A Space for Interaction: Physical + Digital + Information + Type

Abstract

Typography elevates form for transparency, (or now a different mix) with legacy ideas of reading aka interiorization of subject matter by an individual reader over other kinds of interactive exchanges, and yet all reading is an interaction with the readers' memory, experiences, and social interactions. In framing the concerns of "challenges to traditional ideas of narrative by site specific and public art space; emphasizing participation," the definition for reading is enlarged to include discursive verbal communication, and influences from outside of the symbolization/interiorization found within the book format. Examples from public art and design break these issues down into three comparative ideas that may be helpful in understanding this different context: episodic versus semantic memory, "embodied text," and "the place of the story." Episodic memory is distinctive from semantic memory (Tulving 1972), foregrounding (and also validating) temporal and experiential knowledge in addition to writing and high literacy. In translation studies, "embodied text" is the experiential and nonverbal level of communication (gesture, bodily point of view, etc.) that can be described through additional "channels of communication" (Poyatos 1996), while ideas found in theories of narrative that examine site suggest ways that spaces activate reading and discourse ("the chronotope-" Bakhtin 1981). Finally, a methodology for accounting for these issues in design strategies is shown through particular "case studies."

Introduction

Can the highly personal interiorization of reading be reconciled with ideas of interactivity (within an environment, shared, discussed or otherwise verbalized with others, as instructions or prompts, etc. i.e. as "interactions")?

On one hand, and in a completely flawed generalization, the methods and concepts for interaction design end up being concerned with a product, a "tool" such as a cell phone that has a direct personal relationship to the user and online content. The slippage between the two is confusing but interesting to speculate on. Where does that leave print, or at least the concerns that print engenders of typographic form and books?

One of the most open definitions of interaction design is "…the design of spaces for human communication and interaction." So if we enlarge the framework a bit and we define print as essentially "telling a story," then there is a significant role that the legacy of print can play in contemporary culture. "Telling a story" is a broader category, something that print does as well as verbal communication, theater, film, video, and other kinds of interactions. There are ways to advance this idea of telling a story.

Interaction design, with a strong bias towards Human Computer Interface (HCI), seems to bypass the legacy of print and typography (such as in this meetup) that emphasizes interiorization et al., especially in the over-arching idea of how tools function for outcomes and goal-oriented behavior.

Some reading is closer to this while other forms of reading are not. For example, a road map and cookbook are much more like a *tool* than a *novel*— a reader directly manipulates their environment with these *tool-like* books. In the meantime, how do we start examining a larger sense of "reading?"

The "chronotope"

One particular idea as a starting point for rethinking print is Bakhtin's concept of the chronotope,[1] defined as the "space/time" of a story. The space and time of the story can be thought of as a unit- it has particular characteristics (such as a particular genre of a story, for example a folktale).

The story can reflect a way of looking at the world by a particular social group (the ethical dimension, or particular way of looking at the world for a particular culture embedded in the folktale). It can be used to analyze a story and also be a way of looking into the ideology of the group that reads the story. It has also been suggested by others building off of Bakhtin, that environments can be particular "space/times" for a story as well. The Berlin Wall, and "Ground Zero" at the former site of the World Trade Center in New York are physical examples where particular stories find expression.

On a smaller scale if we take this idea to be one of a narrative experience by a user or reader, then any book has not only its internal written content, its space/time within the story, but also the space/time of the reader which combines the design artifact, the time of day, the environment that the book is read in, etc. This changes our conceptualization of design. More than a package for the story, the artifact is part of the experience of content.

If we define typography as operating in this enlarged conceptual space then we can begin to think of a continuum of private to public experience. We can expand on formats thinking about particular experiences and ask questions. These are interface questions in the digital realm. In the broadest sense, a traditional book is also an interface. How does the overall structure, the "layout": create a reading experience that has direct implications for meaning: how does the setting of the space (an architectural space, or the space that a book occupies, or the two dimensional space of the page) create an expectation for the reader of how to access and approach the content?

