



Alessandro Ludovico  
a.ludovico@soton.ac.uk

Winchester School of Art, University  
of Southampton / Neural

# History of the Infinite Publication

**Keywords:** Publishing; E-book; Digital History;  
Science Fiction; Social Media.

## Abstract:

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 fixed 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, or 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 the given space. Before that, the amount of readable space had to be established in advance, being either a page or a certain amount of openness of a scroll, and the content would just be able to fill it under certain ratio rules.

## THE OPTICAL COLLAPSE OF CONTENT SPACE

This idea of collapsing the space of content has become popular especially during the 20<sup>th</sup> century, as a consequence of a society progressively information-based on a global scale, thanks to the mechanical and electrical technologies. The first wave of attempts to collapse the content space, have been based on optical technologies.

Breaking the boundaries of the print publications was something envisioned by El Lissitzky in 1923 in his *The Topography of Typography* manifesto. 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 addressed 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 limits 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 the content, which would have allowed to access multiple content sources at the same time. Before the above mentioned ending sentence there’s another point of 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 involved content or publication. The size of this *continuous* publication would remain unknown unless we’d have reached its end, which is not so distant, as a concept, from the current perception of digital publications, whose size is unknown until we reach the end of the file.

A few years later, in the second half of 1930s, there were already some tests on the so-called *fax newspaper* or *radio newspaper* (Waldrop and Borkin 1938). It was meant to allow a radio listener to print a daily newspaper at home at a fixed time of the day. It 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 in advance its size, either, until it was fully printed.

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. 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 sensibly bigger amount of content than a classic textbook. The *Enciclopedia Mecánica* (Mechanical Encyclopaedia) (El Mundo 2016) used similar optical principles 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 dual functionality: reducing the space usually occupied by the content and revive it when needed.

## THE SCIENCE FICTION VISION

In parallel to 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 archeological 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 expanded ad-infinitum 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’ *Library of Babel* (1941), written in 1941, is probably the most famous example. It describes an infinite library with all the possible books that can be written and the cultural and psychological consequences on the humans approaching it. Just a few years later, Richard Shaver in his *I Remember Lemuria* (1948) novel wrote about an enigmatic object that he called a *pocket reading machine* which was so common that would have not attracted attention in the described urban environment. 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, Isaac Asimov in his short story *The Fun They Had* (1951) had two of the protagonists to describe *telebooks* over a dialogue. 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 is not taking into account the waste of natural resources to produce both the tv set and the needed electricity, here the two media, television and print, are formally merging, in order to dematerialise the printed content in the air, channeling 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, the similar idea of a *television newspaper* was graphically illustrated in the syndicated comics *Can it be DONE?*, 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 the content, which is distilled in collapsed quantities, ready to be expanded within the device. All of them are imagining an evolution of the existing media into an updated and empowered version, with no clear spatial content limits.

## 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, has 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:

The size should be no larger than a notebook, weight less than 4 lbs.; the visual display should be able to present at least 4000 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. And 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 sports a reverse of perspective, should have been initiated by a specific event: the optical qualities of publications reaching their resolution and spacial limits, in both paper and celluloid. The next step has included the technically investment in a "container" with a comparable resolution, but with no spacial 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 the 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 the 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 exactly finding what exactly 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 being accessible for free, then why stop? El Lissitzky in his *Our Book* (1926) 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 "archeologies of the present", as Kittler (1999) 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.

Having an infinite content means available, doesn't restrain us from increasing it with the content we so easily produce on various 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 it. 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, in the online digital system, which is driven by two main time / space coordinates and qualities: instantaneousness and abundance.

Fig. 1. Shaver, Richard. *I Remember Lemuria*, Evanston, IL: Venture Books, 1948.

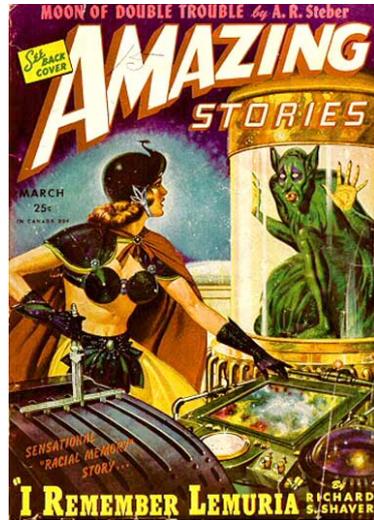


Fig. 2. Ángela Ruiz Robles showing The *Enciclopedia Mecánica*.



#### References:

- “Can it be DONE?” syndicated comics, Scoops Magazine, London: C.A. Pearson Ltd, 1934.
- Asimov, Isaac. *The Fun they Had* in “Boys and Girls page”, “NEA service Inc.”, December 1951
- Borges, Jorge Luis. *La biblioteca de Babel* in *El jardín de senderos que se bifurcan*, Buenos Aires: Editorial Sur, 1941.
- El Mundo. “Ángela Ruiz Robles: Así funcionaba el precursor del ‘ebook’ inventado por una maestra española”. March 28, 2016. Accessed January 08, 2018. <http://www.elmundo.es/ciencia/2016/03/28/56f903ed-22601d9e268b4572.html>.
- Kay, Alan C. “A Personal Computer for Children of All Ages” in *ACM ’72 Proceedings of the ACM Annual Conference*. Volume 1, Article No 1, Boston, MA, ACM New York, 1972
- Kittler, Friedrich A. *Discourse Networks, 1800/1900*, trans. Michael Metteer and Chris Cullens, Stanford, CA, 1990, p. 369
- Lissitzky, El. *The topography of typography*. Merz, No. 4, July 1923.
- Lissitzky, El. *Unser Buch (U.d.S.S.R)* in Alois Ruppel, ed., *Gutenberg Jahrbuch Mainz: Gutenberg-Gesellschaft*, 1927, 172–178
- Shaver, Richard. *I Remember Lemuria*, Evanston, IL: Venture Books, 1948.
- Waldrop, Frank C and Joseph Borkin. *Television: a struggle for power*. New York, NY: W. Morrow and Company, 1938, p.52