b) extracting meaning,

(c) text that is in a digital format.

The first one (a) process remained the same act as the one in the printed case in the sense of the task of word recognition, encoding, text-model formation, strategic processing. (b) Extracting meaning is the main purpose of digital reading, and it is also about the act of finding the meaning of the actual text. However, the main change comparing print reading is exactly in the latter, namely in (c) text, because texts in digital format are "still words being taken in on a computer screen" (Gomez 2008, 44), but completed with additional illustrative and explanatory digital elements, that we call together as digital content[3].

Now, according to the suggested three attributes, print and digital reading seems to share the first one: both have the attribute of the *act*. However, the question remains, are these two activities, the *act* of reading a *printed book* and reading a *digital book* the same or not? Are they equal to reading the news from a crinkly newspaper or on the website of The New York Times, for example? Alternatively, to the case of reading a handwritten letter or an e-mail? Do they remain similar if we change the object of the act of reading, namely the *reading material*? What is the reading material *at all*? Now, the next section is going to discuss the issue of *reading material* as the second attribute necessary to define reading.

3. Reading Material

The major question of this section is how to define text or content in the digital age. Here the necessity of distinguishing text and content is rooted in the referential doubtfulness of digital words, symbols, and other visual elements of digital devices, practically of screens. The notion of text is as complex as the notion of reading is and has plenty of definitions according to scientific fields. "The term text has not been easy to define since 1960s. It was first made difficult by the poststructuralist writers, such as Derrida, Barthes, and Foucault, but their notion of the text and their own texts had relatively little impact on the educational community. Now the computer, which is indeed having a great impact on educational theory and practice, has presented further complications." (Bolter 1998, 3)

In the simplest form, everything is text *what is written*. Alternatively, as the *Organisation for Economic Cooperation and Development (OECD) Programme for International Student Assessments (PISA)*'s official framework documents on literacy says, "the phrase text is meant to include all language as used in its graphic form: handwritten, printed or screen-based." (PISA2018 2016, 13). The decision whether something is a text or not is normally quite easy in the case of handwriting: we do not trouble much with the question whether a shopping list for our husband, a short note for a colleague, or grandma's recipe are texts or not. We consider them as texts, while drawn charts, funny pictures on the margin, or il-

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[3] I will discuss the issue of content in the next section.

lustrations in an old codex are what they are: additional explanatory or illustrative elements, but not parts of the texts. If we sketch a route to explain to a tourist the shortest way to a building, for instance, we call it a map and not a text. If we write a guide without a sketch, it is a text. If we add a schematic map to the margin, we still consider the whole thing as text. If we remove the drawing, it is still a text. However, if we remove the lines and only the map remains, the nature of the creation changes, and it became a map or a picture again, and it is not a text anymore. If we put this map-example into the printed environment, individual guides without drawings or guides with drawings are considered as texts, while a sketch of a route without phrased instructions is just a map.

It seems that the line between text and non-text lies in the proportion of written words to other visual elements, both in the cases of handwriting and print. If the amount of words is higher than the amount of other visual elements, we talk about a text; while it is smaller, we talk about something else. However, if we would like to define the demarcation of texts and non-texts in a quantitative form, and give the exact proportion, percentage, and numbers, we immediately found ourselves in a moorland. Let me show this by an example: if we go to a copy shop to print something out in colour, and the number of words and the size of the picture is bigger than a given percentage of the paper, we have to pay a higher amount of money. Nevertheless, this "given percentage" changes according to the price list of the actual copy shop. Now, following this string, we can try to define it by giving an exact percentage, such as a text is something in which the amount of visual elements do not go beyond 50% of the entire content. Then we must deal with questions such as what a visual element is, what is whole content, why 50% etc. Do we talk about screen size and the amount of visible text on the screen without scrolling or the complete content (e.g., an article) what we scroll up and down on the screen?

In the specific cases of a mathematical derivation, a formal logic explanation, a picture book, or a comic strip, for instance, the distinction obscure again. If the amount of mathematical formulas is smaller than the word-phrased explanation, we call it as a text, while it is on the contrary, we will not call it as a text anymore – this does not seem to be a rational separation. In another case, when a philosopher is writing an argumentative paper on formal logic, applying the current logical formulas in her paper, and the end, the amount of these formulas are higher than the word-phrased, descriptive explanations, will the paper lost its textual nature? It does not seem quite right. In the example of a comic strip, we normally ask, have you ever read the Batman comics; and we do not ask, have you ever seen (the pictures) of the Batman comics? Briefly, it seems that the two cases of handwritten and printed (in other words, non-digital/non-electronic or written or paper-based) wordings can be considered as equals in the regard of their textual nature.[4] However, when we involve digital (in other words, on-screen/electronic/typed/non-printed/online) text, the issue becomes more complex.