Exhibition design comes closest to being a good model for reading as physical experience, and space as narrative. A classic illustration of this is the redesign of the exhibitions at the American Museum of Natural History. The popular notion of evolution as progressive, linear and in some cases an argument for "Social Darwinism," became an issue for science education in the 1980's. The original layout at the American Museum of Natural History created a narrative and grouping that reinforced this idea. The solution for the redesign of the space was to create a narrative that reflected less a linear progression towards "perfection," and progress: the "ladder," or "pinnacle" where inferior species are replaced by superior species, versus the "bush" of late 20th century diffusion of species into environmental niches.

The structure of the space can create essentially "the plot" of its story, literally placing the reader into a series of experiences with display, didactic panel and written content. The audience in a sense is reading a kind of book on the level of architecture and display.

Example two: A public reading experience- social interaction

Borderline Translations is part of a larger networked and digitally interactive project. It was created in Milwaukee in 2003 to bring together two to three more-or-less separate groups— recent arrivals from central and south America, the older third and fourth generation community from central Europe, and younger "professionals" living in the same area . The work is projected at a theatrical size in the gallery space. One part of the installation presents a written scenario of being in a crowd where one does not speak the same language and is consequently an outsider to the group. The story relates a decision by an individual in a larger group to choose to translate and be inclusive of the outsider. It is bilingual, simultaneously presented in Spanish and English. The audience in this location is a mixture of Spanish and English speakers who are also neighbors in the surrounding community but have little daily social contact with each other, therefore the written scenario mirrors the actual interactions between people brought together in the space, as well as the divided community. A single user at a pedestal interacts with the piece. Depending on who is interacting with the piece, either a completely Spanish or completely English version of the piece is displayed and can be toggled back and forth at any point: a language lesson. In the space, a simple behavior asserts itself where one or more users manipulate the controller while others observe or comment, but since the choice between one language or another is a public act, individual interaction becomes a public declaration of the users' identity and a choice to develop a public dialogue at that moment in the interaction between two different cultures that are in daily proximity to each other. The individual's choice

in using one language rather than another becomes an action of defining one's identity within the public space. This is an example of an "embodied text" -an embodied text is a story that has some aspect of performance attached to it- where kinesics and proxemics and the identity of the user have an effect on the interpretation within a social group.[4]

There are inherent reader issues of hierarchy, scale and size of typography in terms of a reader's ability to read the text in a particular order, which are well known in print design. However, the space is further conceived in terms of 1) the audiences' basic behavior in their daily interactions in the neighborhood, 2) the written content as a scenario of that general behavior, 3) the inherent situations presented with a large public display where a group of observers and at least one person directly leads the interaction with the work. The potential experience is anticipated through scenario building, (an act of fiction) by myself, anticipating how the design and content respond to this larger sense of "space/time," and design decisions are made to influence it.

In both examples, everything is still there: type, story, images, however the idea of experience and physical interaction shifts the "space/time" of the story to the actual "space/time" of the readers in the space.

Experience based (episodic) knowledge + semantic knowledge

How does this space/time of narrative work? One aspect is to look at ideas found in "episodic" in addition to "semantic" memory. An anecdote is useful.

The linguist A.R. Luria found that when people were shown images of objects, literates tended to group objects into abstract categories (such as a category for tools). When non-literates were shown the same images, they tended to group them into situational categories that reflected their recollection of their direct experiences- such as a saw to a log, a hammer to a nail, etc.[2] The way that they explained these causal rationales for the pairings would often reflect their previous experience. *The tool was propositional*, for example "you could use the saw to cut up the wood for a winter fire."

For well over thirty years the concept of episodic and semantic memory has been refined and applied to the understanding of experience as a significant part of knowledge acquisition. In building a general model for cognition and episodic and semantic memory, linguists have developed concepts of the episodic "... (as) involved in the recording and subsequent retrieval of memories of personal happenings and doings, the other (the semantic) with the knowledge of the world that is independent of a person's identity and past."[3]

The simplest way to see the limits of this in print design is that traditional values favor (for the most part) semantic knowledge: the use of written language and literacy to define what counts as knowledge and content. By expanding the idea of space/time in comprehension of a "text" we can start to anticipate how we can design for a larger sense of experience.

Interaction and reading- episodic:

Print based artifacts that acts directly on an environment by its "program" (a "to-do list," manuals, educational material) can be thought of as weaving together the episodic with the semantic.   How can print within a system be more "episodic," while still combining more semantically based knowledge? What ties a reader's comprehension back to using both approaches within a design program—therefore forming a programmatic idea of the artifact's usage within its context?

