

Innovation, Programmable Media and the Human Computer Interface

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ABSTRACT

In this article, the author examines fundamental principles or characteristics (e.g., programmability, modularity, variability) of digital media that make much of today's digital innovations possible. These precepts offer context for understanding the rapid and pervasive innovation currently taking place in society and, more specifically, how this innovation impacts trends in human computer interfaces. A focus of the article will be news-orientated interfaces. This article contrasts traditional informational sources such as newspapers and television news with digital interfaces. Finally, this article makes several observations regarding technology innovation that have bearing on the interaction experience of news consumers. This article categorized these observations broadly as rapid innovation, interaction, social interaction, scale, convergence, and Internet of Things and data.

KEYWORDS

Digital Media, Human Computer Interfaces, News-orientated Interfaces, Society

INTRODUCTION

The Web and other networked-based services are primary vehicles for news and information dissemination. It is estimated that 84% of households in developed countries and 43% of households in developing countries have Internet access and 70% of the world's youth are online (ICT, 2017). The Pew Research Center (2018) reported that 93% of adults get some news online and that the digital space has become home for traditional news services as well as new types of services that originated on the web. While television news is the most widely used platform (57% of U.S. adults), many people (38%) get news from websites, news apps or social media and younger adults get news online more so than any other platform (Mitchell, Gottfried, Barthel & Shearer, 2016). Conaghan (2015, p. 1) noted that of the large portion of men and women who went online for news, half use mobile devices (smartphones or tablets). A majority of major news websites are finding that most of their traffic comes from mobile devices rather than from desktop computers (Mitchell & Page, 2015). Due in large part to mobile connectivity, people can obtain news instantaneously and become aware of worldwide events at any time of day or in any location around the world. People access news wirelessly on mobile devices, making news and information services portable, personalized, and participatory (Purcell, Rainie, Mitchell, Rosenstiel & Olmstead, 2010). The transformations taking place in news and information services magnify questions regarding the influence networked-based services have on newsreaders (Santana, Livingstone, & Cho, 2011). Researchers indicate that media are not solely transmitters of information, but they influence the process of thought (Carr, 2008; Purcell et al., 2010).

Online news content is frequently represented on digital displays as a highly dynamic interface characterized by a proliferation of media and interactivity that supersedes what is found in

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traditional informational sources such as newsprint or television news. Once comparatively simple and invariable, the human computer interface evolved into an ever changing front-end to a steady stream of dynamic content (Dobres, Wolfe, Chahine, & Reimer, 2018). Interfaces have never been so diverse or transformative. They present complex visual landscapes comprised of and supported by multimedia, communications, and networking technologies. Pervasive worldwide, they afford people an unprecedented degree of innovation, functionality and access to news, information services, and other people. The actions or ways in which users interact with modern human computer interfaces are diverse and include behaviors such as swiping, scaling, dragging scrolling, hovering, and flipping (Sundar, Bellur, Oh, Xu & Jia, 2014). Interfaces are a foundational technology that helped instigate tectonic shifts in news and information consuming behavior, journalistic reporting, and news preparation and distribution, the impact of which is not fully understood.

A focus of the paper is innovations in news-orientated human computer interfaces. I begin by reviewing attributes of traditional informational services such as newspapers and television. I then examine fundamental principles of digital media that serve as the genesis for much of today's digital innovations. They provide context for understanding how this innovation impacts developments in the human computer interface. Finally, I make several observations regarding digital innovation that have bearing on the interaction experience news consumers have with digital content.

MEDIA FORMS

Access to the news and one's understanding of it are influenced by interface elements. When people have contact with news, news organizations preplan or design the visual, auditory, conceptual, and interactive aspects of that experience. The manifestation of this design comprises an interface intended to help people access news and derive meaning from it. For example, when reading a newspaper, the printed document, type, content organization, headings, writing style, the proximity of page elements, the surrounding context, groupings and placement, and page numbering establish a context that guides readers' attention and provides them information about how to use the newspaper to glean information. One can imagine how readers would fare if a paper suddenly removed all headlines, page numbers, table of contents, and used disparate type. Some authors contend that the typographical design of newspaper makes reading easier and enhances comprehension relative to news content published on the web (Shafer, 2011). The inherent attributes of newsprint and television news media greatly influence how people access and comprehend news as well as how news is reported. Pippis, Walter, Endres, and Tabatcher (2009), for example, report research showing that content recall for television and radio news was lower than recall of textual information. Santana et al. (2011) found that news consumption varied based on the frequency, duration, and visual content of a news presentation. Access to a news story and learning from it is directly affected by many contextual features that make up the social and behavioral state of the environment in which a person acquires news (DeFleur, Davenport, Cronin, & DeFleur, 1992).

Television and Newsprint

Television broadcasts provide a vastly different news gathering experience compared to newsprint and online news. People adapt their behavior to accommodate the differences. A person may view a TV news broadcast in a room with other people or while engaging in some other activity. Television is a passive medium wherein viewers watch and listen as content gets delivered to them. They have limited physical engagement with the display interface as they endeavor to get news. A distinct separation exists between news content and the television interface. Broadcasts present short video-based stories sequenced linearly within a specified timeframe at a fixed location for on-air viewing. One's access to and the sequencing of such stories is controlled by the news organization. People can record TV broadcasts for archival purposes. Once recorded, the broadcast can be controlled by the individual.

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