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A framework to the digital book design process

Maurício Elias Dick and Berenice Santos Gonçalves

Introduction

- 1 The current era is characterized by the use of technological tools in a wide variety of daily activities (Cordón-García and Fernández 2015), where digital has become the standard environment for individuals to communicate, socialize and consume content (Wischenbart et al. 2017). This situation opens space for the digitalization of several sectors of social life, a phenomenon in which products, processes and business models are transformed and restructured in face of new digital technologies (Brennen and Kreiss 2016). This is the case of the book, which undergoes a transformation (Cordón-García and Arévalo 2015), being one of the last frontiers in the digitalization of the media (Procópio 2013).
- 2 Because of its specificities, the digital book has brought with it important changes that have affected the agents of the publishing chain as a whole—considering author, publisher, distributor, library and reader—altering conception, production and distribution processes, as well as and the culture associated with the book (Cordón-García 2016, Cardoso 2015, Kroes 2011, Pwc 2010). While the roles of traditional players have taken on new meanings, relationships between chain links have been broken and new ones have been constructed (Pwc 2010).
- 3 Given the current dynamics and complexities, it is necessary to rethink how these contexts of change for digital books are perceived (Wischenbart 2018) and the way to deal with the editorial problem must be different (Silva and Borges 2016). As in other project situations, the product is not an isolated element (Moraes 2010), but it integrates an imbricated and mutant reality in which the parts actualize each other dependency and independence simultaneously. In the design context, it is fundamental to perceive the world in a broader way to understand the dynamics that revolve around the developing artifact (Moraes 2010). It is necessary to change the perspective from objects to

relationships, considering the parts, but also the whole, adopting a systemic thinking (Capra and Luisi 2014).

- 4 Under different denominations, such as “systemic thinking”, “systemic view” and “systemic approach”, this *modus operandi* deals with context and relationships in a system, considering the elements and the whole (Bistagnino 2009). Systemic thinking is based on systemic ideas such as the primacy of relationships, circularity, network and processes (Andrade 2014), involving a thought that occurs through relationships, patterns and contexts (Capra and Luisi 2014). Treated as a change of perspective, the systemic way of thinking can be applied to several disciplines as a manner of approaching the complex problems of the 21st century (Capra and Luisi 2014).
- 5 Based on these arguments, it is necessary to focus attention on the digital book design process from a systemic perspective to understand the dynamics of the elements that influence it. This may help designers to take into account the specificities of digital books and the current complexity of the editorial scenario. In this direction this research aimed to propose a framework for the digital book design process, from a systemic perspective. A framework can be understood as a visual representation of a system that shows its elements and evidences their relationships (Ideo 2015). Therefore, it is an abstraction that presents both structure (parts) and dynamics (interrelations) of a particular represented system (Dick and Gonçalves 2019).
- 6 To accomplish that, interviews were conducted with professionals who work in the development of digital books, whose results together with the findings of the literature gave rise to a set of premises that underpinned the construction of the first version of the framework, adjusted and refined from contributions of designers in the context of a focus group. As theoretical bases, systemic thinking is used to obtain an expanded view of the particularities of the digital book and of the changes arising from the editorial context.

The digital book in the editorial context

- 7 Digital books have gone beyond their initial consolidation phase. At present, these artifacts are disseminated through platforms common to other digital media, coexist in multiple formats and are marketed in a variety of forms. As a result, there is a radical change in the publishing industry (Wischenbart 2018). However, this digital revolution is not recent and did not begin with digital books (Pinsky 2013, Uehara 2014). As Thompson (2012) states, although it has not been affected like other creative industries, the publishing industry has not remained untouched by the technological revolution, being a revolution much more in the process than in the product. In this sense, the digital book is part of a deeper transformation in the sector (Thompson 2012).
- 8 Since the 1990s, a series of changes were already taking place in the editorial environment (Dubini 2013). According to Thompson (2012), a number of innovations such as desktop publishing, the internet, e-commerce, and on-demand printing have brought about changes in the midst of publishing over the last thirty years. This shows that both the process and the publishing market have been impacted by the development of new technologies (Pinsky 2013).
- 9 According to Polo Pujadas (2016), in addition to rapidly changing production, technological changes have introduced new dynamics for publishing. For the author (Polo Pujadas 2016), the sector is becoming increasingly aware of the changes that imply the

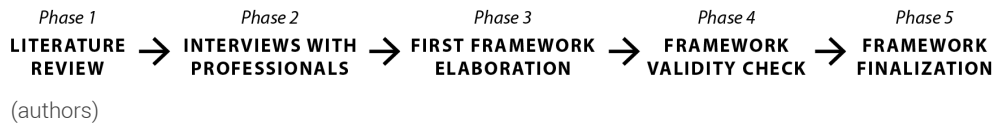
advance of new technologies and digital media. This scenario leads to rethinking the nature and the concept of the book, which emerges in the digital environment as a networked information good, where interactive capacities and the connection to external systems are its essence (Mendonça 2015). In this context, the digital book becomes an open system, versatile and in continuous evolution and its development, in turn, affects the whole system of which it is part. That is, from authorship to reception (Cordón-García et al. 2013), through the forms of production, reproduction and consumption of the book (Cordón-García and Arévalo 2015). Thus, the phenomenon of the digitalization of processes and the emergence of this new digital artifact modify the relationships between links in the book chain, breaking existing connections and creating new ones.

