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Abstract

This paper outlines the findings of a small study used to inform the design of a mobile news application. It is part of a larger PhD project that uses a Research Through Design framework to investigate how hypertext might impact the design of journalistic narratives. This analysis of 24 news stories, news packages and content aggregation tools, reinforces previous studies that show journalism has not exploited the potential of hypertext as a narrative device. However, it also reveals opportunities to design news in a way that allows variation in plot, and to use shape as a tool for navigating complex stories.

Introduction

Journalism, as a practice and as an industry, is under pressure on a number of fronts. New technologies, the rise of free news sources, and legacy attitudes about audiences have created an environment in which media companies are struggling.

While the emergence of new technologies and publishing platforms presents the industry with opportunities to develop new forms of storytelling, journalists still rely on traditional formats to construct narratives and engage with audiences.

Media economists such as Picard argue that journalism has lost its economic value and a “new journalistic practice” is needed [50]. However, studies of online journalism show that the industry has failed to exploit the potential of digital platforms, in particular in the application of hypertext, interactivity and multimedia [5, 8, 21, 57].

Studies of hypertext in particular [4, 11, 19, 20, 36, 37, 38, 48, 61, 62, 63] reveal limited use of hyperlinks in online journalism, with the majority of links leading to pages on the same website and few links to primary sources or related background information. This has the effect of diluting the potential for greater interactivity, credibility, transparency and diversity that hypertext affords [14].

Hypertext and narrative

Among journalism scholarship in this area there is an overwhelming tendency to conduct studies that count links or explore where they go or why. This approach does not appear to recognise the healthy literature among hypertext and fiction scholars that explores the qualities hypertext bring to narrative [2, 6, 7, 35, 43, 52]. Among this body of work are studies that address the role of the audience [6, 31, 35], issues of comprehension [12, 43, 46], hypertext design [1, 3, 10, 18, 28, 29, 32, 39, 47, 49, 51, 53, 60, 66], and the case for visualisation as a hypertext design principle [10, 30, 32, 39, 51].

While some of these issues have been taken up in journalism research [42, 56, 60, 65], there are few empirical studies that address how they might be applied to news narratives. Exceptions include Fredin’s [26] decade-long study into how best to use hypertext in news stories. Observing that the “organizational rules that apply to newspaper articles cannot be transferred directly to hyperstories” [p. 22], he identifies eight hyperstory prototypes. He describes a process in which stories are made up of many sections, each a separate file, and for which the journalist constructs a metastory, and he suggests a system of layering information.

This idea of a metastory resonates with Pohl and Purgathofer's [51] findings that graphical overview maps that represented the overall structure of a document played "an important role in authoring (and also navigating) hypertext" [p. 810]. Other work focussed on the design of hypertext narrative includes Bernstein's work on patterns and his idea that hypertext can alter plot [2].

One aspect of hypertext scholarship that does not appear in the journalism literature is the notion that hypertext exists in space [6, 30, 34, 47], which leads to issues of how to navigate and find meaning within it [10, 18, 39, 51].

Designing news hypertexts

The breadth of research among computer scientists and literary scholars suggests there is potential for hypertext to reconfigure established journalistic practice. However, exploiting such potential raises questions about narrative design, process and control: how do audiences read and make sense of such stories; how should journalists create them; and how much control should the author and reader have?

NewsCubed is an interaction design PhD project that looks at the impact of technology on journalism practice. The goal is to discover how news might be redesigned to better exploit hypertext in a way that allows readers or users to visualise the components of a complex or long-running story, and to vary the perspective within stories. To do this, a practice-based research framework has been adopted, on the basis that it facilitates the development of new ideas.

Research Through Design

RtD is a design-oriented research model that uses methods from design practice as a form of inquiry and, through the process of designing, results in the creation of an artefact that demonstrates an ideal or "opens a new space for design" [68, p 311].

RtD has roots in "research through art and design" [25] and draws on the idea that there is a "designerly" way of thinking and acting as distinct from scientific thinking [13, 27, 58], and that is good for solving complex or "wicked" problems [9, 24, 68]. The approach has links with reflective practice [55, 67], and Cross has referred to "a science of design based on the reflective practice of design" [13, p. 54].

In the literature on interaction design and human-computer interaction, RtD sits alongside other design-oriented research frameworks such as the Interaction Design Research Triangle [23] and Concept-Driven Interaction Design [59]. Within these approaches an artefact is produced, which embodies the research and new understandings gained as a result.

Frayling [25] identified three types of research in art and design: research into, research through and research for. Downton has also distinguished between research through design as distinct from research for design, which he describes as is research that is "carried out during the overall design process to support designing" [22, p. 17]. This type of research is normally done at the beginning of the design process and serves to enable, improve or support that process.

This study of hypertext and news could be considered an example of research for design: it is part of the process of collecting evidence that will be used to inform the broader design research, and enable the artefact at the centre of the project to be brought into being.

