

Looking for the Spaceless Book, an E-publishing Archaeology

Alessandro Ludovico

Winchester School of Art,
University of Southampton,
Southampton, UK

a.ludovico@soton.ac.uk

ABSTRACT

In the reformulation of the ‘publication’ concept after the electric and then electronic revolution, there is a consequent reformulation of the ‘space of publication’ which finally transcends the page and the binding as the insurmountable limits.

Here the history of this process is tracked through the first optical attempts to compress the content in order to overcome those limits, conceptually preparing for a more radical technological shift. Foreseen in early science fiction visions, this shift determined by digital and the networked technologies, is dramatically collapsing the publication space towards a dimension close to the infinite, where the published object disappears in the reading machine, in what becomes a mere but sophisticated ‘container’.

KEYWORDS

Publishing; Post-Digital; Electronic Publishing; Science Fiction; Media Archaeology; Digital Publishing; E-Reader; E-Publishing; Book Culture; E-Literature; E-Book; Electronic Literature.

ARTICLE INFO

Received: 30 November 2018

Accepted: 01 December 2018

Published: 18 December 2018

<https://dx.doi.org/10.7559/citarj.v10i3.570>

1 | INTRODUCTION

The concept of assembling a publication is to include a limited amount of content in a manageable space. But as soon as we have been accustomed to the dimension of the single publication, we have tried to overcome its limits and expand it, possibly including as much information as possible in a new recognisable form. Multi-volume works and then encyclopaedias have helped to divide what couldn't be bounded in a single manageable space. But after the dematerialisation of this physical space, the publication's boundaries have been first blurred in their technical representation. First these boundaries have been expanded mechanically through optics, and then electronically through the computers. In both the embodiments the boundaries define both the pages and the publication as a whole. Then the boundaries just vanished with the networked digital, in the multitude of content that could be temporarily hosted on a screen, giving room to new technical prototypes and new visions of the publication concept

2 | HISTORY OF THE INFINITE PUBLICATION

The aim to increase the space for content in publications has been part of the more general and natural need to overcome the limits of a finite space. But the need to overcome the size limits in publications can be formulated as a *technological* question as the printed format easily reaches its

limits when it becomes either unreadable, with the content excessively reduced in scale, or unmanageable, with the content exceeding a certain threshold in binding or physical presence. Historically, the first approach to increase this space has been manifested through the progressive mechanically-induced collapse of content in a given space, using optics to miniaturise text especially, and increase the capacity of a page. Before that, the amount of readable space had to be established in advance, being either confined into a page or a certain length of a scroll, for example, and the content would just be able to fill them under a certain ratio.

3 | THE OPTICAL COLLAPSE OF CONTENT SPACE

The space is processed in publications in order to 'collapse' in perspective, because it will first increase through optics, and then it'll expand at such a rate in a different invisible dimension (digital), that it'll induce a perception of a collapse of the previous physical one. This idea of collapsing the space of content has become popular especially during the 20th century, as a consequence of a society progressively information-based on a global scale, thanks to mechanical and electrical technologies. The first wave of attempts to collapse the content space has been based on optical technologies.

Breaking the boundaries of the print publications was something envisioned by El Lissitzky in 1923 in *The Topography of Typography* manifesto (Lissitzky, 1923). He concludes it with: "The printed surface transcends space and time. The printed surface, the infinity of books, must be transcended. THE ELECTRO-LIBRARY". This sentence has been credited for envisioning the internet, or rather the current digital space of publications. But in it we can identify two specific visionary elements. The first is "the infinity of books" as a unifying vision of the whole printed knowledge as a single space, which can potentially be addresses as such. And the second is the concept of *transcending* space and time, which in that period was probably embodying the dream to overcome the slowness and heaviness of printing with some electricity-empowered technical innovation. So, transcending space can be interpreted as breaking the physical limits of content space; and transcending time can be interpreted as accomplishing an asynchronous access to content,

which would allow access to multiple content sources at the same time.

There's another point in El Lissitzky's manifesto stating: "the continuous sequence of pages: the bioscopic book", whose first part can be interpreted as another attempt to consider a vast, even undetermined, content flowing in a continuum, with the consequence of not being able to determine a-priori the size of the content or publication involved. The size of this *continuous* publication would remain unknown unless we would have reached its end. Which, as a concept, is not so distant from the current perception of digital publications, whose size is inappreciable until we reach the end of the file (when there *is* an end of file...). We have *information* about the size, but we lack a perception, which is instead immediately perceivable in the physical world. A few years later, in the second half of 1930s, there were some tests on the so-called *fax newspaper* or *radio newspaper* (Waldrop & Borkin, 1938). It was meant to allow a radio listener to print a daily newspaper at home at a fixed time of the day. This kind of newspaper was transmitted through dedicated radio frequencies, and then decoded and printed through a specific device integrated into the classic radio receiver of the time, as a scroll. The reader didn't know its size, either, until it was fully printed.