- 10 The possibility of separation between technological support and content (Dubini, 2013) allowed new ways of providing the book in the digital context, with the multiplication of forms of distribution, availability and access. That is, the digitalization leads to the dematerialization of the book, making it possible to manage support and content separately (De Voldere et al. 2017, Dubini 2013). According to Dubini (2013), the book may become liquid and, depending on the device used, its content and how it is presented satisfy different information needs, in addition to the possibility of interoperability between devices and different levels of content modularity. This makes it possible to sell chapters or packages with sequence and content customized by the user, for example (Dubini 2013, Pinsky 2013).
- 11 Meanwhile technological players, represented by digital platforms and device manufacturers (such as Google, Amazon, Facebook and Apple) became part of the publishing chain and triggered a disintermediation effect (Arévalo, Cordón-García and Diaz 2014). For Dubini (2013), the different digital platforms can represent competitors or possible allies in the publishing environment, since they perform some of the traditional players' functions in an alternative or complementary way. In addition, device manufacturers dominate the distribution of digital books (De Voldere et al. 2017) and leverage the creation of new technologies that allow advances in the development of the referred digital artifacts (Procópio 2013). This results in a change in the balance of power among the traditional players of the book chain, where the new players greatly condition the system's evolution (De Voldere et al. 2017, Dubini 2013) and are able to change the existing intermediation structures.
- 12 In turn, this entire context of change has partly altered the function of the publisher and has also transformed the reader's role, making it more active in the process of authorship, for example. For Procópio (2013), this is a moment of paradigm shift in the publishing sector, characterized by a new way of writing, publishing, circulating and reading books. As Mendonça (2015) points out, the changes that affect the editorial context make this environment more like a system, a network, given the diversity of the players involved, the variation of the links between them and the emergent functions of these relations.

Design and methodology

- 13 Of applied nature, this research adopted a qualitative approach and is structured in five main phases, namely: literature review, interviews with professionals, first framework elaboration, framework validity check and framework finalization (Illustration 1).

Illustration 1—Phases of the research.



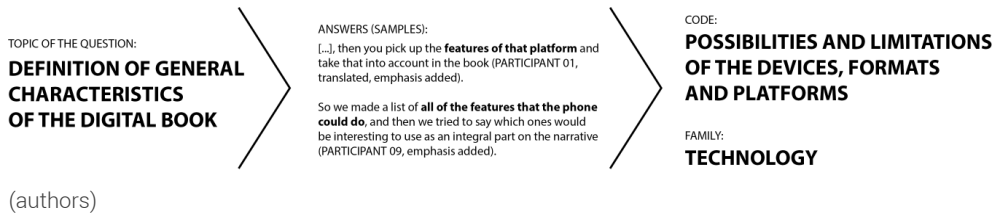
Phase 1: literature review

- 14 The main authors who supported the construction of the literature review about the digital book and the editorial context were Furtado (2009), Thompson (2005, 2012), Mod (2011, 2012), Procópio (2013), Pinsky (2013) Dubini (2013), Clark and Phillips (2014)—also on Phillips (2014)—, Rodrigues (2015), Silva and Borges (2016), Cordón-García (2016)—also on Cordón-García et al. (2013) and Arévalo, Cordón-García and Díaz (2014)—and De Voldere et al. (2017). Based on the sources found, largely in the light of book publishing, the implications of the findings for the design process were not fully explicit, which justified interviews with professionals that work in the digital book segment.