Hypertext and news

As part of the process of researching design solutions, 24 examples of the use of hypertext in news stories, news packages and news curation applications were evaluated in terms of characteristics identified in the literature on hypertext.

The news designs were selected on the basis that they were either an example of story packaging [36, 42], or they allowed greater user control over the narrative [6, 26, 31].

The stories, packages and apps were assessed for their use of hypertext and for the level of control afforded to the reader. Story design was also considered, including the use of shape [15, 16, 17, 30, 40, 64, 66], pattern [1, 26], and visualisation [10, 32, 39, 51, 56]. In particular, how these characteristics worked to facilitate navigation and understanding of the story space.

The 24 examples are listed in the appendix at the end of this paper. They include a examples from established news brands, along with products from lesser-known news startups, which means there are some fundamental differences in the type of content being evaluated. Traditional publishers, for instance, overwhelmingly provide original journalism, whereas news startups and mobile apps generally provide tools that aggregate content from social platforms.

This leads to a marked difference in the primary use of hypertext by legacy and new media companies: where established mastheads tend to link internally ie: to other related content on the same site; news apps and curation tools use hypertext as an aggregation tool, so most links are external, ie: to the original source.

While it is difficult to compare offerings from publishers that approach content creation and delivery from such different perspectives, the design research framework of this study, and the larger PhD project, means comparison is not a focus. Rather, the aim is to gather reference materials that can be used “at various times in designing and subsequently in evaluating the designed outcome” [22, p. 20-21].

Use of hypertext

Most of the hypertext structures observed could be considered link and node systems. Files, or stories, link to other, related files or stories. Among the news packages and stories studied, these links tend to be internal — leading to related stories or to non-related content on the same site ie: part of the site’s global navigation. In the case of the news apps, links are predominately external, reflecting the aggregation focus of these tools. Exceptions to these trends included stories from ProPublica and SBS.

“Why can’t Linda Carswell get her husband’s heart back”, published by *ProPublica* in 2011, is a long-form feature story that is part of the larger “Post Mortem” story package. The story uses hypertext to give readers access to a database containing source materials, such as medical records and communication as well as annotations by the journalist. Readers can choose to turn on “source” links, which highlights sections of the story that have associated files and notes. This feature has characteristics of Fredin’s complex glossary and complex digression formats [26], in that it allows access to detailed discussion and interpretation via a separate network of files. However, it doesn’t allow for “trailblazing” by the reader, as there are no paths from this file network to other stories.

“The Block”, published by *SBS* in 2012, exhibits qualities of spatial hypertext. This interactive video-style documentary focusses on a housing estate in Sydney. Viewers move through a virtual, street-view style map of the two-acre block and explore it via interviews and file footage. These stories are arranged on the map in a way that implies meaning eg: we hear from boxer Anthony Mundine in the gym on Everleigh Street. In this way, meaning is implied by the visual arrangement of information [41]. That the hypertext nodes are related through their proximity also give a sense of neighbourhood [1].

Control

Among the examples studied, control of the narrative still largely rests with the author and users are able to explore the hypertext via embedded links. While some of the news curation tools allow users to construct packages, this functionality does not extend to the readers. For example, Paper.li and Storify allow users to create, edit and publish narratives, however, readers of these stories do not have the same control. Another restriction among apps is access to content. Most of those studied here allow users to aggregate content only from selected sources. Scoop.it was an exception in that it allows users to create original content within the tool.

Despite the potential for hypertext to “allow readers to share control of the text with the author” [6, p. 122], this ability is not common, and there are few examples of what Joyce terms a constructive hypertext — one that allows users to “to create, to change, and to recover particular encounters within the developing body of knowledge” [31, p. 616]. Such hypertexts also require “visual representations of the knowledge they develop” [p. 616].

“Prison Valley” is an exception. Like SBS’s “The Block” this multimedia web documentary has a geographical setting that the viewer explores, in this case Canyon City in the US. From a virtual hotel room, the viewer explores the town and it’s prison system via documents, video interviews and forums. Viewers can collect information and souvenirs along the way. These are kept in the hotel room and provide a way of tracking and retracing their path. Because “Prison Valley” does not use a map in the way “The Block” does, viewers cannot readily work out where they are. However, in terms of navigation, the hotel room provides a way to recognise their location and situate themselves within the information space [32, 46].

Design

Among the sample there was widespread use of layering information so that users are given some details of the story then click through for more. Fredin refers to this as the rule of “a little then a lot” [26, p. 17]. In news packages this generally takes the form of a headline and summary of content that the reader clicks on to read in full. Similarly, apps such as Flipbook, Pulse and News360 display a headline, thumbnail image, and in some cases a summary, of content that the user can drill into further. In terms of visual design, this characteristic might be considered a “drill-down story” in that the “visualization structure presents a general theme and then allows the user to choose among particular instances of that theme to reveal additional details and backstories” [56, p. 1146].