The concept of not being able to establish the quantity of content recurs in different notions about the future of publications. So, "the continuous sequence of pages" had a conceptual implementation in Vannevar Bush's *Memex* conceptual system (Bush, 1945), where microfilm-like media would have hosted an indefinite amount of content with search capabilities.

This need for a collapse of content space can be also found in some prototypes in the do-it-yourself scene which proliferated in first half of the 20th century. One example of such a prototype was tested by an inventor who had a specific approach: instead of inventing a different medium for hosting a larger amount of content, he wanted to minimise the space of print, not so differently from what, a couple of decades later, would be been done by microfilms. The prototype was realised by Bradley Fiske, a retired admiral who developed, in 1922, a *reading machine* (Figure 1) [1], a small device allowing to read novels printed in very tiny typefaces on small



Figure 1 | Fiske Reading Machine.

paper cards, optically magnifying them with a lens, so collapsing the usual space of print while enhancing its portability. A few cards were able to host over 100,000 words, enough space for a whole novel. And even if this invention never became a commercial product, we can think about it as a first step towards the concept of microfilms. In the same period, Bob Brown conceptualised in his book *The Readies*, a comparable universal *reading machine* “using strips of miniaturised text” (Brown, 1930).

The space occupied by the content was then early addressed as an issue, with the flourishing of commercial publishing business and the improving abilities to read generation after generation of people. A different do-it-yourself experiment was embraced by a Spanish teacher with the aim to relieve the students from the heaviness of their textbooks. Ángela Ruiz Robles in 1949 built a prototype of a mechanical book, which was aimed to incorporate a considerably bigger amount of content than a classic textbook. The *Enciclopedia Mecánica* (Mechanical Encyclopaedia – Figure 2) (El Mundo, 2016) used similar optical principles to those of the above-mentioned machines: it was built within a plastic case with texts and illustrations on reels, easily removable and replaceable by other, with different topics, and with parts meant to allow writing and drawing. The reels were under a sheet of magnifying glass with a light for reading in the dark and, in a second prototype released in 1961, there was also the possibility to hear a spoken description of the topic.

All these conceptual machines and prototypes remarkably rely on the same principle later applied in microfilms technology: the physical collapse of the content space. Using optical or mechanical technologies they tried to make it work through a



Figure 2 | Ángela Ruiz Robles and her Enciclopedia Mecánica.

dual functionality: reducing the space usually occupied by the content and revive it when needed.

4 | THE SCIENCE FICTION VISION

In parallel with visions and prototypes conceived in the golden era of the technical do-it-yourself (1920s-1960s), science fiction has envisioned imaginable embodiments of media related to publishing. After being a literary territory to forecast a narration of the future at large, it has assumed a consequent archaeological importance for the history of media. So, a vivid and advanced imaginary about the infinite book can be retrieved by the production of different science fiction writers, who have provided different visions of a truly expandable ad-infinitem publication.

The comparable ideas in these novels are involving ‘systems’ and ‘machines’ as scientific or technical agents pushing the limits of media as we knew them. As one of the first examples relating publishing to the infinite dimension, even if it’s not technically considered science fiction, Jorge Luis

Borges's *Library of Babel*, written in 1941, is probably the most well-known (Borges, 1941). It describes an infinite library with all the possible books that can be written and the cultural and psychological consequences on the humans approaching the library itself. Just a few years later, Richard Shaver in his *I Remember Lemuria* novel wrote about an enigmatic object that he called a pocket reading machine which was so common and habitual that, as he wrote, "it would have not attracted attention" in the described urban environment (Shaver, 1948). Even if just sketched in a few words, this elusive device was considered portable, small, and functioning as a machine, so including some systems for reading. Only three years later, in 1951, Isaac Asimov in his short story *The Fun They Had* had two of the protagonists to describe telebooks over a dialogue (Asimov, 1951). Indeed, in this story a couple of kids living in 2157 find an old printed book from the previous century, stating at some point:

"[...] what a waste. When you're through with the book, you just throw it away, I guess. Our television screen must have had a million books on it and it's good for plenty more. I wouldn't throw it away."