Phase 2: interviews with professionals

- 15 Nine semi-structured interviews were conducted with professionals that work in the digital books segment, who represented seven Brazilian companies and two American ones. Three participants represented traditional large publishing houses and six were from small/medium sized technology companies and/or independent publishing houses. As for the type of digital book produced by the interviewees' companies, two produce the so called "book apps", one produces books based on web language and six develop digital books of fluid and/or fixed layout, mostly ePUB format.
- 16 The core of the interviews consisted of 18 questions that allowed the identification of which elements and relationships influence the digital book design process in the conjuncture of the professional practices of the participants, also seeking to deepen the previous literature review. Initially the questions sought to investigate the main stages and professionals involved in the digital book design process in the companies of the interviewees. Subsequently, specific aspects of the process were approached, such as the conceptualization of the book (the definition of its general characteristics), the preparation and adaptation of the content, the definition of technological formats and supports and the participation and/or influence of the author and reader in the process as a whole. Also, some particularities of the production flow in the digital context were investigated, as well as how digital distribution, access and promotion strategies are defined. The final questions were related to archiving and preservation of digital books, as well as to the role of libraries on the context of those companies.
- 17 The content analysis method proposed by Bardin (2016) was used for the qualitative data processing. To assist it, in the interviews with professionals, the qualitative data analysis software ATLAS.ti was used along with the specific categorical analysis technique (Bardin 2016). In this direction, the participants' answers were coded and these codes were related to the topics of the questions. From the proximity/similarity between codes, it was possible to categorize them in thematic families, as in the sample showed on Illustration 2.

Illustration 2—Sample of the performed categorical analysis process.

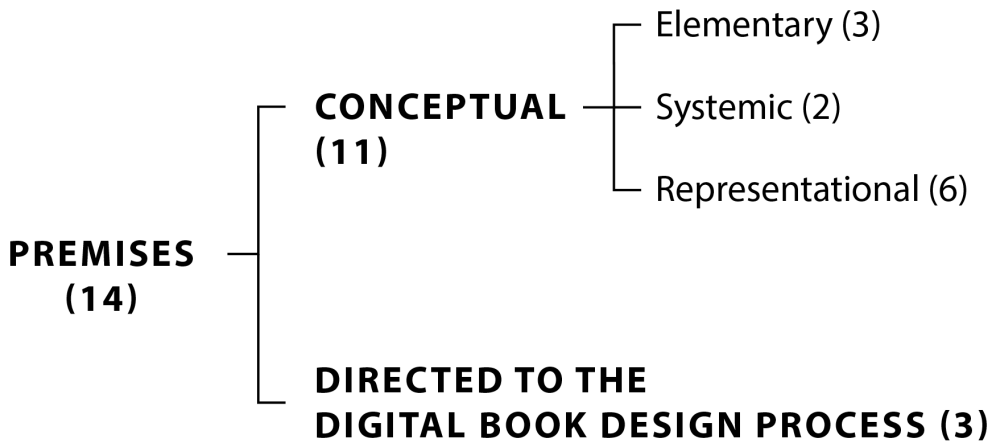


18 This allowed the identification of the main influence factors in the design process at different levels, according to their degree of recurrence, in addition to their most relevant aspects that came from the interpretation of the codes obtained in the procedure.

Phase 3: first framework elaboration

19 Based on the synthesis of the data and knowledge gathered in the literature review and in the interviews with professionals, premises were formulated to guide the drawing of the first version of the framework, contemplating a systemic view of the elements that influence the digital book design process. In total, eleven conceptual premises and three premises directed to the digital book design process were formulated (illustration 3).

Illustration 3—Categorization of the framework premises.



- The **conceptual premises (CP)** are those related to the generative concepts of the whole. They have a broader character and are applicable to the development of any framework that has the intention of contemplating a systemic representation related to a design process. They refer to the purpose of the framework, its systemic requirements and its form of organization and representation, being divided into elementary, systemic and representational.
- The **premises directed to the digital book design (DP)** relate to the content of this proposition, in this case, the particularities related to the digital book and the factors of the system that influence its design process.

20 Based on the analysis of the premises, it was defined that the entities of the framework would be all the factors identified in the premises directed to the digital book design

process. To complete the graphs, these entities were connected by lines that represented qualitatively the intensity of their relationships, identified from the inference of the data obtained in the literature review and in the interviews with professionals. On the other hand, the regions were demarcated by the relevance of the graphs for the digital book design process.

Phase 4: framework validity check

- 21 To check the external validity¹ of the first version of the framework, a focus group was held in a single session with a duration of two hours and the participation of five Brazilian designers that research the digital book or with experience in the editorial or digital fields of Design. In this way, the procedure was divided into three parts: appropriation, discussion and evaluation.
- 22 The first part (appropriation) consisted in presenting the research, the premises of the framework, its construction and its first version. In the second part, after a time of assimilation, the discussion mediated by the researcher began. It aimed to discuss the framework's clarity, complexity, utility, weaknesses and potentialities, also seeking to bring the main doubts of the group. The third and final part of the focus group (evaluation) occurred individually, through an evaluation questionnaire given to the participants. This instrument was composed of six statements to be weighted in a five-point Likert Scale, with space to justify the answer, as well as two open-ended questions and a space for observations/comments. For both discussion and evaluation, open-ended questions were elaborated, since they allow to know more deeply the opinion of the participant (Duarte and Barros 2012).
- 23 In general, the contributions of the designers were categorized into three groups: about the utility and purpose of the framework, about its visual representation and about its content. These, in turn, directed modifications in the framework that led to its final version in the later phase of the research.

