

# Hypertext in Mutation: The Mapping of a Mythos

Tara Ogaick and WonJoon Chung

Carleton University, School of Industrial Design, Ottawa, Canada  
{tara\_ogaick,wonjoon\_chung}@carleton.ca

**Abstract.** Currently, hypertext exists in its earlier state as webpage, connected to various other nodes of relevant information or advertising online, in interactive narratives such as Geoff Ryman's *253*, as hyperlinks housed within static documents like PDF's or Word files, or hyperlinks shelved between layers of blogging data and Facebook walls (to name a few social media outlets). Hypertext is understood as operating between poles – as a means of electronic or digital freedom granted to the reader, or as the opposite, the illusion of freedom granted by a controlled system set up by the author. This paper explores the third space for hypertext by making use of the process of using hypertext; the space wherein a user or participant is directly interacting with hypertext and thus influences the reader-author relationship by creating a subjective reading (and therefore a subjective document) of a series of nodes and proposes that appropriate interface can create design synthesis.

**Keywords:** hypertext, design synthesis, interaction styles, interface.

## 1 An Introduction to Hypertext

### 1.1 The Conception of Hypertext

Vannevar Bush presented the concept of a machine that could house different documents and media styles which would be available to anyone and allow people to gain and share knowledge [4]. However, this concept was hindered by the need for a physical artifact, and in particular, one that could withstand a subset of machines to perform various tasks (projector, etc.) By 1987, Jeff Conklin was introducing hypertext-proper. Jeff Conklin and Ted Nelson, pioneers of the hypertext interaction style, expose how digital media overcome the barriers of the physical machine that Vannevar Bush presented in 1945 [6][9]. Interestingly, the language that Conklin uses to describe hypertext presents a seemingly utopic and radical system. He writes,

*Mechanisms are being devised which allow direct machine-supported references from one textual chunk to another; new interfaces provide the user with the ability to interact directly with these chunks and to establish new relationships between them. These extensions of the traditional text fall under the general category of hypertext (also known as nonlinear text). [6]<sup>1</sup>*

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<sup>1</sup> p. 17

Conklin's statements regarding the tasks available to hypertext are appropriate – it does indeed allow for referencing between documents beyond the scope of the page the participant may be using, but the term “interact” is a misnomer. In 2001, Marie-Laure Ryan describes the difference between interaction and narrativity as play versus meaning.<sup>2</sup> The ability to “click” to open another node of information should perhaps be considered the first sign that hypertext was fantasized as having the power to produce nonlinear means of knowledge building and sharing and interacting with the original source file, but that this is under scrutiny. This is echoed by other researchers interested in the notion that hypertext is nonlinear.<sup>3</sup>

One of Conklin's statements regarding the potential that hypertext espouses is that it should not be properly representable on a printed sheet of paper [6].<sup>4</sup> Yet, much like the desktop metaphor famously praised by the Xerox Company that produced the Star User Interface and presented an interface style that bridged the gap between the technology of the computer and the physical counterpoint of the office desktop, hypertext is still most often referenced as a “page” – especially in relation to databasing and knowledge sharing [5].<sup>5</sup>

## 1.2 Metaphor and Its Influence on Developing Interfaces

The metaphor of the desktop provided users the affordances necessary to intuit functions of the interface and appreciate the GUI (graphical user interface) developed by Xerox in the 80s [5]. This included the presentation of text documents as icons, and by using the pointer as metaphorical “hand-tool” to perform actions such as move

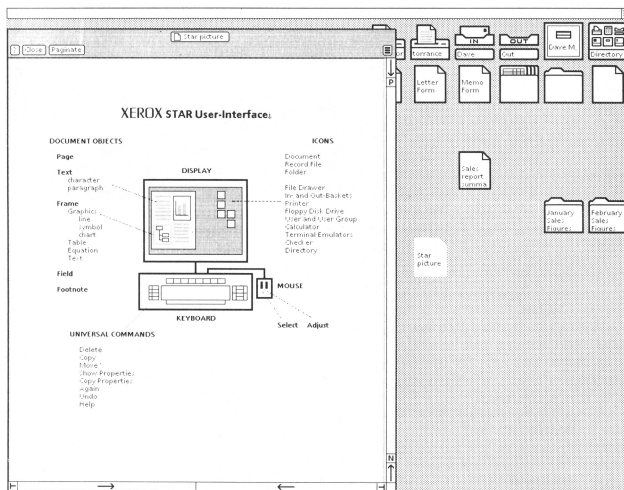


Fig. 1. The XEROX Star User-Interface

<sup>2</sup> p. 45

<sup>3</sup> A few of these authors are, Smith and Wilson, 1993; Kendrick, 2001; Ryan, 2009; Pope, 2010.

