Sensory Deprivation: Issues of Control
Encoding Design Diagrams, Memory Engrams

FLANAGAN, Robert
University of Colorado, USA
rflanaga@carbon.cudenver.edu

A persistent visual obsession in contemporary, digitally processed architecture instigated this design investigation. Neil Leach in The Anaesthetics of Architecture, identifies 'aesthetic intoxication', accompanied by a narcotic numbing effect, as a consequence of the fetishization of visual imagery. The inverse principle - sensory deprivation - completes the effect. Sensory deprivation results from miscues in the digital design process and from the intentional denial of sensory stimuli. A theater of the five sense was the design medium used to investigate sensory accountability. The issues addressed were:

1. Contextual factors of aestheticization and deprivation, particularly digital factors.

2. The effectiveness of Design Diagrams, graphic symbolic schematics, to address sensory deprivation and the anaesthetic effect.

3. The effectiveness of multi-sensory Memory Diagrams (engrams) as inhabitable Design Diagrams to address these effects.

While the original intention was to study sensory accountability in digital design, the potential of multi-sensory Memory Diagrams re-centered the emphasis of this investigation.

Keywords: *Sensory deprivation; memory diagrams; design diagrams*

Sensory Accountability

This study was initiated to evaluate the hypothesis that digital technology adversely affects non-visual sensory development in architectural design. It first addresses the proposition that CAD software's selective, visual filtering inadvertently contributes to sensory deprivation by denying all but visual design development. In its second proposition, selective, digital, visual filtering compounds the anaesthetic effect, a state of mental numbness induced by the over-saturation of the visual aesthetic (Leach, 1999). The final consideration is the trend in CAD software development toward representational modeling at the expense of traditional symbolic, schematic, design processes, a factor that negatively reinforces both effects.

The common origins of deprivation, anesthetization, and process disruption are addressed through the development of Design Diagrams (Flanagan, 2000) in the concept development phase. Design Diagrams are digital adaptations of early conceptual design's trace-paper overlays. The concept development phase (ideas) is followed by translation (design development), and expression (building). These diagrams are characteristically poly-dimensional, symbolic representation of form, space, and design logic that may find literal, figurative or implied interpretation in architectural, landscape architectural or urban design forms. Design Diagrams refer to digital symbolic design schematics printed in collage, while enhanced Design Diagrams are more aptly termed Memory Diagrams in recognition of their added dimension, time.

Denial and miscues, acknowledging non-CAD factors

Sensory denial is not always unintentional; the contemporary 'fireplace insert' always engages the visual, partially engages touch, never engages smell, and cannot engage sound. While the viewer requires the apparent authenticity of the image (a television image is not an acceptable substitute, but an under-oxygenated methane flame is), the non-visual sensory properties of a real working hearth are mysteriously absent. This cultural phenomena proliferates as real fireplaces disappear; viewers increasingly lack the experience to cue the senses - the ceremony of the tended fire, the sound of exploding embers, the sharing the family meal are without memory. However, the 'image' of fire is perpetuated in a new visual icon, replacing the old references to hearth, family and home.

Parallels in commercial architecture abound, intentional sensory deprivation, including visual restrictions, are regularly instituted to enhance productivity. Much as horse-blinders prevent distraction at the racetrack, workspace controls skillfully suppresses profit robbing sensory distractions. A related factor, value engineering, essentially guarantees that superfluous sensory considerations are negated (particularly in the United States) since there is minimal economic value attributed in the proforma (economic design plan) to non-visual sensory stimuli or visual distraction.

A glib visual aesthetic identifies the second factor. In his polemic, The Anaesthetics of Architecture, Leach identifies 'aesthetic intoxication' as a consequence of an obsession with the visual image, "The world of the architect is the world of the image". The architect's office has become an image factory in support of a "... value-laden hierarchy of capital(ism)." (1999). Leach also explores the universal implications of visual excess through the aestheticization of war, political propaganda, art, sex, and education - with particular derision aimed at the fashion conscious architectural academy. While the fetishization of visual imagery induces a narcotic numbing, it is the inverse principle - sensory deprivation - that completes the effect.