Phase 5: framework finalization

- 24 In the last phase of the study, the framework was adjusted and refined, being detailed in the next topic. It is important to emphasize that, despite the linear process, the formulation of the final proposition counted on the confrontation and the interrelationship of the different results during the research.

Outcomes

- 25 Framebook is an explanatory framework, whose objective is to aid in the perception of the complexity and planning of the digital book design process. For this, the framework is presented as a visual representation, in a diagrammatic form, of the system of factors that influence the referred process.
- 26 The proposition focuses on designers, both in the context of teams in technology and publishing companies as well as in individual working in an independent scenario. Regarding the profile of these professionals, Framebook is directed equally to the

designer who executes as to the one who coordinates the process, since often the designer is who organizes and structures the whole accomplishment of the work.

- 27 The factors brought into the framework are grouped into three regions: primary, secondary and tertiary factors. The primary factors correspond to the Content, the Technology and the Reader. These are essential to the entire digital book design process, since the system of this artifact is conditioned by the way in which each of these factors makes possible the relationship between the others. That is, the digital book is conditioned by how: (i) the content enables the technology/reader relationship; (ii) the technology enables the content/reader relationship; and (iii) the reader enables the content/technology relationship. In this logic, the primary factors form the core of the framework, where the design decisions relate to the binomial technology/content (form/function) and, from the inseparable relationship with the reader, the conceptual conception of the book arises.
- 28 Secondary factors are less relevant than primary factors. However, they have a considerable influence on design decisions regarding the essence of the digital book (content and technology). They are: Author, Other Agents (designers, developers, proofreaders, translators, etc.), Publisher, Business Management, Distributor and Library. Tertiary factors correspond to the Printed Book, Digital Rights, Similar Digital Books and Technological Players (such as technology companies and device manufacturers). They are on the edge of the system, but they still must be considered in the digital book design process. Table 1 describes the meaning of all 13 factors in the context of the proposal.

Table 1—Description of the proposed factors in the context of Framework.

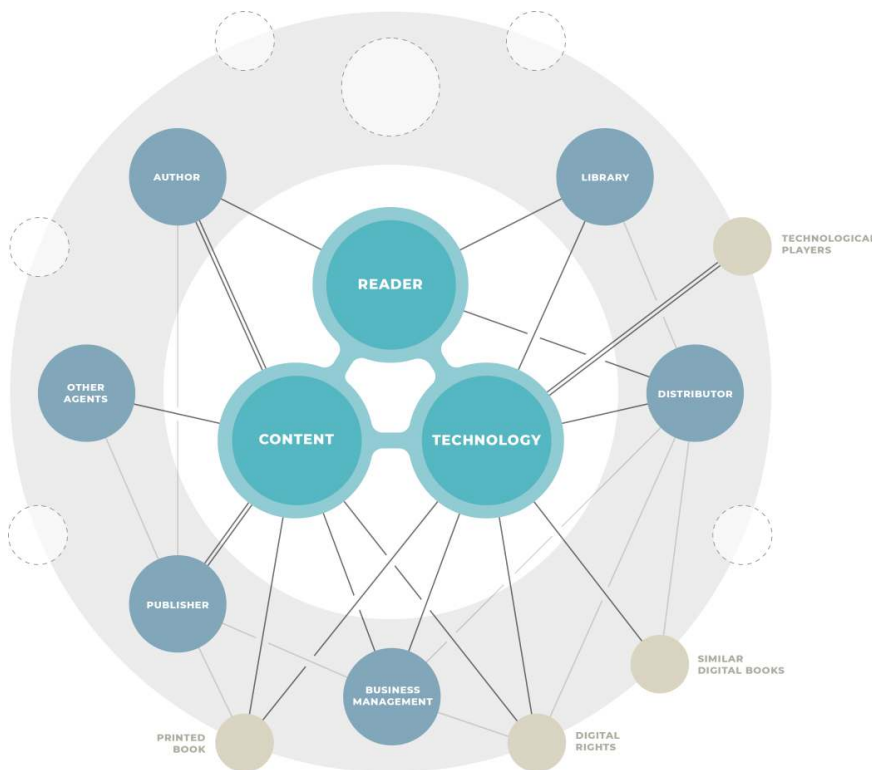
Primary Factors	Content	It refers to the definition, organization and structuring of content, as well as delimitation of media and interactive resources. It covers issues related to the nature of the content, the media to be used and the narrative/plot of the digital book, as well as specific properties of the content such as its extension and its potential and quality in the digital environment.
	Technology	It refers to definitions of formats, devices and publication features. It is related to possibilities and limitations of devices, formats and distribution platforms, to interoperability, as well as availability, complexity and technical viability of the technological options.
	Reader	It refers to the understanding of the target audience, that is, the user of the publication and its relationship with the artifact. The factor concerns issues related to the habits and characteristics of the reader/user, the desired reading/use experience, the form of access to the publication, the reach of the digital book, as well as the accessibility requirements.
Secondary Factors	Author	It refers to the individual or group responsible for the idealization of the digital book and/or production of the content, with regards to their opinions and decisions.