<sup>4</sup> p. 17

<sup>5</sup> p. 517

and copy, users were presented with a style of interaction that invited a performance between physical reality (outside the computer), and digital reality (inside the computer) [5].<sup>6</sup> This was a revolutionary development because it combined human needs psychologically by providing a reference point grounded in reality (that of a physical desktop), with the digital landscape of the desktop.

### 1.3 Examples of Interfaces that Use Metaphor

The use of metaphor for the development of new interfaces has expanded beyond the desktop. Some examples of this expansion include TapGlance (using a magnifier tool for inter- and intra- application navigation for mobile phones) [11].<sup>7</sup> The MagicBook (for augmented reality devices, this metaphor is espoused in a physical book) [2], and Toolglass and Magic Lenses (for use in digital media as a window pane metaphor that allows for multiple layers of data to appear or be hidden) [1].<sup>8</sup> These are three examples, but there are others that are less focused on a type of computer device or screen such as haptic animals that still rely on metaphor (the haptic noses, haptic fur, and so forth). This paper, however, is focused on hypertext as a new style of interaction with idea creation and relation capacity that haptic devices are not as focused on. However, tangible interaction will be touched on as smart phones and devices are already integrating this style into hypertext. For example, reading software on the iPad that includes the ability to touch on any word and be given a dictionary definition.

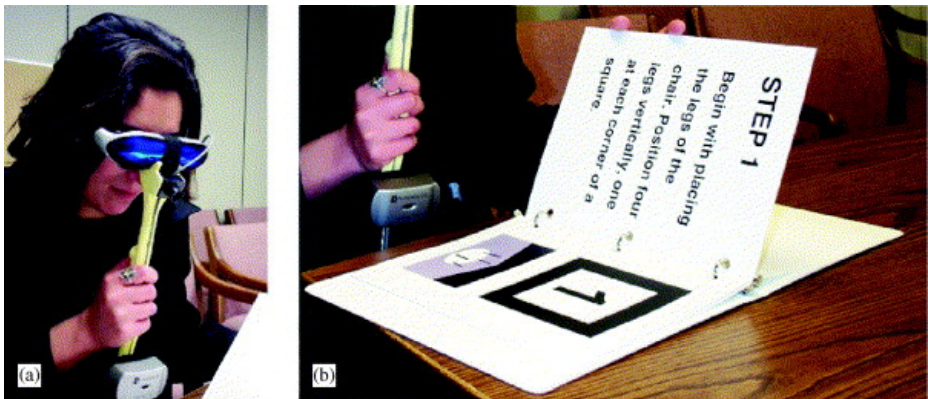


Fig. 2. The MagicBook Interface

<sup>6</sup> p. 520

<sup>7</sup> p. 386

<sup>8</sup> p. 73

These tools may be interpreted as metaphors for the original hypertext. They are tools developed and designed to enhance learning and the manipulation of data, to envision layers and wander through these layers while remaining connected to an original context, and as methods to enhance interaction rather than simply deriving meaning from collected data. While one might see fragments of these tools in some software, they do not appear in popular media items like laptops or smartphones.

#### **1.4 Metaphor in Hypertext**

A paper by Ece Merdivan and Nesrin Ozdener in 2011 examined the effects of different metaphor in relation to hypertext in specific. Their study was relevant to the need for tools promoting knowledge and learning and are thus applicable to developing a discussion on metaphor both in interface design and in hypertext. According to the results of the study, metaphor is just as important as the way it is used [9].<sup>9</sup> Moreover, the use of metaphor offers conflicting results for the ability to create nonlinear texts and student comprehension and absorption of knowledge [9]. In this instance, one is able to see where meaning is both attained via metaphor and proper nonlinear creation and the discrepancy where meaning is lost in the interpretation and knowledge acquisition of data at the end of the hypertext [9].