Take for instance the example of a cookbook. The cookbook is not only typographically different than a novel (the typographic page is bulleted for easy access through occasional glances), but it is woven into a series of prospective experiences that the reader will have with it. The cookbook relates to other artifacts within an environment, arranged by the user and based on an expected outcome. The inherent guidelines, conventions, or rules "built" into the book determine how the reading is interacted with.

Berlin 2008: an example of designing for episodic responses

The Berlin Wall has now almost completely passed from an active physical site into a historical cultural icon: Berlin has been redrawn, the Brandenburg Gate has been re-contextualized by new architecture, the U-Bahn functions seamlessly across areas where it was once cordoned off.

Berlin is experiencing a wider phenomenon that can be described more generally as transculturation: the merging and converging of different cultures, a large and pervasive contemporary global issue paradoxically that can only be understood through specific sites. With the fall of the Berlin Wall comes hybridizations of identity, communities and language, often accompanied by personal and social conflict. In particular East Berlin neighborhoods, many of the same basic issues of "gentrification" that many US cities have faced for the last 25 years is occurring. With development comes the literal erasure of the identity of East Berlin through the razing of many of its public spaces, creating a sense of ambiguity and confusion for the original East Berliners that still live there. Berliners are still in a period of adjustment of their identities and find themselves often confused by the end of the Berlin Wall and Unification twenty years later.

In 2008 I developed and exhibited the interactive project *Imaginary Countries: Berlin and the Southwest U.S. Border.* This project was originally developed for and shown in the Mitte region of Berlin in June of 2008, comparing the historical Berlin Wall with the current Strategic Border Initiative in the United States, and to also encourage active negotiation of issues of social identity. There are two parts: one part of the project visualizes the local space and the Berlin Wall based on various research and documentation sources. This section presents graphics that visualize more or less traditional "semantic" information. The behavior of most viewers was predictable- the participants read and quietly contemplated the written text and visual diagrams.

The activity

The programmatic aspect of the project brought the local audience into contact in spaces outside of the gallery space in various locations. These conversations recounted the participants' store of episodic memory: for example, participants observed and discussed the change in accent overheard on a street, a GDR era apartment block now being transformed into upper-income apartments, the fountain at Karl Marx Allee now wrapped with the multi-colored graphics of a cell phone company, etc. The information presented in the gallery space on returning from these itineraries took on a new import. Individuals recounted episodic memory where they and their parents were born (sometimes grandparents) and how the neighborhood has changed since Unification.

Section two

The project has a separate section that uses the metaphor of "split hemispheres" (the split hemispheres of the globe, the split hemispheres of personal identity) to engage audience participation. Audience members can participate in real time by answering questions relative to their own social identity.

A shift occurred in the social interaction- by using visualization tied to personal recall, dialogue shifted away from historical abstraction to personal experience, which not only aided social interaction and dialogue, but also made the audience invested in how they contributed to the information as it evolved. This is an example of how design artifacts can exist within a larger system (the "life" of the experience) and engage episodic memory, even when artifacts are not under the control of the designer. Ultimately if we design intentionally to think through the reader's experiences we are helping frame concepts and interpretation, which is a very different way than thinking that we must control a complete environment. In this case, the particular attributes of episodic and semantic are in a sense cross-listed out and planned for and therefore designed for in the larger sense of the experience.

For the Berlin project, veridicality (is something true?) was a significant category to work with, in this case to use visualization as historical documentation and to be able to re-open negotiations of identity through a sense of place. "What happens (when you access content)?" suggests a division between personal experiences of the neighborhood and the political expedients of Unification and EU membership rationales and unifying national symbols.

On the other hand, "can you infer things from this" is a strength in the symbolic and conceptual world of the semantic. The visuals used in section one compared the Southwest Border Initiative to the Berlin Wall based on conceptual themes of defense, mortality, etc. thus promoting comparisons on an abstract level of how power relationships develop between populations and their governing bodies.