	Other Agents	It refers to other professionals involved in the process, such as designers, developers, proofreaders, translators, etc., with regards to their opinions.
	Publisher	It refers to the individual or group responsible for the digital book publishing, with regards to their opinions and decisions.
	Business Management	It refers to the business' strategies, company's policies and limitations as well as issues related to the commercial feasibility of the project decisions.
	Distributor	It refers to distribution platforms, with regards to their impositions and limitations, as well as restrictions and commercial agreements related to the distribution of the digital book.
	Library	It refers to the role of libraries in the context of the digital book publishing.
Tertiary Factors	Printed Book	It refers to the printed equivalent of the digital book (if any), with regards to content, graphic design and/or concept fidelity between both.
	Digital Rights	It refers to the digital book's and content's permissions and restrictions (where applicable), as well as the content's and user's security.
	Similar Digital Books	It refers to other similar digital books, that is, the recurring solutions in the industry for the same type of digital book.
	Technological Players	It refers to digital platforms and device manufacturers, with regards to restraints and/or opportunities caused by the technological evolution, as well as the archiving and preservation of the digital book.

(authors)

- 29 However, given the precepts of systemic thinking, isolated units are not enough to properly understand a system. To think systemically is to think in a contextual way, where the properties of the parts can only be understood from the organization of the whole, in a wider context. Thus, it is not possible to consider the parts without considering the whole, that is, the relationships between the parts. In this direction, in Framework, the primary, secondary and tertiary factors are connected to each other (Illustration 4).

Illustration 4—Framebook’s final version.

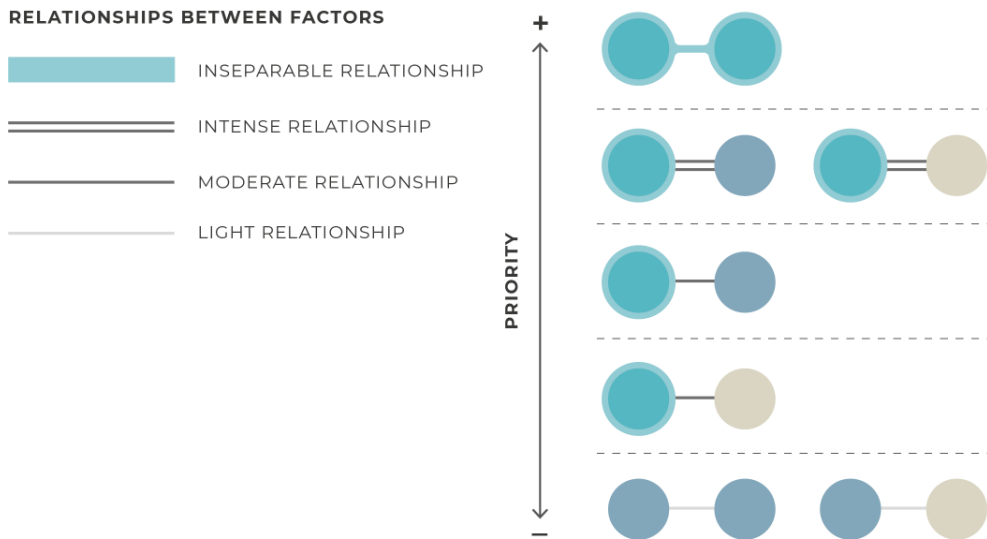


(authors)

- 30 As can be seen, these network relationships lead to non-linear thinking and are classified into four types. The relationship between the primary factors is called inseparable relationship, since in the digital book design process it is not possible to consider a primary factor without weighing it with the others or excluding it from the process. Content, Technology and Reader are inseparable and interrelated entities in the existence of the digital book. The other relationships existent in Framebook are the intense relationship, the moderate relationship and the light relationship.
- 31 The relationship between a primary factor and a secondary or tertiary factor will always be a moderate or intense relationship, with intense relationships being those with the greatest strength among the factors after the inseparable relationship. In Framebook, these qualify the relationships between Content and Author, between Content and Publisher and between Technology and Technological Players. On the other hand, the relationships of the secondary factors with the tertiary factors will always be light relationships. It should be noted that the framework does not explicit the relationships between the tertiary factors, given the excess of complexity that they would add to the proposition, but they can exist.
- 32 Because of the hierarchy between factors and between relationships, Framebook establishes different priorities for considering them. First, it is necessary to consider the primary factors and the relationships between them, then the intense relationships of these with any factors. In the sequence, there are the moderate relationships of the primary factors with the secondary factors and, afterwards, their moderate relationships with the tertiary factors. At last, the light relationships between the secondary factors

and of these with the tertiary factors should be considered. Illustration 5 shows this hierarchy.