In fact, the authors conclude that “Future studies can develop strategies to enable students to read the whole content text before hypertext construction” [9]. This statement furthers the conflict buried in research on hypertext and the desire for it to synonymously promote creativity and challenge linearity. Here, Merdivan and Ozdener state explicitly that one must see the entirety of the hypertext (its map; its linear structure) before one is able to access the potential for the nonlinear.

## **2 Mutations in Form**

### **2.1 Storytelling and Gaming**

Marie-Laure Ryan, one of the most renowned critics of interactive fiction as well as one of its greatest champions, posits that there is a particularly interesting design problem that affects interactive fiction. What she does not predict is how relevant this problem becomes for interaction designers and user experience designers. In her seminal text, *From Narrative Games to Playable Stories: Toward a Poetics of Interactive Narratives*, she writes that this design problem is how to integrate “...the user’s activity into a framework that fulfills the basic condition of narrativity: a

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<sup>9</sup> p. 280

sequence of events involving thinking individuals, linked by causal relations, motivated by a conflict, and aiming at its resolution” [12].<sup>10</sup> One may even propose that the balance between user experience and the product itself are what is most at stake in the design process.

Interactive fiction, as presented by Ryan, invites its users into a lifelike scenario where one has access to input whatever one wishes (similar to the Holodeck in Star Trek, according to Ryan) [12].<sup>11</sup> Contrary to this, hypertext fiction is a controlled environment that limits the amount of input a user can contribute and thereby becomes a challenge for the participant to figure out how to speak to/with the hypertext [12]. The author supplements the definition of hypertext developed by Conklin and other preliminary authors of the time with that of a need for interaction. Ryan notes that

*What hypertext gains in actual feasibility over the Holodeck, thanks to the simplicity of its algorithm, it loses in ability to create narrative meaning and immersion in a fictional world: narrative is a linear, causal sequence of events whose significance depends on their position on a temporal axis, while hypertext is a network of textual fragments that can be read in many different orders. Unless the user's choices are severely restricted, it is highly unlikely that they will produce a sequence that respects narrative logic.* [12].<sup>12</sup>

Therefore, what Ryan points out is that hypertext in its desirable and fantasized format of the explicitly nonlinear would render the meaningful meaningless by enforcing a lack of connection between nodes of information.

It is therefore necessary to maintain some sort of link between materials in order to maintain meaning. This is also reminiscent of metaphor; the necessity for metaphor to maintain a connection with something in reality, which has been ingrained into current models of language and semiotics, is what makes metaphor or its uses successful. Probably the most interesting example of this mutation is the interactive fiction, *Façade*. In *Façade*, the user is allowed to input whatever text they desire, so that they have the freedom to use language in its fantasized state. It is almost perfect use of natural language. The characters react to the input of text and the story revolves around how the user interacts and chooses to use this power. The number of endings one can achieve are seemingly endless. However, these interactions and the ability for meaning to remain active in the fiction is built on metaphor and although one can insert random language and text into the space of Grace and Trip's home, the punishment that the user faces is the ending of the narrative and their dismissal from the space.

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<sup>10</sup> p. 43

<sup>11</sup> p. 44

<sup>12</sup> p. 44



**Fig. 3.** A screenshot of Andrew Stern and Michael Mateas' *Façade*, interactive theatre where a user inputs text to communicate with the two characters depicted here, Grace and Trip

## 2.2 The Rules of Engagement

Furthermore, Ryan makes a distinction between a narrative game and a playable story. According to the author's definition, "...in a narrative game, gameplay is meant to enhance gameplay, while in a playable story, gameplay is meant to produce a story" [12].<sup>13</sup> Likewise, there are differentiations in what these types of interaction can render regarding pleasure. On the one hand, interacting where one does not try to "win" or where there is no predictable outcome produces pleasure in free play and imagination. Conversely, interacting where there are set rules and guidelines allows users the pleasure of "winning" or overcoming challenges and feeling satisfied in the completion of a task [12].<sup>14</sup> One may imagine that Conklin's imagined hypertext should have produced the feeling of pleasure described as the pleasure in free play and exploration rather than of winning or completion. However, one might venture that in current exploration of hypertext and their imagined metaphorical developments such as Toolglass etc, free play is hindered by both the set regulations and direct metaphor of the page, or else hindered by the learning curve or inaccessible nature of the development of these other tools.

