DIGITAL INTERACTIVITY:

VARIOUS POINTS OF VIEW

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ABSTRACT

In this paper we attempt to offer an overview of some of the various points of view, which coexist (Arata, 1999) within the broad term 'Digital Interactivity'. We review identified characteristics of and constraints on interaction, then discuss important elements of digital interactivity (feedback, immersion and engagement, simulation, play, hypertext). We select link authoring and the construction of interactive spaces as examples of tools used to create the impression of enhanced interactivity, and identify some future applications of interaction design such as pervasive computing, peer-to-peer networks and commercial interactive sites to express brand identity.

INTRODUCTION

As Kress & Van Leeuwen (2001) state, there is no communication without interaction. Broadly, levels of 'interactivity' can be recognized as depending on quality of feedback and control and exchange of discourse according to the mode or modes ('multimodal discourse') involved. Important constraints that operate to modify interactivity of any kind can be identified as the amount of 'common ground' (Clark, 1996), constraints of space and time, relative embodiment, and choice of or control over the means, manner, and/or medium of feedback**.**

Ha & James (1998) emphasize the element of response as characterized by playfulness, choice, connectedness, information collection, and reciprocal communication.

BACKGROUND: SELECTED ELEMENTS OF DIGITAL INTERACTIVITY

Feedback

Any evaluation of feedback, as defined by Kiousis (2002), should take into account various factors. For example, feedback should not be just two-way, but should encompass several different avenues and facets of expression; it can be linear and/or non-linear. Hyperlinks should offer the element of choice, and the ability to modify the mediated environment must exist. Individual perception of interactivity depends on the quality of media (form, content, structure, relation to user) but also on 'social presence' (Short et al, 1976) or 'telepresence' (awareness of mediated environment), perceived speed, timing, and flexibility. Kiousis adds to these factors the concepts of 'proximity' - how 'near' the user feels - and 'sensory activation' - the involvement of the user's senses.

Immersion and Engagement

The qualities of 'immersion' and 'engagement', referred to by Douglas & Hargadon (2000) as 'The Pleasure Principle' and equated by Laurel (1993) with the 'willing suspension of disbelief', appear to be crucial in creating the illusion of interaction.

The role of immersion and engagement is obvious with reference to simulations, the use of links, and user perception of control and decision-making.

Simulation

Simulation (particularly as in Game format) privileges a sensation of control, a sense of presence, and entry into mediated environments as 'active' rather than 'passive' through manipulating time (speed involved in decision making), agency, the spatial orientation of the user, and what Darley (2000) describes as 'vicarious kinaesthesia': the feeling of "direct physical involvement"(157). Perhaps we might add to this list the element of 'surprise', the 'unexpected', the *apparently* random, necessitating a response and therefore creating an impression of responsive dialogue and mutual discourse, a perception of feedback and engagement.

Play

In all questions of interactivity, the target audience must be considered (McMillan, 2002), and the nature of links must be examined. Manovich (2001) complains that by following 'pre-programmed, objectively existing associations', users of interactive media are being asked to mistake the structure of somebody else's mind for their own (61).

One of the characteristics of interactivity is the nature of 'play' involved. The importance of play in performing identity and social structure has long been recognized (Huizinga, 1955), and, as Zimmerman (2004) has more recently noted, play both expresses and simultaneously resists the structure of the system within which it exists. Within any interactive system, this element of play could perhaps be seen as a crucial factor in removing the impression of a predictable structure, which stifles user individuality and involvement. Although choices, or links, are indeed programmed, there can be no play without constraints - games always have 'rules' which cannot be changed without creating a different 'game' (unless of course this is a device of the game creator to produce engagement and thus reinforce the nature and structure of the game!)

This consistency of 'world' or 'play' further contributes to the 'willing suspension of disbelief'. As Douglas (2000) remarks, ambiguity is always embedded in the interactive, but this ambiguity can be harnessed in service to the sense of play, which of itself both provides and subverts the structural framework.

Hypertext: Interactivity as Narrative and/or Drama

No consideration of digital interactivity is possible without a discussion of interactive hypertext, often characterized as 'multidimensional'. It is necessary to remember that multidimensional does not mean 'random explorations', but what Douglas (2000) calls 'polysequential' rather than Nelson's 'non-sequential' writing (Nelson, 1992), or even Bush's 1945 'encyclopedia of associative trails' for Memex (Bush, 1992), for in such an 'encyclopedia', although the associations of the reader will be used to construct individual unique meaning or personal narrative, the 'encyclopedia' has not *necessarily* been structured for this purpose by the author - this is the difference between constructed narrative and information retrieval.

Multidimensional hypertext at its best takes advantage of and exploits the human tendency to construct narratives to make sense of the world, relying on individual human selection of appropriate stimuli, and human ability not simply to choose links but to create connections, rather than simply following pre-ordained paths. Joyce (1995) remarks that the user/reader's task is to make meaning by perceiving order in space, so that the meaning is orderly but there is a continual replacement of meaningful structures throughout the text: the narrative is constantly evolving - in time and space.