Digital text is "an electronic version of a written text. Digital Text can be found on the Internet or on your computer or on a variety of hand-held electronic devices. […] By nature, digital text is more flexible. It can be searched, rearranged, condensed, annotated, or read aloud by a computer". ("Redefining Literacy" 2020) However, if you have a digital

[4] Here I do not discuss the linguistics approach of textuality and the notion of text, because it would go beyond the scope of the paper.

text to read, you usually face other things besides text, such as visual elements, audios, and videos, built-in interactive tools – briefly: contents. What is a content? "Digital content is any content that exists in the form of digital data. Also known as digital media, digital content is stored on digital or analog [sic!] storage in specific formats. Forms of digital content include information that is digitally broadcast, streamed, or contained in computer files. Viewed narrowly, digital content includes popular media types, while a broader approach considers any digital information (e.g., digitally updated weather forecasts, GPS maps, and so on) as digital content." ("Digital Content" definition1 2020) Briefly, here we are talking about text, audio and video files, graphics, animations, images, and information available for download from or distribution on electronic media, such as e-books or iTunes songs. Basically, "if you are on the Internet, most likely you are looking at, watching, or listening to a piece of digital content" ("Digital Content" definition2 2020). However, in this sense, if everything on the Internet can be considered as content, and digital reading is consuming content, then watching a movie, listening to an audiobook, playing an online game should be also considered as reading, and this would be apparent nonsense.[5]

Then what can help us to understand and have a grip on the notion of digital text and content? Two things: the distinction of online and digital text and the notion of hypertext. An online text is more than a digitalised version of a printed text because the online nature of it essentially modifies its reading, meaning, and comprehension. Researchers call these "hypertexts", which are "linked to each other with hyperlinks so we can easily switch and jump between them, like in a kind of eternal, never-ending and always refreshed text." (Szabó 2015, 171) Hypertexts, also because of the online space, naturally "live together" with visual elements. This connection could be so complex that sometimes it is difficult to decide what is related to the main text, and what is just an additional illustrative or design element or a supporting icon of the digital device. However, this should not be too surprising: if the connection between an offline text and the visual is so strong and complex, then it should be at least the same in the case of online texts, too. Thus, reading material in a digital environment can be digital text or hypertext, and this latter includes additional interactive visual elements, but both types of texts reserve their textual nature. Videos, audios, and games are contents, can be part of digital reading material, but we watch them, listen to them, play them, but do not *read* them. At this point, I agree with the statement of the NEA study: reading digital content is "not reading" (Coyle 2008, 3-4), however, I still contradict that learning online is "not reading", but an activity „that distract one from reading" (Coyle 2008, 3-4). Here it is important that "learning" means reading, comprehending, and memorising a text, and I exclude activities such as learning skills by playing logical games or learning foreign words by listening to their pronunciations, etc.

Now, the child-with-the-tablet case looks like as follows: she is performing the *act* of reading digital text/hypertext as *reading material*, and this latter could be a digital book or article or interactive storybook as well as an e-mail or a Facebook post. Now, we have successfully determined two out of three attributes of reading; thus, it is time to turn our at-

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[5] Here I do not discuss the role of visuality in digital text, because it would go beyond the scope of the paper.

tention to the last one, namely on the *device*. The next section discusses the issue of the *device* and the question of whether it can overwrite the determining force of the other two attributes and exclude digital reading solely from the category of reading or not.