Similar to the early stages of interaction style development and assessment, one may venture that successful interface design should include a variety of styles. Gosling and Crawford further the debate on narrative games versus storytelling by considering the difference between passive observation and the active participation

<sup>13</sup> p. 45

<sup>14</sup> p. 46

and creation that happens when one plays games [7].<sup>15</sup> It is becoming equally important to blend these two styles; users of both interactive fiction and interactive media want to be able to manipulate and develop their devices while still being able to participate passively in an experience. One sees this most obviously in Apple users versus Android users. Android users claim one of the perks of the Android user experience is the freedom to adapt and change their experience, whereas Apple users claim the user experience comes in the completed package of the iOS.

### 3 Interface for Design Synthesis

The paper up until this point has been a review of the hypertext interface style as well as interactive tools for interfaces such as the Toolglass application, and finally an overview of interactive narrative as a means of understanding the presence of necessity for metaphor in the design of new styles. Interactivity in text has been expanded to alternate mediums. Instead of needing a computer, mouse, and keyboard, the development of smart phones, tablets, and locative media (amongst other more practical products) have enabled hypertext to reach new users and be implemented across different products [3].<sup>16</sup> It is through this development that one is able to recognize problems with hypertext and design. Bizzocchi and Woodbury enumerate these problems:

*This problematic relationship can be seen as a conflict between two design domains: the design of narrative and story and the design of interactive experience. For many storytellers working in the traditional media, the design of narrative seeks a particular kind of outcome—a state of immersive surrender to the work. The reader engages in a suspension of disbelief, ignores the objective reality of the conditions of reception, and surrenders to the world of the story [3].<sup>17</sup>*

One must establish a context, or a relationship, between types of narrative immersion and interactivity to ensure that hypertext remain meaningful. Moreover, this problematic relationship calls into question whether or not hypertext has evolved beyond its primary functions from the time of Vannevar Bush and Jeff Conklin.

We propose that there is flexibility and further evolution of the hypertext interface to fulfill the power behind the process of moving between links and nodes, and that satisfies and propels story and narrative to its most appropriate quality of establishing a meaningful story. Through an appropriate interface, users have the ability to co-create a story in a non-linear fashion (thereby distancing themselves from the potential bias of one sole storyteller), without physical proximity to one-another (which may cause inconsistencies in participation or feelings of collaboration), apart from environmental constraints, and with access to the larger database and networking potential that digital interfaces allow.

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<sup>15</sup> p. 139

<sup>16</sup> p. 550

<sup>17</sup> p. 551

### 3.1 Brief Proposal of Methodology

In order to explore the potential for hypertext and non-linear design, we will first determine the set of characteristics that define hypertext and attempt to connect these characteristics to the analog world. This will help us test whether or not hypertext influences an aspect of design – its storytelling potential, for example – without developing and designing a finished digital product. Indeed, one of the most crucial aspects for testing will be to create a hypertext-like process developed for storytelling in user scenarios that focuses on the backstory rather than its finished product.

### 3.2 Workshops for Comparative Studies

Furthermore, workshops will be conducted to test this process and develop a firm set of criteria for future work in hypertext-influenced design. These workshops will compare the current meaningfulness of user scenarios in the design process against our hypertext-influenced user scenario creation. This design process has been chosen for its 1) use of metaphor for storytelling, 2) its capacity to use empathy and sympathy in order to produce meaningfulness for an artifact, 3) its capacity to create a more holistic understanding of the product, and 4) for the notion that storytelling moves design from its requirements to a space between fantasy and reality. Hypertext-influenced design does not need to remain relegated to the process part of design. We propose that this work will influence interface design as well as work in augmented reality which is still criticized for its remarkable capacity to affect the metaphor for what is human.

In order to fully actualize the potential for this cyborg interface that consciously acknowledges the limitations of interactive narratives, we will appropriate Aaron Koblin's expressions of visualization; of metaphor and the propensity for all users to contribute within the boundaries of their own abilities, interactive narrative components such as the ability to link between nodes when the reader chooses, human-computer interaction styles such as direct manipulation and natural language, and an awareness of design knowledge and processes for co-design and collaboration articulated by authors such as Nigel Cross and Elizabeth Sanders.

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