Beyond the naive ecological considerations, which are not taking into account the waste of natural resources needed to produce the TV set as well as the needed electricity, here the two media, television and print, are formally merging, in order to dematerialise the printed content in the air, channelling it to an already tested machine. This machine, the TV set, is able to temporarily host content on the screen, replacing it at will, so potentially hosting infinite content. Already in 1934, a similar idea of a television newspaper was graphically illustrated in the syndicated comics *Can it be DONE?* [2], with a couple commenting the news in front a big screen TV set, the size of a tabloid.

All these visions are technically focusing on content 'containers', media in themselves at large. They are machines, or 'devices', meant to become the universal interface to access content, which is distilled in collapsed quantities, ready to be expanded within the device. All of these visions are imagining an evolution of the existing media into an

updated and empowered version, with no clear spatial content limits.

At the end of 20th century, instead, the present technology escalates in science fiction to predict what is about to come just after the miniaturisation of electronics and the advent of telematic networks. So, in 1989, a few years before the commercialisation of the Internet completely revolutionised the mediascape, science fiction writer Ben Bova, in his novel *Cyberbooks* (Bova, 1989), wrote the story of a young programmer inventing an electronic book device, and of how this device would disrupt the New York-centred publishing industry:

"From it he pulled a grey oblong box about five inches by nine and less than an inch thick. Its front was almost entirely a dark display screen. There was a row of fingertip-sized touchpads beneath the screen."

The content is 'read' by this device in the form of "chip wafers" but what the protagonist was passionately questioning was the potentially uncontainable nature of information:

"I contend that publishers are in the information business, not the wood pulp and chemical industry. What you want into the hands of your readers is information — which does not necessarily have to be in the form of ink marks on paper."

This focus on information as an abstract entity, and the core electronic device 'product' can be interpreted as a prediction of many tech companies' 'missions' and production strategies since the early 2000s.

The concept of a container hosting floating information remains consistent even in the new millennium, as we can notice in the *Minority Report* movie (Spielberg et al., 2002) where the newspaper that John Anderton (played by Tom Cruise) is holding while a fugitive on public transit, is formed by a few pages digitally updated in their own space, especially through animated breaking news reports.

5 | THE DIGITAL ENDLESS COLLAPSE OF CONTENT SPACE

Digital machines by their own nature have certainly collapsed the space of information. Their engineering is based on a long historical trajectory of

electronic miniaturisation of both the processing and the memory elements, which, over time, have induced the exponential multiplication of the contained digital space of information in smaller devices with greater storage capacity or networked access to almost infinite content spaces.

If we try to identify the first electronic device explicitly focusing on cultural content, we can probably choose the *Dynabook* prototype, conceived by Alan Kay in 1968 and unfortunately never realised. It was the first complete model for an electronic textbook, in a shape that today we would easily categorise today as ‘tablet’ or ‘e-reader’.

In his paper in 1972 he’s detailing the *Dynabook*’s technical specifications (Kay, 1972):

“The size should be no larger than a notebook; weight less than 4 lbs.; the visual display should be able to present at least 4,000 printing quality characters with contrast ratios approaching that of a book; dynamic graphics of reasonable quality should be possible; there should be removal local file storage at least one million characters (about 500 ordinary book pages) traded off several audio (voice/music) files.”

It can be noted that the ‘printing quality’ of the display was treated as an important element, as it should have guaranteed the use of the screen as a functional substitute of the printed page. Equally important was the ‘removal’, so expandable file storage with a standard minimum content size of a huge book, potentially expandable to an entire collapsed library.

This transition, which includes a reverse of perspective, should have been initiated by a specific event: the optical qualities of publications reaching their resolution and spatial limits, in both paper and celluloid. The next step has included the technically investment in a ‘container’ with a comparable resolution, but with no spatial limits for the content, which would have been perceived through a single screen. Generally speaking, the screen itself has very tangible boundaries, but its content has none. The main conceptual consequence is that the screen becomes the single universal space, which is potentially containing all the possible conceivable content, reconfiguring its matrix of basic elements. And the more we experience it, with a possibly

extreme diversity of quality and quantity of content, the more we tend to consider it infinite and universal.

Historically, when devices started to be connected to an invisible storage through networks, first physically and then wirelessly, we probably started to assume that there’s an infinite storage somewhere possibly containing all the content we need, and this content is then drawn from there, dynamically being rendered on the screen matrix of pixels, at will.