The use of layers and links, particularly in news packages, reflects the idea of a meta-story [26, 65], although there was little evidence of the graphical overview maps suggested by Pohl and Purgathofer [51].

Most news sites still fit with Rossi et al’s guidelines for a “news” pattern where the page is structured in such a way that the “space is devoted to the newest additions, including a summary and a link to the information object” [54, p. 1670]. Stories and packages from mainstream publishers, such as the *Financial Times*, *New York Times*, *The Guardian*, tend to be part of a strong hierarchical website, with extensive global navigation to other parts of the site. This is not the case with news curation apps, which tend to be more clearly focussed on the user’s preferences, have minimal global navigation (particularly on mobile versions), and do not offer the wide-range of original content that mainstream publishers do.

It is worth noting that while topic pages are features of news websites, they are not normally part of the publisher’s mobile app: the *Financial Times* In Depth section is part of the FT’s website, but not its iPad or iPhone app.

The use of space as a design tool is mixed. Where apps such as Flipbook, Pulse and News360 can be seen as examples of the comic strip genre [56, p. 1145], many of the other examples studied do not fit easily into Segel and Heer’s visual genres. In most, the story space is restricted to the computer or device screen — an example of what Kaplan and Moulthrop call “architectonic space” [32, p. 207]. But they point out that hypermedia operates in semantic space and that users should be able to “situate themselves within a dynamic information space” [p. 215].

There is a body of work that considers shape as a way of understanding digital environments [15, 16, 17, 40, 64, 66], with Johnson-Sheehan and Baehr [30] suggesting that the structure of hypertext “should also reflect a simple three-dimensional shape (for example, cube, sphere, pyramid) that the users can ‘close’ in their minds” [p. 26]. Such ideas were not evident in the study sample.

While there is a trend among apps to use organise stories groups in panels of square tiles, the concept does not extend to three dimensions. Rather, the space is broken up into content shapes much the same way has long been done in newspaper and magazine design. In the case of apps,

users navigate the content by scrolling back and forward through the screens, or, in the case of Flipbook, flipping through pages.

This is an example of what van Dyke Parunak might call a linear typology, which has texture and comparability: “texture is the existence of some field or distinguished point relative to which directions can be established. Comparability is the existence of a relation ... between any two points of the space” [64, p. 44]. Texture and comparability enable navigation.

Implications for design

The findings of this study suggest potential for news design to more fully exploit hypertext as a narrative device. The evidence shows marked differences in the way that traditional publishers and news start-ups approach packaging content in topic categories. The most obvious are in the use of original versus aggregated content, and the tendencies towards internal versus external hyperlinks.

Hypertext is supposed to provide online journalism with greater interactivity, credibility, transparency and diversity [14]. Yet, with some exceptions noted above, hyperlinks are not regularly used by traditional media companies to involve readers, incorporate information sources or include a range of perspectives. And while news curation tools allow users to create custom narratives, the sources of content are often restricted, so any diversity of views is often limited to social media.

There is potential for some of the ideas about narrative developed by scholars of hypertext fiction to find fertile ground in journalistic stories. Conklin has pointed out that the essential advantage of hypertext is the “ability to organize text in different ways depending on differing viewpoints” [12, p. 38]. Bernstein [2], Bolter and Joyce [7], and Murray [45] have all identified the possibility for hypertext to offer readers choices that vary story plot, and Bernstein has suggested scholars “contemplate the challenge of historical narrative” [2, p. 8]. Matias’s historical documentary [40] and Mulholland et al’s Story Fountain [44] are examples of multi-perspectival narratives. Meanwhile Kolb has experimented with argumentative hypertext [33]. Within journalism, Tremayne [62] has suggested hypertext can be used to give a story context by linking to alternate points of view. However there is little research or examples of story designs that examine the implications of such narrative structures on journalism.

This presents a design opportunity. Not all stories fit neatly into the journalistic inverted pyramid that organises information in order of perceived importance, and journalism, by its nature, covers news incrementally: stories are produced over time and around news angles — various perspectives of a story that together make up the coverage. As the examples in this study show, hypertext has been used to aggregate such coverage, but there is scope for designs that facilitate the ability to switch perspective.

Such functionality leads to issues of control, and it would seem there is a case for a middle ground solution: one that combines journalist-driven and reader-driven narratives with the benefits of original and aggregated content. Segel and Heer [56] have highlighted the tension between allowing users to control a story and the need for the author to drive the narrative. The challenge for designers is to strike a balance.

The concept of virtual space also provides scope for innovative news design. Currently, ideas of shape and space have not been exploited in journalistic narrative, yet the literature indicates that shape can aid navigation and comprehension of information spaces. Nürnberg et al [47] argue that spatial hypertext, which places data in space, pushes the limits of hypertext and that structure in such systems is “dynamic and implicit”. A news story built around such concepts is likely to be very different from those we are more familiar with and could challenge existing commercial structures.

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Appendix

List of data sources.

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