ABSTRACT

This text seeks to contextualize the history of and discourse surrounding information visualization. It positions visualization in relation to broader 20th century visual culture and addresses the evolution of the interface as a ubiquitous tool and the aesthetics for understanding the organization of information. A timeline of precursors to the Graphical User Interface (GUI) is developed and a survey of recent related history and theory is conducted to deliver additional perspectives on information aesthetics. The text concludes with a brief survey of several recent visualization projects to illustrate the variety of fields being engaged and enriched by contemporary information design.

INTRODUCTION

In recent years, there has been a scramble to delineate what may be a new frontier in visual culture. Artists, theorists and designers have rushed headlong into an ambiguous realm that has been simultaneously described as data art, information architecture, infographics and most frequently, information visualization. What do these terms mean? Furthermore, what range of creative and communicative activities do they encompass?

This evolving initiative to define information visualization can be largely attributed to the influence of designer Edward Tufte, who taught statistics at Princeton in the mid-1970s. His dissatisfaction with existing literature on the “graphic standards” of information design inspired his seminal text *The Visual Display of Quantitative Information*, which he self-published in 1982. According to Tufte (2001), information visualization is about creating “instruments for reasoning about quantitative information” (p. 9) with the utmost importance placed on clarity and precision.
Information has become an aestheticized commodity, one driven by an increasing visual literacy. Contemporary media allows users to cross-reference and interact with complex flows of data and statistics while registering multiple world-views. Once limited to scientific and industrial research, quantitative data analysis is now accessible “in our living rooms and at our breakfast tables” (Danziger, 2008, p. 11). This chapter will position recent interest in information visualization as resulting from the widespread proliferation of interface culture over the last thirty years. Before delving into the nuances of the interface it is worthwhile to pause and schematize a working definition of information visualization that will act as a foundation for subsequent discussion.

What constitutes information visualization? This is a complicated question to answer as identifying the boundaries of new disciplines is always a contentious affair. Using Tufte’s “instrumental” definition as a springboard, this discussion will consider information visualization as the distillation of a body of data into a meaningful graphic representation. Problematizing this notion of “informative” representations is of particular interest to media theorist Mitchell Whitelaw (2008) who has identified data as a “substrate” of information, a body of “raw material” that can be curated and contextualized into legible forms or celebrated as abstraction. For the purpose of this discussion we will consider charts, graphs, maps, and time-based interactive pieces as potential candidates for inclusion in the domain of information visualization. In many ways, visualization can be considered a “cartographic” enterprise—as the map delineates territory, the visualization renders data, connections, time and space.

**DEFINING THE INTERFACE**

An interface defines the boundary between two entities. It abstracts the interior language of a system and serves as an operable membrane through which this system can be manipulated. Although we tend to associate this relationship with the control of technology (i.e. software directing hardware), we can abstract the notion of the interface to read the practice of information visualization. An information “map” is an abstraction of a dataset into a more accessible, legible form that can be quickly scanned, comprehended and potentially even reconfigured by a user.

As a paradigm, interface culture is most clearly exemplified by the Graphical User Interface (GUI). The GUI is a virtual environment that has become so ubiquitous that we have become blind as to how much it colours our perception. This “hidden in plain sight” perspective on the interface as a paradigm was the subject of Steven Johnson’s text *Interface Culture* (published at the height of Microsoft’s power, before the dot-com bubble burst), which presciently employed the GUI as a cipher to read the sweeping economic and technological changes of the mid 1990s.

Many of the organizational qualities of the GUI have now been deployed in other forms of media. The influence of interface aesthetics can be seen in print, motion graphics and gaming and has radically altered the nature of broadcast design—one only need compare archival television news broadcasts from the 1980s to the info-blitzkrieg of present-day cable news. There has been much speculation about the wide-ranging implications of pervasive computing, a technological revolution that will shortly transform the world around us into a networked system of “intelligent” objects. This research will posit the history of information visualization as being directly tied to the proliferation of interface culture, an ideological and technological shift that has already occurred. It will also assume there is some truth to the notion that increasing bandwidth devoted to the transfer of data will demand more sophisticated frameworks for interpreting this deluge of information (Johnson, 1997).

In *The Language of New Media* (2001), Lev Manovich updates the thought of art historian