The third factor, the proliferation of representational CAD software, is a simple supply and demand reflex to an industry that values highly specialized visual design tools. The problem with the new 'model based' design software is its visual spatial emphasis; it reverses the traditional design process of form follows schematic diagram with schematic diagram follows form. Quoting Autodesk, maker of Autocad, "What is Model-Based Design? Model-based design permits building designers to develop construction documentation as a set of views of a single, consistent building model. It also allows them to generate plans, sections, elevations and schedules from this model." (http://www3.autodesk.com/adsk/item/0,,692207-123112,00.html, 2001). Autocad's model based design approach promotes the development of efficient building systems, dynamic economic models and timesaving construction methodologies - a seemingly idyllic trend in CAD development - until one considers the void in schematic development.

Experiment I. Development of the Design Diagram

The pedagogic objective of the first experiment was to demonstrate a process of original authorship in digital media, one that would encourage creativity yet readily responds to the control and direction of the student designer. Here, the Design Diagram addresses the intangible conflict of language through the symbolic development of 'sticks' (rules) and 'seeds' (ideas). Rules are variables that regulate process i.e. always perpendicular, never intersect etc., while seeds project meaning. Individual symbols hold little particular significance, their development and configuration in the diagram imparts meaning. Initially, each student identified text, graphically structured an argument and then negotiated the conflict. Student design processes relied on hand sketches, computer modeling processes, and occasional cardboard study models [Figure 1].
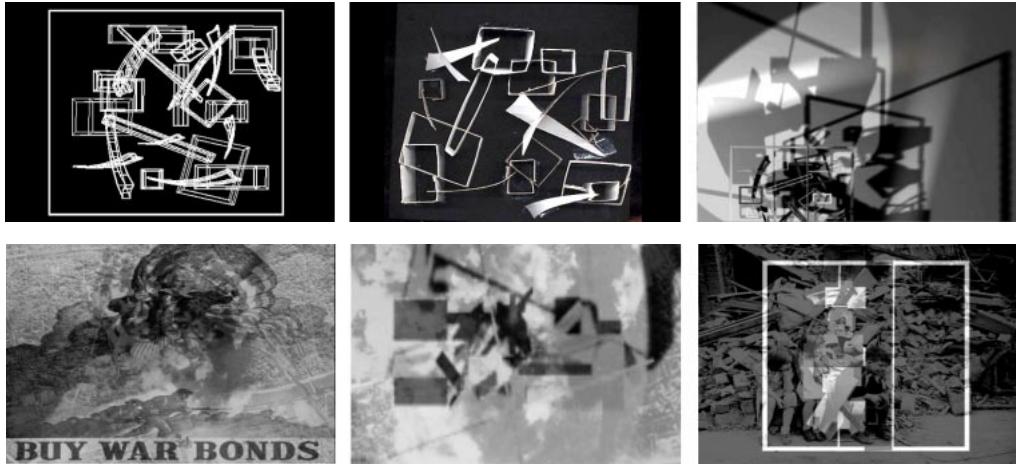
Figure 1. Design Diagram development, Friendship/ Enemy, Vipul Dinesh Safi, spring 2001.

Figure 2. Memory Diagram sequence, Vipul Dinesh Safi, spring 2001.

Evolution of the Memory Diagram

Memory Diagrams are time enhanced Design Diagrams, they are composed of layered sequences of imagery and sound whose meaning is capable of being 'loaded' into memory with the intention of informing future design. The hypothesis is that time-enhanced Design Diagrams, or more aptly Memory Diagrams, would add an additional dimension of information. Time causes them to function somewhat differently however; since these animated diagrams are dependent on memory, they can be played forward and backward repeatedly, but the media resists the simultaneous, comparative reading of print media.

Symbol + Message + Time = Memory (form and concept)

The three panels in [Figure 2] below illustrate time perception and message layering in a Memory Diagram. In the world of the cinematographer, "The desire of the fiction filmmaker - or any artist who creates an imaginary world - is that the audience will accept the symbolic truth of his situation and characters." (Giannetti, 1972). Construction of this memory also requires filtering, "The truth of the matter of course is that an event must be perceived, and the very act of perception involves distortion. Relevant and significant facts must be sorted out from the vast multitude of irrelevant details." (Giannetti, 1972). Undoubtedly, previous reference to the negative effects of visual filtering by digital software come to mind, but in this case the message is edited by the author to provide clarity.

