Digital Traces Conceptual Design Schemes for Collective Remembering

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Abstract
The analysis of a number of collaborative online environments led to the identification of design schemes. These can serve as maps for the placement and retrieval of ideas. The analysis also led to the identification of further qualities like recombination of information, experience, or dimensions of growth.

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Introduction
Memories are part of grown structures; of dynamic environments that are able to accommodate ideas and keep them accessible. Key issues, from a design point of view, are the dynamics of growth and the paths that are created in this process; paths understood as traces from the past but also as trajectories for future memories. In the hyperreality of electronic information systems such dynamically growing repositories need design on different levels from structure to orchestration [1]. The design has to go beyond providing a functional system, it also has to provide a structure or map for humans to orient themselves, recognize places, remember stories, retrieve marks, and add future memories. The conceptual design schemes presented in this paper reflect the basic principles of realized systems that allow the generation and use of collective memories.

Digital Traces
The idea of implementing the possibility for users to leave traces in digital environments can already be

found in 1964 in Roy Ascott's "Pillar of Information", a networked, public-access electronic kiosk. "As one person took information from the pillar, a trace would be recorded of the transaction, and subsequent users would be able to track the patterns of use and the system would suggest multiple knowledge pathways." [2]. "Trace", by Florian Wenz et al, was a project for the exhibition "The Archeology of the Future City" (Tokyo, 1996). Creating ones own trace happened coincidently with reading previous visitor's traces. There were two modes to experience Trace: abstract, public, complex, multilayered out.worlds and specific, private, immersive, simple in.worlds [2]. Another project focusing on traces was "Virtual Library" by Mischka Bugajska et. al. (1999). Library users create "paths of knowledge" through the history of books they check out. Others can "walk" along these paths, which offer an alternative to the library catalogues especially in multidisciplinary searches [4]. These examples of traces offer "memories" as ad hoc support for an ongoing activity.

Figure 2. Dreamscape

Figure 2. Communimage

Conceptual Design Schemes

Electronically supported, collaborative remembering—in the sense of purposeful seeking of a specific memory—needs well-designed systems that can support the user by providing the locations for memories and the respective maps. The potential to dynamically grow is an important aspect of these memory systems. A memory location is a place in space and time, reflecting the moment the memory was generated.

The following conceptual design schemes are the result of analyzing a number of successful collaborative environments that allow the storage and interaction with ideas of others. Each example had a hundred or more contributers. The success of each one of them was indirectly determined through an empirical assessment of the creative and aesthetic quality of the contributions. In the following I am addressing a number of questions relevant to the identification of conceptual design paradigms, like: How are structure and dynamics connected to the content and development of ideas? What is the dimension of growth? How can the dynamic geography be characterized?

Carpet Scheme: Dreamscape and Communimage

The core of the carpet scheme are patches designed by the participants. It is a scheme for the visual communication of ideas and the collaborative creation of a map for remembering. The borders between the patches are the location where visual coordination with the neighboring patches is possible. The scheme is simple and the area for contributions quite restricted, which may be the reason why the whole gets a playful feel. Contrary to the simplicity of the scheme, the contributions are very sophisticated. Reflections on social and political issues can be found in both examples: Dreamscape and Communimage.

In Dreamscape, the landscape of patches was of fixed dimensions. The participants designed their patches to represent daydreams starting with lines, and adding textures. Then links to websites were placed mnemonically in the landscape. A verbal communication interface allowed the coordination of the work and the negotiation of necessary measures on either side of the border.

Communimage is a carpet that grows. Currently (January 2005) the printed size would be 13x10

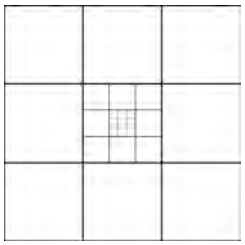

Figure 3. The gridcosm tunnel scheme

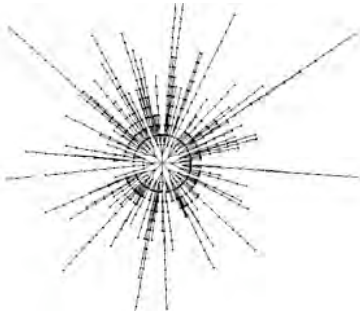

Figure 4. Diagram of the star or tree scheme of fake.space

Figure 5. A node with its context in fake.space

meters. Everybody can participate and choose a free location to place an image. It is easy to observe how ideas flow in this environment. Since the whole process is laid out in two dimensions the paths of inspiration become nicely readable, traceable and backtraceable.

Tunnel Scheme: GridCosm

A tunnel is a system that only grows in one dimension. Sito's Gridcosm, even though represented as a two-dimensional square, is actually a tunnel. In each iteration the finished 3x3 square becomes the center of the next 3x3 square. Its dimensions on the screen are always the same, but it grows into depth. The gridcosm videos show this very nicely. Gridcosm, like Dreamscape and Communimage, is playful as well as serious. In August 2005, gridcosm was in a self-reflective phase showing its own interface, a variation thereof, and its interface in the context of a computer desktop interface. It is also a linear story and finding memories relates to the retrieval of moments along its time-line.