Where exactly it is stored, and who is storing it, owning it, being able to change it, edit it, delete it, becomes mainly irrelevant for the average user, especially compared to the compelling spectacle of having content instantly available, and endlessly scrollable. The combination of an infinitely reconfigurable screen with a remote boundless storage breaks all the possible size limits in our imaginary. This gives room to high expectations of content which are constantly renegotiated, but always settled, accepting the failures to find something specific in exchange of the quantity of other similar content, constantly and rapidly replacing the initial need. When exposed, for example, to a search on Google, YouTube, Facebook, just to name a few, if we’re not finding exactly what we were looking for, we often rapidly modify the need with what we find, as the quantity and the basic quality of what we’re being offered overcomes our initial intentions and focus, giving way to content-driven new paths. This mechanism makes the majority of humans prone to what they have been offered as the offer of content is, namely, infinite. There’s always something more accessible for free, then why stop? El Lissitzky, in his *Our Book* (1927) affirmed that “The amount of material used is decreasing, we are dematerialising, cumbersome masses of material are being supplanted by released energies”. These energies have become ubiquitous and continually exchanged. If we address them historically as “archaeologies of the present”, as Kittler (1990) defined them, we should “must also take into account data storage, transmission and calculation in technological media”, including them in the equation describing what we really need and what we, instead, consume.

But having an infinite amount of content already available, doesn’t restrain us from continuing to expand it further, with the easy *publishing* tools especially enabled on various social media

platforms. We can consider the act and gesture of 'posting', on various type of internet media, as an act of 'instant publishing', increasing the total amount of content and allowing us to contribute to the same content. On one side, the interconnected web content cannot be conceived as a single infinite publication, because of its diversity in topics, formats and quality, forming a multitude. On the other side, the quality we attribute to traditional publications, instead, as being formed by highly sophisticated content, finiteness and consistency, cannot be applied, in reverse, to the online digital system, which is driven by two main time/space coordinates and qualities: instantaneousness and abundance.

ENDNOTES

[1] (June 1922). A library in your vest pocket. *Science and Invention*. v10 #2.

[2] "Can it be DONE?" syndicated comics, 1934, *Scoops Magazine*, London, UK: C.A. Pearson Ltd.

REFERENCES

Asimov, I. (1951). The Fun They Had. In *Boys and Girls Page*, December 1951, NEA service Inc.

Borges, J. L. (1941). La biblioteca de Babel. In *El jardín de senderos que se bifurcan*. Buenos Aires: Editorial Sur.

Bova, B. (1989). *Cyberbooks*, New York: T. Doherty Associates.

Brown, B. (1930). The Readies, transition, no. 19/20, June 1930, pp.167-73.

Bush, V. (1945). As We May Think. *Atlantic Monthly*, 176, July 1945, pp.101-108.

El Mundo. (2016). Ángela Ruiz Robles: Así funcionaba el precursor del 'ebook' inventado por una maestra española. *El Mundo*, 28 March 2016. <http://www.elmundo.es/ciencia/2016/03/28/56f903ed22601d9e268b4572.html>. Last access: November 2018.

Kay, A. C. (1972). A Personal Computer for Children of All Ages. In *ACM '72 Proceedings of the ACM annual conference*, Volume 1, Article No 1, Boston 1 August 1972. New York: ACM.

Kittler, F. A. (1990), *Discourse Networks, 1800/1900*, Stanford: Michael Metteer and Chris Cullens, p.369.

Lissitzky, E. (1923). The topography of typography. *Merz*, 4, July 1923.

Lissitzky, E., (1927). Unser Buch (U.d.S.S.R). In Alois Ruppel, ed., *Gutenberg Jahrbuch*. Mainz: Gutenberg-Gesellschaft, pp.172-178.

Shaver, Richard (1948). I Remember Lemuria, Evanston: Venture Books.

Spielberg, S., Dick, P. K., Frank, S., Cohen, J., Kaminski, J., Williams, J., Cruise, T., et al. (2002). *Minority report* [DVD].

Waldrop, F. C., & Borkin, J. (1938). *Television: a struggle for power*. New York: W. Morrow and Company, p.52.

BIOGRAPHICAL INFORMATION

Alessandro Ludovico is a researcher, artist and chief editor of *Neural* magazine since 1993. He received his Ph.D. degree in English and Media from Anglia Ruskin University in Cambridge (UK). He is Associate Professor at the Winchester School of Art, University of Southampton and Lecturer at Parsons Paris - The New School. He has published and edited several books, and has lectured worldwide. He also served as an advisor for the Documenta 12's Magazine Project. He is one of the authors of the award-winning *Hacking Monopolism* trilogy of artworks (Google Will Eat Itself, Amazon Noir, Face to Facebook). <http://neural.it>