Several factors are notable in Memory Diagram [Figure 2]: Contextual image of war and geometry are layered, but geometry is not 'tagged' by the image (see Experiment II). It is impossible to accurately ascribe the impact of sound in the Memory Diagram, but it significantly textures meaning. This three minute animation was overlaid with six audio samples, each chosen to pace delivery and to add an additional layer of information; in its entirety, the Memory Diagram embeds an awareness of the futility of war into the geometric conflict derived from the text.

Experiment II. Development of Inhabitable Memory Diagrams

In contrast to the form and concept approach above, in the second experiment Memory Diagrams would be constructed as an inhabitable thought diagram, a mental engrams where "...the brain can retrieve the memory - rough and perhaps a bit faded, but a

serviceable replica of the original perception." (Johnson 1992). First however, the issue of form would have to be addressed. While functional consideration were intentionally minimal, it was a troubling issue because no link between processes of geometric development and the memory diagram were yet defined.

Issues of form were not easily discounted early in the design process. In a fortuitous coincidence, Daniel Libeskind's proposed expansion of the Denver Art Museum coincided with this study. In Libeskind's proposal, jutting angular shards of titanium crystal erupt from the ground in a visual expression reminiscent of a mineral specimen. It raises the design question, why? In the classroom setting, why informs both what and how; failure to address this issue in the digital as well as the non-digital realm plants the seed of "...too much space given over to buildings with nothing to say." (Muschamp, 2001). But, why should a building say anything? The common shipping box is intended to transport its contents from place to place (location), while the architectural container is intended to transport its content from place to place (in time). If the purpose of each conveyance is functional, why would each container not represent its purpose? Assumptions of stylistic appropriateness were therefore intentionally rejected.

The form was assumed, a simple rectangular box, a stage prop to instigate discussion. The Memory Diagram would be constructed independent of geometric development. The box image was scavenged from a tutorial photograph in the photogrammetry software Canoma, stripped of its message, and re-represented as place [Figure 3]. It was acceptable for students to revise the box in the photograph, but an explanation of 'why' was required in support of that decision.

Developing Inhabitable Memory Diagrams

Each student created a Memory Diagram for a theater of sensory perception. The process was derived from the premise that two, almost simultaneous, creative functions initiate architectural design. First, the precursory design function of sketches and narrative is developed in response to precedent and context; second, the sketches and narrative are translated into the outline of form and function.

Contextual discussions were framed by Fredric Turner's Rebirth of Values, Juhani Pallasmaa's The Eyes of the Skin and Anthony Podeswa's film, The Five Senses. Required research of the work and theoretical positions of an esteemed architect had a most unexpected effect, especially when the architect's theoretical positions and work appeared internally inconsistent or at variance with the student's personal values. The student researching Peter Eisenman's Wexner Center for the Arts [Figure 3] discovered that, "Eisenman's stated goal is to eliminate self-expression from the architectural object." (Muschamp, 2001). This was counter to his own beliefs; he therefore abandoned that approach and adopted an allegorical, narrative strategy derived from the work of architect Douglas Darden (Schneider, 2001) [Figure 4]. The guiding narrative was Gabriel Garcia Marquez's One Hundred Years of Solitude. His
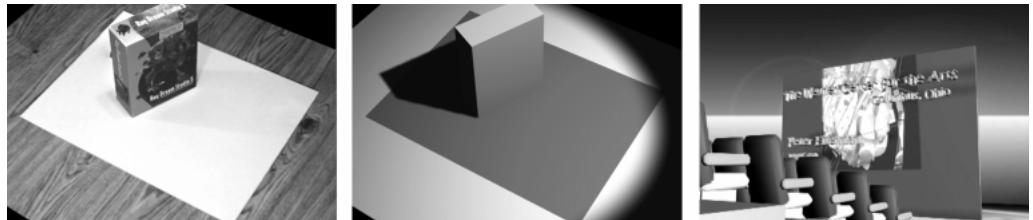