4. Reading Device and Technological Determinism

The huge influence of technological improvements on reading is salient, even from a brief overview of the history of reading. Not just on how and what we read but also the amount and spread of the act of reading. Shifting devices (from stone table to papyrus and parchment, then paper, at first handwritten, later printed), were huge steps that formed and improved writing methods as well as reading material. The more reading device became available, the more people got the chance to learn reading and perform the act of it. As reading devices improved, reading material became complex, and variant and the target group of reading widened. The privileged status of the act of reading has lost, and it became a common thing to do; now, being literate is a fundamental part of modern, educated societies. (Snowling and Hulme 2007; Baron 2009; Fischer 2003)

At first, reading was a social activity, when the one educated member of the community read aloud the written to the audience. Then, as time went by and technology changed, reading was slowly lowered, became silent and individual. People learned to read alone, reading devices such as books and newspapers gained their persistent roles, at first at institutions, then at homes. The availability of reading devices and materials naturally improved teaching reading, thus people's literacy skills. When text went on screen and became available all over the world, the amount of reading material, and the opportunities to read them suddenly grow endless. Today, in the Digital Era, when the dynamic hypertext, the opportunity of immediate feedback, editing, and storyline-forming rule the online space, reading seems to be social again. As *Bob Stein,* creator of the *Institute for the Future of the Book* puts it: „As sure as I was in 1992 that the future of the book was on screens, I'm now sure that it's social […] There's nothing ideal about reading by yourself […] That's just the way we did it for a long time." (Chant 2016) Skimming online content means maintaining "a jumping-off point for further conversations with people around the world". (Chant 2016)

However, due to technological improvements, the key-concepts of literacy as the fundament of communication, cognition, and learning became slurred and vexed. The change from print to digital is not just a simple platform shift as the previous changes, but a cardinal step in the history of reading. Today the question is not about the life and death of printed books but the future of reading. If we agree with McLuhan's theory of technological determinism, every medium shift changes culture since mediums are human perceptions, thus mediums have more power on society than the message itself. (McLuhan 1964) It determines what, how, and when we read, and thanks to the algorithms, do a far better job than human editors do. The consequence of this process is that digital texts are changing according to the requirements of electronic devices, and so are the print texts to keep up with the rapid digital transformation.

This previous issue can be easily observed through the debate about a choice of preference concerning print vs. digital. (Baron 2015) This is a quite heated debate about relatively subjective things, namely what device is comfortable and effective for individual

readers. Much research aimed to assess readers' opinions about print vs. digital reading by listing the pros and cons based on mostly on the reading device. Here I will not discuss them in detail but give a summary of some key points from the comparison, as follows.

Print books can be heavy, complicated to carry along, and have physical limitations in size, weight, and content compared to digital books. However, print books are not as hard for the eyes as digital ones; they can be easily noted on the margins, and the experience of touching, holding, flipping, and smelling them help in the reading comprehension process and memory. Digital books are easily shared, accessed, bought, and loaned from digital libraries, and with built-in digital tools such as vocabulary, searching function, and the opportunity of digital annotations is very practicable. However, they are easily injured, vulnerable, and go dead without regular charging, while print books last long but take up much room. Research shows that readers chose texts to the reading device, and not vice versa. Meaning that if a digital reading device (e.g., tablet) is more available than a print device (e.g., book), then the reader will choose according to the device and not the text. This would not be a scandal in the medieval ages when people did the same and read what was available in print, but today, when we have nearly everything in print, it seems at least strange to let our reading choices limited by the reading device. (Baron 2015)

The significance of the previous will be clear when we realise that the debate is about the effects of technological innovation on reading and education as well. I said education since reading and teaching reading is a fundamental educational issue. One could presume that technological innovations are in the service of training better readers; however, this is not that simple. There is much research about the topic of children's digital reading, and it seems that in some cases digital environment does not help; on the contrary, it distracts children and has a bad impact on their reading performance. Are we becoming lazy at reading? Or "studies clearly show that the addition of technology in the classroom actually has a positive effect on our children's reading and writing." (Konnikova 2014) However, other research claims exactly the opposite, namely that "the more we read online, the more likely we were to move quickly, without stopping to ponder any one [sic!] thought." (Konnikova 2014) "Good reading in print doesn't necessarily translate to good reading on-screen." (Coiro and Dobler 2007) Thus, on the one hand, some claim that format matters, and because of technological improvements, children read less, and their reading performance is poor.

On the other hand, some claim that format does not matter, but the storyline and the process of constructing meaning in a complex digital environment. As David Gatward (2017) puts it, it is "foolish to think that children and teenagers don't read when their primary mode of communication is the written word. […] "Do we care about how children and teenagers enjoy reading, or are we more interested in them meeting our ideal of what a reader is […]?" (Gatward 2017) This question seems to be adequate and has great significance in the 21st century – as the next section aims to show.