Murray (1997) identifies three qualities (which she calls 'pleasures') that characterize the interactive audience: immersion, agency and transformation. Immersion, meaning

engagement of the imagination and the senses, has already been discussed as a property of interactivity. Murray emphasizes the active audience and differentiates between the role of the interactive user/reader and the role of the author by describing the user/reader as agent. Her emphasis on various points of view as one technique for incorporating multi-sequencing in hypertext is typical of a narrative approach.

An alternative approach is that of Laurel (1993), who suggests drama as a model for interactivity, and emphasizes three features:

1. Enactment (to act out) rather than to read. Narrative is description; drama is action.

2. Intensification - incidents are selected, arranged, and represented to intensify emotion and condense time.

3. Unity of action versus episodic structure. In narrative, incidents tend to be connected by theme rather than by cause to the whole; in drama, there is a strong central action with separate incidents causally linked to that action - drama is thus more intense and economical. When Laurel advocates strategies for designing interactive media, she emphasizes that the conceptual structure should encourage the potential for action. Laurel outlines several key points for designing interactive media, and emphasizes that tight linkage between visual, kinesthetic, and auditory modalities is the key to immersion.

ENHANCING INTERACTION: CREATIVE LINKING & INTERACTIVE SPACE

Link Authoring

Every interface asks the audience to participate in its construction, and creative link authoring is one of the most important factors determining whether the audience will perceive this interface as interactive.

Early on, Nelson (1992) proposed different simple 'styles' of guiding the sequencing of hypertext: planned variations, which focus on the transmission of a message, representing interconnections, representing the structure of the subject for the reader to explore. Golovchinsky & Marshall (2000) point out that the quality and quantity of the reader's choices are confined by the fixity of the links - and that the 'trick' of creating interactive hypertexts is to subvert this 'fixity'. Choices as to the use of fixed links, variation of links, query-mediated links, provide a 'hidden' structure, which conditions the audience's choices and reactions to the text as well as the level of perceived interaction. Further, linking 'reconfigures' the text and is crucial to creating the placement in space, which gives the text its multidimensional aspect and 'aligns' and 'realigns' meaning - both visual and verbal. As Garrand (1997) remarks, there must be a balance between the viewer's freedom and narrative coherence (the constraints of the game further the sense of play!), and subtle and appropriate linking creates that balance. Garrand, writing with reference to interactive multimedia, emphasizes that linking for interaction must be 'vertical' as well as 'horizontal' - that interactive writing is 3-D writing.

Links both emphasize the visual element of the text itself - the text as a visual feature - and help to create an 'enactment' of three dimensional space in the spatial relations of 'navigation' (up/down, left/right, etc.) and in the impression of 'layering.' In hypermedia link authoring, where hypertext is linked with images, videos, sounds, animations, etc., linking makes clear that verbal text is only one kind of content, and that a link does not just 'match' verbal text, sound, image, etc., but reveals content from different perspectives. Although links used in the

course of interactive exploration can give the impression of what Douglas (2000) refers to as an 'unlimited database', too much detail and too many links detract from immersion.

Interactive Space - Visual & Verbal

One aspect of digital interactivity is about creating the impression of the enactment of an infinite possibility of sequencing through creative linking - structure and content are formed by and equated with space 'traveled'. The physical action of 'clicking' to select links is combined with the mental action of 'connecting' links; both serve to structure and layer digital space, and to produce the sensation of movement through space. As noted before, users do not visualize themselves traveling up and down a line, or even back and forth on branching lines to and from a center of meaning, but navigating through 3D space. Further, identification of what might be considered as being 'inside' or 'outside' the text loses meaning and importance. This 'virtual' space is self-contained but through linking and association can contain more than the 'sum of its parts'.

As Wertheim (1999) has remarked, the frescoes of Giotto in the Arena Chapel of Padua (1305) provide a visual parallel and enactment of this kind of Memory Palace, and also a precedent for the layering of meaning in space, which has come to be seen as characteristic.

Livingstone (1999) also points out that the physical movement of the human agent (in clicking, choosing paths, etc.) manipulates objects, which exist only in digital space, as if they existed within physical space. He compares this to Lakoff & Johnson's 'embodied interaction' (1980), and, as we 'drag' objects onto and around the screen, the conceptual relationships we make between the *real* and the *digital* form the foundations of a completely new interactive space with its own specific characteristics, and its own formulae for conveying meaning.

'Paths' of reading are also important for the creation of interactive space. As Kress (2003) makes clear, reading paths are culturally dictated (left to right/ right to left, etc.). 'Multimodal' texts open the question of reading paths - in terms of 'directionality' (which direction?) and in terms of which elements the reader chooses as 'points' along the reading path. What are the elements to be read together? (Just as children learning to read do not make the assumptions about 'ordered' reading space that trained adults do.) Is the reader looking at a text to be 'read' as a conventional text, a text to be 'read' as an image, an image to be 'read' as part of a text? Thus the 'reading' of an interactive verbal/visual text 'screen' implies that the reader establish the order through his/her own preferences as to relevance, thereby constructing a personalized meaningful space.