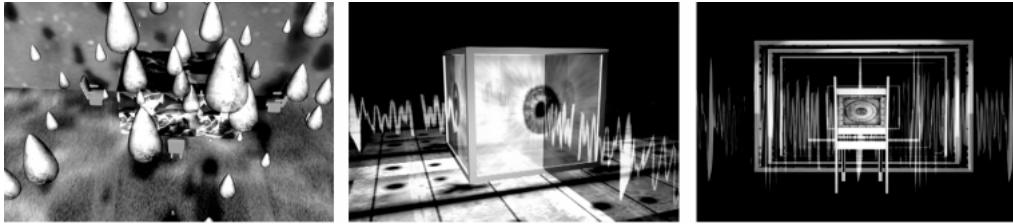*Figure 3. l. to r. Tutorial illustration, ready for reuse, contextual analysis by Eric Mallon.*

Figure 4. l. to r. Memory Diagram Eric Mallon, Vishal Turkar (2) spring 2001.

Memory Diagram evokes a surrealistic "Dictation by thought,..." (Breton, 1924) visual and aural quality. The music of Frank Sinatra, Come Fly With Me, overlays the dreamlike sequence.

The next student's research documented the work of architect Christian De Portzamparc with the intention of adapting his plastic use of space and form. While his investigation was enlightening, the student's synesthetic explorations into sensory accountability redirected the design approach away from precedent as a 'projector' of form and redirected it toward the concept of waves and currents as universal interpreters of perception. His three minute Memory Diagram evokes a surrealistic world where the theater presents the improbable or even impossible sensory experience.

Conclusions, potential and limitations

In any venture into the unknown, the things that one discovers are not necessarily what one intends. Here, the quest for sensory accountability organized and guided the investigation, but the inherent value of Memory Diagrams appears to exceed its application in sensory accountability. It is difficult to develop evaluation criteria for Memory Diagrams since their value is mired in subjective judgements. The criteria that I adopted to evaluate Design/Memory Diagram was their ability to inform the project designer in a coherent and creative way of the conceptual designer's (student's) intentions.

Experiment I demonstrated that the negotiation of text to create Design Diagram is an effective pedagogic strategy capable of illustrating the metaphoric design potential of digital processes. The use of enhanced Design Diagram with the added dimension of time, Memory Diagrams, extended use of the diagram to create a richer multi-sensory design reference. The potential of this design strategy is in its reasonably direct approach to integrate conceptual design development with design development. It benefits from a defined process working toward an identifiable objective.

Experiment II demonstrated that a Memory Diagram without the requirements of geometry can generate a rich and varied conceptual design investigation. The process tended to identify errors introduced by assumption. This was evidenced in both student projects illustrated [Figures 3&4]. Its focus on the design argument is its strength, but its undefined relationship with design implementation is its weakness. Similar issues regarding the complexity of direct control of process, related to meaning and interpretation, were encountered in structuralism and semiotic film theories of the late sixties (Giannetti, 1972). It has yet to be established if this process can expand beyond its conceptual informational abilities; attempting to apply scientific rigor to this design process is an unknown at this time.

Music is certainly one of the most intriguing, yet ambiguous, factors in this study. Music's creative and organizational infusion is in these Memory Diagrams. In essence, music appears capable of texturing creativity and design - much like skin textures space. This issue will be considered at a later date.

Summary

The advent of inexpensive yet capable digital processes arrives with many benefits; the issue of

Memory Diagrams and sensory accountability would not have been addressed in this digital setting except for the availability of this inexpensive technology. On the other hand, technological progress can seriously undermine the existing order; the void in schematic development would not have been introduced except for technological advancement.

The nature of memory is what is really at issue here. The ability to address the way that memory works and to exploit that understanding for commercial or other purposes is fraught with questions. Should Design Diagrams be encoded as memory engrams? As we begin to identify the programmatic functioning of memory, should it be exploited? Is it ethical? The past history of mind/memory control is at best dubious; it is a factor to be considered.

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