Tree or Star Scheme: fakespace

A "collaborative" tree grows over time, a process that embeds a branching narrative character into the system. The stories can be read by navigating outwards along the branches. Once the system contains a large number of nodes, new paths can be created through the information to tell different stories.

fake.space is an example of a tree or—regarding the way it is visualized—a star. The system was created as the online working platform for a course in information technology and architecture. The collaborative creation started from a center of eight nodes in which questions about space were raised. The process depended on orchestration through a team of teachers, who would formulate assignments. These were then fulfilled by the students as a number of nodes for the fake.space system. To have a common theme and common assignments was helpful to keep the content focused.

The tree of fake.space consists of nodes and pipes. Nodes are images or 3D models; several of them can be combined into one node. Pipes are texts – linear and one-dimensional – to formulate connections between nodes. Additional creations by the participants included different travel modes, tours, and movies that combine nodes into new story lines; creative processes involving retrieving and recombining the stored memories.

Circles Scheme: WebRing and eventspaces

Circles are a powerful scheme to create substructures in a system and thereby mixing a hierarchical scheme with a flat one. WebRing, a system developed by Sage Weil in 1994, shows the power of this scheme for the structuring and navigating of websites. Different sites that belong to a similar theme can be arranged in a circle, which is accessible through a navigation bar that allows the user to go to the next, previous or a random site of the ring.

Eventspaces is a collaboratively created game based on a circles scheme. The paths around one circle are straightforward, additionally there are programmed connections within or outside the circle related to the riddles to be solved within the game. The goal of the game is to visit every node in the system, which is very challenging, because there are more than 800. The idea is to find and remember events more than facts.

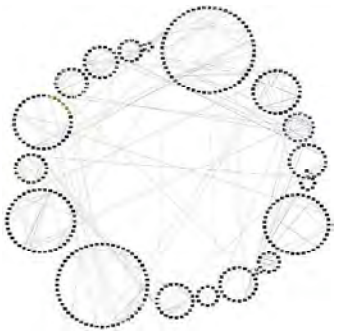

Figure 6. Diagram of the circles scheme from eventspaces

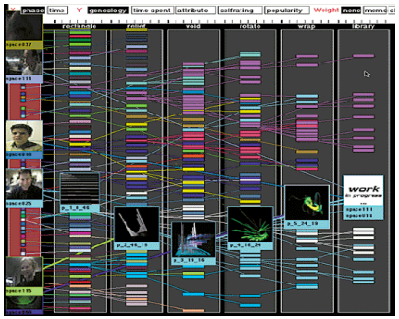

Figure 7. The phase(x) applet showing the memetic system

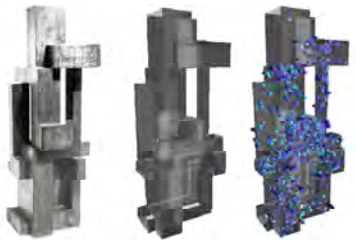

Figure 8. The volume scheme exemplified with the [roomz]+[connectionz] example

Memetic Scheme: phase(x)
A memetic scheme is a genealogical system for ideas. Contributions are added and if suitable they are chosen for further developments. Some contributions have many children, others have none; some ideas survive, others die.

Phase(x) was the online working platform of a computer aided design course and an implementation of a memetic scheme. The students handed in their results to the "gallery" of phase(x) and for the next assignment they chose someone else's result as a basis. The collaborative aspect contextualizes the different contributions; some get more visibility than others because of the process of "natural" selection. Since there are different levels of viewing the information in out.world as well as inworld views, there are also different validation models in place.

Rooms Scheme: [roomz]+[connectionz]
This scheme regards virtual spaces and their content. According to Bernard Tschumi and his theories on architecture and event, the density of events that have occurred in a space must steadily increase [4]. Spaces are seen as containers for stories. This system does not grow in any space dimension only the number of stories within the given geometry increases. The dimension of growth is the density of accessible experiences.

The example [roomz]+[connectionz] is about stories within a digital model of George Vantongerloo's sculpture "rapport des volumes". All the volumes of this sculpture are L-shaped and the participants would choose three connected ones for their story. Also connections to other stories could be introduced so that the inner life of Vantongerloo's sculpture becomes an even denser hyper-narrative, with an outer form providing guidance to the contained wealth of ideas.

Concluding Remarks

The examples were chosen according to a subjective evaluation of the quality of experience created within each of them. The experience, the visual design, the structure and many other aspects make each of the examples feel unique. Uniqueness is also a quality worth seeking, because not only within the systems, but also within their context they should function as special location for memories.

The identified design schemes are exemplary for an understanding of some major focus points for the design of collaborative memory systems. The structure and mode of growth are important, but special events, special modes of navigation, special content also add to the characteristic of the design and the specific quality of each example. In another paper I am discussing different layers in the architecture of systems for creative collaboration, which I have identified as structure, processes, interface, participants, and orchestration [1].

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