Illustration 5—Priority of relationships between factors.



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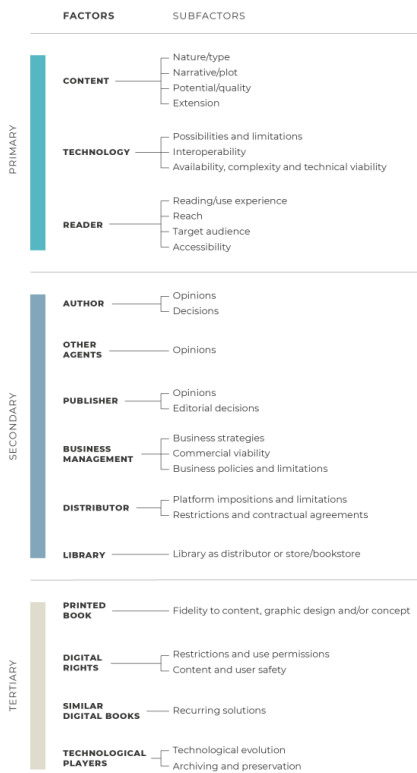
- 33 Seeking to clarify the relationships showed in *Framebook*,² it is convenient to contextualize them from the exemplification in projects. In a design process in which the purpose is to develop a digital book of a traditional novel along with its printed equivalent, the content factor would already be determined by the textual nature of the work. Adjustments and innovations regarding the organization and structure of content could be thought of in terms of its narrative, of its potential in the digital environment and even of its extension. On the other hand, in a design process whose goal is to develop an interactive digital children's book, without a corresponding printed book, part of the technology would be defined by the nature of the content, while different issues as to its potential in the digital context and to the narrative could be thought out. Interactive digital children's books allow great exploration of interactivity, multimedia and their plot can bring important conceptual definitions to the project.
- 34 At the same time, in the scope of technology, it is important to think upon the most appropriate formats for textual (such as ePUB, web language, etc.) or interactive content (web language, app, among others), as well as on the types of technological supports more comfortable to continuous reading (e.g. e-readers) or to interaction (hybrid reading devices such as smartphones and tablets), besides the technological/technical availability, complexity and viability given the team available for the book development. The awareness of the influence of technological players during the decisions regarding the digital book technology is also important. If necessary, what would the processes of update and maintenance of content and format would be like? How would the book be archived, preserved, and managed? Books in ePUB format, for example, can be easily updated and do not require frequent periodic maintenance. On the other hand, app books are more susceptible to the evolution of the technological apparatus. Still, archiving, preserving, and managing the book and the content could require outsourced systems that would entail costs for the project.

- 35 The deliberations exemplified so far should be considered combining the definitions of the book's audience. Desired reading/use experience, user profile (what devices the reader uses, his/her needs for accessibility, his/her expectations for the book, etc.) and the book's reach to the user determine to a large extent technological issues such as interoperability, functionalities (within the possibilities and limitations of technological options), how the book will be offered and accessed, as well as decisions related to content regarding the use of different media.
- 36 Thus, a broad and diverse audience, heavily connected to social networks and streaming services, which uses multiple devices to read books, but expects a linear reading experience—for example—may require an interoperable book, linearly structured, open to sharing and interactions with other users, offered as a single package and accessed through a subscription service. In turn, a specific children's audience—which uses mostly tablets, is used to the universe of games and expects a reading/use experience that entertains—may require a hypertextual and multimedia book, developed for one type of device, offered in chunks and accessed via download.
- 37 Authors, publishers and other agents involved in the development of the project can express their opinions and decisions regarding the definitions previously commented, which should also be evaluated according to the business management of the publishing house/company. The author can assist the designer in the definitions regarding content but can also know well the target audience of his work and help in the activity of understanding the reader. On the other hand, the publisher can determine content-related issues according to the company's editorial line, while a developer can limit the interactive features (content) that the work will have depending on the functionalities and technological formats within its scope of technical knowledge already established. Production time and cost, human resources availability, business viability, and various business strategies can equally drive or limit ideas about content and technology. Digital books in e-book format (ePUB, among others) tend to be simpler, easier and cheaper to produce and may be available to the public in less time. App books can be more complex, difficult and expensive to produce, requiring multidisciplinary teams and more extensive processes.
- 38 The form of distribution can also influence or be influenced by technology definitions. There are platforms that allow for certain technological formats, which, in turn, limit content decisions. Some bookstores, for example, only accept books in ePUB 2 format, which does not allow certain media or some accessibility features. The same can apply to libraries if they act as distributors. These aspects ultimately influence the reader's experience and use of the work. Often, the decisions by which channels and how to distribute the book pass through commercial agreements and contractual limitations between author, publisher and distributor. For example, there are authors who do not allow their works to be distributed and accessed through streaming, while some business policies allow only working with certain distribution platforms. In contrast, app stores only accept the distribution of books in proprietary formats, which require the development of an app for each device and its respective distribution channel.
- 39 When available or under parallel development, the designer should consider the printed book equivalent in his/her design decisions regarding the digital book, since it is probably necessary that there is a conceptual, content, and even layout correspondence between them. Observing other similar digital books in the segment is equally relevant to understand their technology and their form of distribution and, consequently, integrate