The creation of interactive multimodal discourse thus demands that authors and designers consider carefully the interplay between visual and verbal units of meaning and their placement - not simply in terms of the space of the screen, but in terms of the relative value of that space, and how juxtaposition in that space affects the relative values of text and image. Not only do text and image provide different possibilities for the creation of meaning and 'engagement', but verbal text on-screen becomes another aspect of the visual (fonts, graphics, visual sculpting of blocks of text, layout, etc.) – and this should be taken into account by creators to capitalize on capacity for interactivity.

De Certeau (1988) suggests that, through the 'spatial practice' of walking, the pedestrian learns to create and inhabit his own city by the paths he chooses. A similar creation of personal space in virtual space is important for immersion and engagement, which is why Johnson-Sheehan & Baehr (2001) place such importance on the use of 'design metaphors' - architectural, physical spaces such as cafés, museums, etc.- to involve the user physically - and why the use of visual features (frames, icons, images) to create possibilities for the navigator,

rather than simply as 'dead' links, is also relevant to user perception of screen space as interactive space. (Laine, 2002)

Darley (2000) has proposed that the interactive element of visual digital culture is best thought of as related to earlier forms of entertainment - like the amusement park, or music hall for example, which demand active participation from the audience - rather than more contemporary media, like television or cinema. This comparison highlights an aspect of visual digital interactivity which often is not considered adequately because it is so obvious - the screen is not a television, not only in the aspect of viewer control or 'interactivity', but also in the way that images are presented, sequenced, used, and 'valued.'

FUTURE TRENDS

An increased implementation of techniques to enhance the impression of interactivity is important for every aspect of digital media. Some interesting future applications include 'Peer-to-Peer Communications /Visualizing Community' (Burnett, 2004), design practice in humanities-based applications (Strain & VanHoosier-Carey, 2003), and the field of interaction design as a whole. As Lowgren (2002) remarks: "Interaction Design is a fairly recent concept…It clearly owes part of its heritage to HCI, even though the turns within established design fields - such as graphic design, product design and architecture - towards the digital material are every bit as important." Further, as McCullough (2004) notes, "the goal of natural interaction drives the movement toward pervasive computing and embedded systems."(70) Techniques of narrative characteristic of interactive hypertext are being exploited to increase user involvement in a variety of commercial and web applications (Broden et al, 2004).

The digital design identity of corporations and brands offers another area for future application. McCullough (2004) has underlined the prospective value of interactive media for developing new relationships between the brand and the market, and particularly emphasized the expected future diversification of interactive systems by digital brands and services as a way of manifesting and performing brand identity.

CONCLUSION

As Aarseth (2003) suggests, "attempts to clarify what interactivity means should start by acknowledging that the term's meaning is constantly shifting and probably without descriptive power and then try to argue why we need it, in spite of this." (426). We need interactivity and all the various points of view that coexist within the shifting meaning of this term because successful interaction transforms the passive receiver of information into the active participant in communication.

TERMS AND DEFINITIONS

Common Ground: Shared knowledge and experience common to both sender and receiver. This 'common ground' enables the references and context of the message to be deciphered successfully and meaning to be communicated.

Digital Interactivity: Despite the fact that interactivity as blanket concept cannot be precisely defined, the quality of interactivity defined by the user generally depends on the amount of 'common ground', the user's *perceived* ability to control and influence form and content of the mediated environment, to be 'engaged' in mediated space (in terms of belief and/or in terms of sensory stimulation or displaced physical enactment or embodiment), and to participate in multidimensional feedback which offers choice in real time.

Hypertext: Text (and we use the term here in the broad sense to include 'text' that may be verbal and/or visual) which is constructed as 'polysequential' (Douglas, 2000) and multidimensional through a network of associational links.

Interaction Design: "There is no commonly agreed definition of interaction design; most people in the field, however, would probably subscribe to a general orientation towards shaping software, websites, video games and other digital artefacts, with particular attention to the qualities of the experiences they provide to users."(Lowgren, 2002)

Multimodal Discourse: Discourses are "socially situated forms of knowledge about (aspects of) reality. This includes knowledge of the events constituting that reality...as well as a set of related evaluations, purposes, interpretations and legitimations." Modes are "semiotic resources which allow the simultaneous realization of discourses and types of (inter)action... Modes can be realized in more than one production medium. Narrative is a mode because it allows discourses to be formulated in particular ways...because it constitutes a particular kind of interaction, and because it can be realized in a range of different media."

(Kress & Van Leeuwen, 2001: 20-22)

Telepresence: Telepresence has been successfully achieved when the mediated environment is perceived by the user as having similar 'presence' and importance as the physical environment. (Kiousis, 2002)

Vicarious Kinaesthesia: The dimension of direct physical involvement which gives the user in a mediated environment the impression of agency, of controlling events that are taking place in the present. (Darley, 2000: 157)

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