5. The Reading Challenge of the 21st Century

After discussing the previous issues of reading, one can ask the question of whether innovators, researchers, teachers, and those who are interested in the field of digital reading have any idea what are they doing? Because it seems that we have been collecting materials in electronic format and digitising books without having a vague consensus about the no-

tion of digital reading or at least a clear decision on the question of whether digital reading is reading or not. We have debates on these issues that can lead us to unity; however, at present, discussions seem to freeze rather than improve. While there are actors, such as the researchers of the NEA, who still claim that new technologies are antagonist to reading, and digital reading is not reading, others are forced to stay in the legitimate-digital-reading discussion rather than level up and start a conversation about opportunities of applying new technologies in the service of reading.

However, there are remarkable tenors to improve the activity of reading by technological innovation (e.g., paper-like displays, inbuilt programs that let us create handwritten notes and marks in digital texts, and find solutions for eye-pain caused by looking at screens for too long), but these are not undisputedly successful. Much research shows that despite the genius and available reading tools, people still prefer print to screen. Research shows that students usually print digital learning materials when they prepare for an exam would like to have a better understanding of texts or feel the same experience and joy as they feel while reading a printed book), and in this case, technological innovations still cannot help seemingly. (Baron 2009) Thus, Karen Coyle's (2008) question, "what technology would make the reading of electronic books appealing?" rightfully emerges. As she continues, it would be "important to have at least a tentative answer to this question before we commit fully to the digitization of library resources." (Coyle 2008) At present, two tendencies can be easily detected in the field of reading device innovation: one is about to make digital reading as similar to print reading as they can. The other one is to express differences between the two types of devices and alienate digital reading from print reading as much as they can. If we would like to approach these two inordinate tendencies, at first, we have to understand and reframe our concept of reading, if it is necessary. To reveal the fundamental similarities and differences of print and digital reading not because of the sake of competition or to proclaim the dominance of one in contrast with the other, but to find their right role and place in 21st-century reading, is a crucial step in the long run. In my consideration, accepting that digital reading is reading can be a starting point in this challenge. Finding a reasonable definition for digital reading helps to describe its true nature and understanding and interpreting digital reading can help to understand and interpret print reading in the digital age.

This latter is also important, but not a much-discussed issue. Print reading is an activity as well as digital reading; it also dynamically changes and needs new models. Thus, when we are talking about traditional reading and text, we must face the truth that they are not something unchangeable and constant things, but living notions are varying according to cultures, eras, and technology. Print reading is also changing with the innovations and examine the effects of these technological changes on print reading is essential. I suppose that we can find many attributes that try to fit the actual digital trends and form and fit print reading materials to digital ones. Thus, in the strong movement to make print content, print text to popular and appealing to readers, even the most traditional texts and books should keep up with new trends to reach the same experience as before. However, it is important to keep in mind that the duty of technology "was never the intent to replace the human experiences that are all around us. Rather, it's a tool that enables us to remove friction and frustration in the places where doing so can make the experience more meaningful or convenient." (Bennett 2020)

Therefore, the challenge of reading in the Era of Screen is to accomplish and bring back the missing experience of classic reading: engagement, emotion, and inner motivation, complex mental, physical, and sensual experience that makes print reading special. This is the way that we could eliminate the amount of distraction in screen reading so that it would be an extended version of reading, and not just a poor, ineffective but practical replacement of the old print reading.

Conclusion

This paper focused on the question of whether digital reading is reading or not. To decide on this question, I suggested three attributes that necessarily define reading: *(1) act, (2) reading material, and (3) device*. According to these, I concluded that digital reading is a specific, extended kind of reading that shows similarities with traditional reading, but significant differences as well. However, these latter do not deprive the digital reading of its reading nature or exclude it from the category of reading.

Besides the demonstration of how the three attributes define both print and digital reading, the paper discussed the role of technology in 21st-century reading, by showing the determining force of the third reading attribute (*device*) over the other two attributes. After a summary of the paper vs. screen debate, the paper closed with an outlook on future challenges of reading, emphasising the importance of theoretical clarity in the field of literacy. Reading is an activity; it constantly changes, no matter whether we are talking about print or digital reading. Thus, revising old definitions and creating new ones in accordance with technological improvements and finding a well-established definition of digital reading will ensure the opportunity and increase the quality of literacy skills improvement in the Digital Age. The paper aims to support these tenors with drawing attention on issues rooted in old school reading approaches and may be of interest to those researchers and teachers who are continually working on the improvement of teaching reading, creating digital educational material and digital reading platforms.

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