or differentiate the book to be designed from the standard adopted by its similar ones. Typically, textbooks use the e-book format (ePUB, mobi, among others) and are distributed through distributors and bookstores, while books with multimedia and interactive features use the app format and are distributed in device manufacturers specific app stores.

- 40 In addition, digital rights also influence or are influenced by both content and technology. The existence of restrictions of use in the book, the mechanism to operationalize them, the existence of permissions on the use of fonts and images and the safety of the content and of the user can delimit the media and the resources that the book will have, the formats and the devices that can be used and the way it will be distributed and accessed. In this logic, digital books that use mechanisms like DRM may not allow the loan and limit the number of devices in which the book can be accessed or downloaded, for example. Such issues ultimately impact on the reader's use experience.
- 41 As can be seen, the relationships between the factors are circular, where they influence each other mutually, and the complexity of the project decisions in the design process of the digital book is high, considering the elements and the relationships of systemic character brought by Framebook. Considerations and deliberations point to definitions that vary according to the project context and connections can generate a large number of questionings that are not limited to the examples brought here.
- 42 Therefore, to complement the understanding of the framework and the relationships between the factors, the proposition contemplates a second level of abstraction, more granular: the subfactors of Framebook (Illustration 6). In this way, each factor is summarized in one or more subfactors, which makes it possible to understand in greater detail the aspects that they refer to, as described on Table 1.

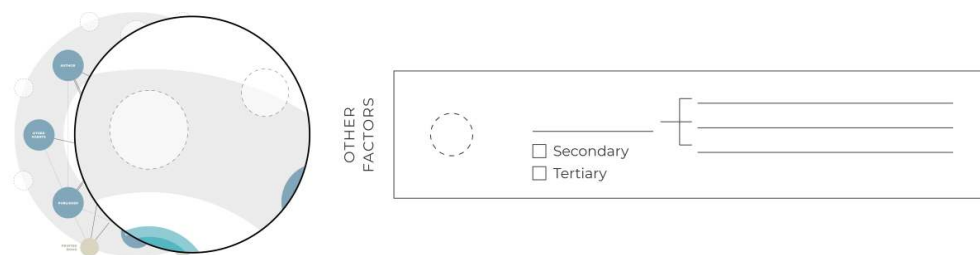
Illustration 6—Subfactors of Framework.



(AUTHORS)

- 43 Because it portrays an open and dynamic system, Framework also allows the addition of new factors according to the need of each project or according to the evolution of the system. It is essential for the designer or design team to determine the relevance of the factor and the relationships to other relevant factors. Because of this, the visual form provides for new spaces and allows rearrangements to accommodate system expansions or unforeseen factors and relationships in Framework (Illustration 7).

Illustration 7—Possibility of adding new factors and subfactors.



(AUTHORS)

- 44 In this direction, it is also possible to add new subfactors to the existing factors. On the other hand, given the flexibility of the proposition, it is possible to remove secondary and tertiary factors³, depending on the complexity of the context in which the design process occurs, including the effect of disintermediation caused by the digital publication model. For example, factors such as Publisher, Printed Book, Similar Digital Books may be disconcerted when design situations do not present such elements. In self-publishing,

even the Other Agents and Business Management factors may not be part of the system that influences the design process of the book.

