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Interface-Based Differences in Online Decision Making

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INTRODUCTION

In recent years the online Web site interface format was found to have significant effects on attitudes toward the store and people's actual experiences when visiting Web sites. In attempting to gain a competitive advantage, online site managers are adopting state-of-the-art technologies, aiming to create a unique experience and to capture more of people's attention during their navigation. Using 3D technology interface gives site designers the opportunity to create a total experience. They are generally used in two formats. The first, more common format, is adopted for displaying 3D objects within a 2D interface site, and characterizes today's numerous Web site stores (Nantel, 2004). The second format, which is still rare, is for creation of *virtual reality* environments (Figure 1).

Converting a 2D interface site to a 3D interface site requires both technological investment, and gaining user confidence in the new environment. Therefore, site managers must weigh the pros and cons of each method before performing the conversion.

The current analysis compares *2D and 3D interfaces*, pointing out the advantages and shortcomings of each format.

Figure 1. 3D online store demonstration

BACKGROUND

Definition of 3D and 2D Interfaces

2D interface is flat design that is not intended to offer exploration. Usually, 2D interfaces are used for presenting static information. In contrast, 3D interface is geared toward immersing the user in a situation. The 3D interface has emerged as a technology that approaches the users toward a realistic computer environment (Li, Daugherty, & Biocca, 2001; Mazursky & Vinitzky, 2005). In 3D interface, users can experience products virtually by examining and manipulating the visual images.

2D AND 3D DIFFERENT INTERFACE PROPERTIES CREATE DIFFERENT SURFER EXPERIENCE

Within the many opportunities that new interfaces offer, cyber technology appears to comprise two main properties: *interactivity* and *vividness*. These major properties are frequently inversely related (Shih, 1998), such that allocation of resources to improve one aspect of the interface detracts from, or at least does not improve, the quality of the other.

Interactivity is defined as the ability of the communication system "to answer" the consumer, almost as if a real conversation were taking place (Rogers, 1986).

An important factor influencing the degree of interactivity of the mediation is the consumer's degree of control over the medium, that is, "the ability to modify the causal relation between a person's intentions or perceptions and the corresponding events in the world" (Schloerb, 1995). A Web site is considered more highly interactive to the extent that its response speed is higher or to the extent that it allows the user to manipulate the content (Shih, 1998). The wide variety of interfaces is composed of hypertext links in which the user navigates through a set of documents, text, graphics, animation, and video (e.g., Hoque & Lohse, 1999). Interactivity is enhanced by allowing shoppers to custom-design their computer environment, and by providing advanced interactive decision aids such as recommendation agents and comparison matrices (e.g., Haubl & Trifts 2000). Given their uniqueness and directed effort to improve reaction speed, download, and efficiency of mouse motion and clicking, this family is termed the *high interactivity interface*.

The second property is *vividness*, defined as the degree of clarity of the information the consumer receives in the virtual world or the profusion of representation of the mediating environment to the senses (Steuer, 1992). Vividness is stimulus-driven and dependent on the technological attributes of the mediation. It is a function of the width of the information transmitted to the senses (i.e., the number of sensory dimensions operated in the range of visual, olfactory, and tactile senses) and the depth of sensory information, reflected in the validity or reliability of sensory information. For example, a photograph has a larger depth than a caricature because the former provides a perspective with more visual information (Shih, 1998).

Consumer-enhanced experience of *vividness* is explicated by its heightened telepresence and bricolage. *Telepresence* reflects the degree of the consumer's perception of him/herself as being physically located in a mediating computerized environment (Schloerb, 1995). Researchers assume individuals who sense themselves as detached from the physical environment will spend more time in cyberspace and have a more positive experience in this virtual environment. Consequently, chances for repeat visits will increase (Shih, 1998). *Bricolage* is defined as the manipulation of objects in the immediate environment for the development and assimilation of ideas (Turkle, 1995). This is a process of flexible non-hierarchical learning, characterized by the "soft mastery of objects" (Shih, 1998), focusing on concrete mapping and manipulation. This learning process frequently depends on an individual's physical contact with an object, enabling learning through experience and play.

Table 1. Typologies of interfaces characteristics

	2D Interface	3D interface
Interactivity	High	Low
Vividness	Low	High
Telepresence	Low	High
Bricolage	Low	High

INTERFACE-BASED DIFFERENCES IN INFORMATION PROCESSING

Differences in *surfing experiences* between 2D and 3D interfaces are largely affected by the way information is differentially encoded, stored, and elicited. Previous research has shown that interfaces allowing a large amount of user contact with the data enrich the learning capacity of the consumer (Kim & Biocca, 1997; Li, Daugherty, & Biocca, 2003; Suh & Lee, 2005)

In particular, the vividness and bricolage properties of 3D interface enable more profound information processing as compared to 2D interface. These differences are reflected in the way high imagery vs. low imagery information is processed. Imagery, in the personal context, is defined as a process (rather than a structure) in which information from the senses is represented in the working memory (MacInnis & Price, 1987). The mental image can be a smell, sight, touch, taste, or sound.

The superior retention of high images in memory, relative to that of corresponding low images information (Childers & Houston, 1984; Costley & Brucks, 1992; Paivio, 1975), has three principal explanations. First, images have a holistic quality, with all of its elements provided as a comprehensive whole; each single element can evoke the entire image (Bower, 1970, 1972). Second, images are comprised of a figure and background. Background details provide a large number of clues regarding the figure. Third, concepts and words are abstract. Whereas semantic networks