Information	Episodic	Semantic
source	sensation	comprehension
units	events; episodes	facts ideas concepts
organization	temporal	conceptual
reference	self	universe
veridicality	personal belief	social agreement
Operations		
registration	experiential	symbolic
temporal coding	present;direct	absent; indirect
affect	more important	less important
inferential capability	limited	rich
retrieval queries	time? place?	what?
retrieval consequences	change system	system unchanged
retrieval mechanisms	synergy	unfolding
retrieval report	remember	know

Tulving 1983, annotated

Fig.1. Comparison (adapted from Tulving).

Episodic as autobiography and identity

Episodic memory by its nature is personal or autobiographic memory, even in a highly social context. If semantic is more about communicating abstract knowledge then episodic is based on the self and experiences. Identity becomes important to the overall interaction in addition to episodic being another kind of knowledge. This identity is embodied—individuals possess a history (a particular dialect or way of speaking for example) and a kind of "agency" that it employs choices to modify the way it is perceived by others (for example, someone chooses to refrain from using a dialect in inappropriate social situations).

 The concept of not only "telling a story," but someone telling a story to someone else in the physical space/time of the story is essential, and it is here that the so-called second-generation theories influencing HCI may be the most useful. What the event is, the particular goals, the social expectations of the space and the methodology to arrive at those goals is very much part of discourse as a mediator or "tool" to act on a larger social environment. The space that this occurs in (the classroom, a meeting, a neighborhood association) will have social agendas.

 In addition to ways of describing verbal discourse, translation studies are useful to look at in how we describe this kind of "embodied" communication. The work of Fernando Poyatos and others have extended a descriptive system of language analysis to include the body in the space/time of the story. These categories can be thought of as additional channels of communication conveying meaning through verbalization and intonation patterns, or "paralanguage," gesture, or "kinesics," relative position or "proxemics," and other symbolic communication that falls outside of a written text.[5] This work (like others' inquiry) has added to ways of conceptualizing communication as an embodied and performative act.

Episodic ideas applied to interface

Ultimately, concepts of narrative and memory can inspire new formal ideas applied to highly pragmatic design contexts. While Poyatos' work is firmly within translation studies, it has inspired my inquiry into the role of physical motion in the

design of interactive visualization as another semiotic variable. In the spring of 2007, I taught a supplementary class for graduate students that introduced foundational ideas of information design and visualization. One of the projects was to find particular affordances in a dynamic interface that would change the understanding of the Periodic Table by a reader/user.

One prototype developed a series of animated symbols that showed the three basic stages of matter- solid liquid and gas. By moving a slider to raise or lower the temperature, these states were interpreted as the particular movement of the symbols. There is a "pattern language" that is developed through the motion; however, this depiction is understood through primarily episodic references such as event, affect, synergy and the user/reader changing the system. This is more directly "experienced based" than the use of tabular/text information or a static graphic chart. Relative rates change and the reader/user has an awareness of the boundary between a solid and a liquid, while the elements that do not progress through the usual stages of solid-liquid-gas become directly apparent. The interface analogizes a physical environment and the agency of a participant to change the situation: very much like a direct experience from the concept of episodic memory.

Conclusion

There is a problem in how we conceive of a reading experience within a contemporary context. Neither supplementing text with a rich media experience nor giving broad interface-based reader options to reconfigure the text really examine the cognitive side of memory thoroughly. On the other hand, theories applied to interaction design do not really engage the openness of discourse, reading and dialogue. Reading is not "dead" necessarily, but a revision of some of the principles that it is tacitly based on is essential if it is to survive as more than as a set of instructions with which one may act on an environment.

End Notes

1-Bakhtin, Mikhail Mikhailovich. The Dialogic Imagination, Four Essays by M.M. Bakhtin. Holquist. M. ed. Austin, Texas and London: University of Texas Press (1981).

2- Luria, Aleksandr Romanovich. Cognitive Development: Its Cultural and Social Foundations. Cole, M. ed. Cambridge, Mass. And London: Harvard University Press (1976).

3- Tulving, Endel. Elements of Episodic Memory. Oxford: Clarendon Press (1983)

4- Ortiz, Fernando. Cuban Counterpoint; tobacco and sugar. Onís, H. trans. New York: A. A. Knopf (1947).

5- Poyatos, Fernando. "Aspects, problems and challenges of nonverbal communication in literary translation." Nonverbal Communication and Translation. Poyatos, F. ed. Amsterdam/Philadelphia: Benjamins (1996).