- 45 It is fundamental to reinforce that the addition or removal of elements in the system can change the organization of the set, affecting the connections shown in the proposition. Thus, relationships are not permanent, but are sensitive to disturbances and can be re-qualified or even eliminated in the face of the structural movement of the system.
- 46 While not taking on an applied commitment, Framebook can be used in different instances during a digital book project. Its main utilization is on the process planning but the instrument has the potential of operational use in the context of briefing, in the listing of design requirements and in the generation of a project checklist tool, for example. Therefore, given its systemic perspective, Framebook may help individuals or teams to design digital books that truly take into account the specificities of these artifacts and the current complexity of the editorial scenario. By structuring a systemic view that demonstrates the breadth and complexity of digital book design, the proposed framework can contribute to a more precise and coherent design process, avoiding the risks of a narrow and restricted view of it. In addition, this systemic perspective possibly increases the efficiency of the process, as it rationalizes design activities and supports the designers in their project decisions.

Conclusion

- 47 This research started from the context in which the existence of the digital book affects the agents of the traditional publishing chain and changes the processes of conception, production and distribution, as well as the purpose and culture associated with the book. Given this changing reality, it is understood that it is necessary to focus attention on the digital book design process from a systemic perspective in order to understand the dynamics of the factors that influence it and to design digital books considering the specificities of these artifacts and the complexity current context of the editorial context. In this sense, the objective was to propose a framework for the digital book design process, from a systemic perspective.
- 48 It is important to emphasize that the framework was conceived as a conceptual instrument and its usefulness is mainly in the visualization and understanding of the complexity and planning of the digital book design process. Thus, Framebook:⁴ (i) explains the factors that influence the referred process, (ii) allows the planning of issues that are relevant to it and (iii) helps in the perception of the complexity of the process, seeking to minimize the risks of a limited vision to the artifact. The proposition is able to demonstrate the complexity of the digital book design process in a systemic, comprehensive and flexible way, considering the specificities of this artifact and the transformations of the editorial system, comprising multiple types of digital books, from the simplest to the most sophisticated ones. Because of this, it is possible to state that the goal of the research was fulfilled.
- 49 Regarding its use, Framebook is directed to designers who act individually or to design teams in publishing and technology companies, but it can also be used by other professionals inserted in the context of Design. From this perspective, it is interesting to note that the instrument can familiarize other professions with the design process.

- 50 It should be noted that not all relationships between primary, secondary, and tertiary factors were made explicit. It was decided to show those inferred based on the literature review and on the interviews with professionals, as well as those suggested by the focus group participants, to the extent that it was considered the limit to avoid the excess complexity of the representation and at the same time to adequately cover the relationships considered pertinent to the purpose of the framework, which was one of its main challenges. In addition, it is relevant to emphasize that both elements and relationships were pointed out from the specific universe of this research, considering its goal, its particularities and mainly the results obtained from the realities of the interviewees and of the focus group participants. Therefore, such system is subject to change according to other perspectives of the same context.
- 51 Finally, this research reinforces that the digital book should be understood mainly as a system, which can be characterized by the interrelationship between content, technology and reader and can be conditioned by the way each of these subsystems makes possible the relationship between the others. It can also be understood as part of supra-systems such as the editorial system and the contemporary media system. This notion contributes to the expansion of the concept of book and corroborates the importance of systemic thinking in the context of Design today.
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NOTES

1. External validity refers to the possibility of describing the results, understanding and extrapolating them to other situations (Ollaik and Ziller 2012).
2. No attempt is made here to explain all possible deliberations to be carried out between the factors listed in Framebook. It is up to the designer or design team to consider the interrelationships that are pertinent to their projects, as well as to create new associations from the connections evidenced by the proposition.
3. Framebook allows the addition or removal only of secondary and tertiary factors, because it is understood that the primary factors are immutable and inseparable, and the exclusion of a primary factor or the addition of a fourth one would decharacterize the system as modeled.
4. A summarized version of Framebook can be retrieved from http://bit.ly/Framebook_ENG.

ABSTRACT

The advent of the digital book has brought changes and challenges that have affected the conception, production, distribution and even the purpose and culture associated with the book. Given these transformations, it is necessary to reinforce attention to the design process of the digital book from a new perspective, adopting a systemic thinking to obtain a clear vision of the specificities of these artifacts and the complexity of their project. In this direction, this research aimed to propose a framework for the digital book design process, from a systemic perspective. To that, interviews were conducted with professionals who work in the development of digital books, whose results together with the findings of the literature gave rise to a set of premises

that underpinned the construction of the first version of the framework, adjusted and refined from contributions of designers in the context of a focus group. The framework proposed in this study has explanatory character, diagrammatic form and represents the system that influences the digital book design process, composed of 13 interrelated factors and organized into three groups: primary (Content, Technology and Reader), secondary (Author, Other Agents, Publisher, Business Management and Distributor) and tertiary (Printed Book, Digital Rights, Similar Digital Books and Technological Players), as well as subfactors distributed among them.

INDEX

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