ABSTRACTION, CHANCE, REALIZATION AND ABSTRACTION

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INTRODUCTION

In the scope of this paper I intend to discuss three programs written this semester for DBN in terms of a visual language (line, shape, value, form, texture, and space as well as time where appropriate), my conceptual motivations for each of the programs and the historical influences behind their visual and/or interactive forms. The selected problems will be 4B (creation of a dynamic composition using two contrasting elements), 5C (relating a 10-point polygon to the position of a mouse, programming in python) and 2B (creation of a perceptual glitch). I would also like to discuss my personal insights, questions, experiences and problems as they concern the larger relationship between computational design and the artist/designer/student.

THE COMPUTATIONAL, THE INTERROGATIVE AND THE HUMANITIES.

“We are on the verge of a new age in creative expression: the digital age. With the development of the computer, fundamental changes are occurring in the ways we communicate, create, and express ourselves. As a result, we need to think very differently about the processes by which we communicate, create and express ourselves.” (Holtzman, p. vii)

Steven Holtzman wrote the above excerpt in 1994. Within six years, arguably less, we have since moved beyond that verge and are now within that digital age. Creative expression in a computational design medium (that is, designed forms dependent on a silicon chip) offer designers and artists unexplored possibilities beyond the obvious simple translation of analog media to digital media. Experimentation in computational design media, and in many ways the technological in general, most importantly offer us the interrogative, the opportunity to expand existing limits to and methods of knowing by not only questioning ourselves in our relation to an unfamiliar media, or of a media as it exists in itself, but as a primary questioning of our human identity. (Turkle, panel lecture notes) This does not imply the questioning need be metaphysical or complicated; in fact, it should be the simple questions of who, where and what we are—questions very much of and in this world. The questions are very much about the now.

“Creeps who talk about a new vision make me sick—and suspicious,” wrote Robert Venturi in his polemic “The Vision Thing: Why It Sucks” and “Being truly visionary is being profoundly now—and in this context being of now is being ahead of now. If you deal with the now perceptively, you deal with the future automatically—this applies if your focus is on the now and on its potential involves evolutionary or revolutionary action.”(Venturi, p.273-4) The evolutionary implies a history and the revolutionary works in real time, not in a time to come. “What’s truly visionary can be perceived only after it has been incidentally achieved. Visionaries are visionaries only in hindsight. The only way to be visionary is to have been visionary.” (Ibid, p. 274) As such, by working in the now with the technology of the now, exploring ways of thinking about design and humanity, these problem sets might one day seem visionary. It’s far from who can write the programs, for most people can—the value is the timely vision into the process.

Gustav Janouch wrote in Conversations with Kafka, “I took him photographs of constructivist pictures. Kafka said, “They are merely dreams of a marvelous America, of a wonderland of unlimited possibilities. That is perfectly understandable, because Europe is becoming more and more a land of impossible limitations.” (Guggenheim, p. 15) In this spirit we will forever be in Kafka’s Europe, a land of impossibilities, when we refuse to look beyond the surface of any medium without providing it a human context. Technological limitations (processing power, bandwidth, etc.) are often cited for the slow advance of a true realization of digital media. In fact these reservations are limitations of the mind and curiosity and a thinking that excludes the ‘now’. The “America” Kafka refers to can only begin to be when we question and position ourselves to be receptive to the homecoming flights of our outgoing pings into this computational wonderland.

In this spirit, we should advocate risk-taking and serious critical investigation into a computational America. There is much we may have overlooked and more we have not found. By focusing our attention
with an eye of an artist as opposed to an engineer, we discover domains of not only unlimited possibilities, but of unlimited limitations (yes) and most importantly unlimited impossibilities (as in the visualization of fractals only previously conceived in abstract number theory or to what Carl Francis DiSalvo writes in his title piece in Leonardo, “Imaging the Impossible.”) (DiSalvo, p. 83)

A NEW REUNION OF OLD FRIENDS

“It was once useful to compare a computer to an electronic pencil or to a sophisticated typewriter. At the end of the twentieth century, this view would be a dangerous misconception of the machine, as it has moved into new areas of support. It can act as a medium and in some cases already as a partner.” (Schmitt, p.5)

Computational design is intrinsically as much a partner of (and in) the humanities as the computer is (becoming) a partner of the designer. Partnered, computer and the curious designer are able to explore abstractions only possible in this partnership. “The computer may develop well beyond what was originally created by the artist, beyond what the artist could even have conceived.” (Holtzman, p. 219) It is the focus on the conceptual and the focus on new ways of approaching problems that makes this a unique partnership. It is not a partnership of production but a partnership of inquiry. To believe that the partnership exists because the designer must use a certain program to flesh out comps for clients or to design interfaces for e-commerce is entirely missing the boat. That is a computer as a tool. It would be ridiculous to consider your spouse primarily for utility. It is an ongoing dialogue between the computer and the user that make this work. It is in this process of partnered creation and exploration that the designer becomes the metadesigner. I feel in many ways, this is how I’ve approached my problem sets as an art/design student without a history in programming and a very questionable history in mathematics. By experimenting with a very basic set of commands, often by chance, I am able to produce forms that I had no way of conceiving before and as such I become at times less a programmer and more a learner.

In the case of exploring these problems sets, the final program is revealed on one hand by the visual (image) and on the other a description (the code). I am thrust into an ambiguous situation of creating. Although I at first seem to struggle with the how more often than the why, it is the why which most fascinates me and keeps my interest. Experiencing the creation of visual imagery by abstraction is a violent process particularly if you’ve no reference, much like stabs in the dark alley as a primary way of navigation. I wouldn’t be surprised to discover that many artists based in traditional media feel same way, whether in sculpture, paint or performance. It is so because it is reconciliation between the abstraction of the known and the realization only seen as a result of the unexpected—and in taking chances.

In some ways, a metadesigner becomes one by chance. This is my personal experience. Not in as much as a random happening, but as an active and deliberate process without a determined end. In other words, design might be as an act of the causal and the designer as one who accepts the perpetual state causation. And it is often chance that pushes the designer to their best and it is chance that often arrives at the best solutions.

OF CHANCE

“Night is a richer representation than being. Chance comes out of the night, it returns to the night, it is the daughter and mother of night. Night is not, neither is chance. Chance being that which is not, reduces being to a deposition of chance (a chance, which withdrawn from play, searches for substance). Being is, according to Hegel, the most impoverished notion. But chance, according to me, is the richest. Chance is that by which being goes to ruin in the beyond of being.” –Georges Bataille (Green p. 26).
Composition by means of chance disrupts the possibility of a work’s having a coherent thread or core running through it to guarantee its intelligibility from the inside out. Dada’s enemy was the a priori. (Krauss, p. 106). Coherency can be boring. Intelligibility can be even more. Both will always be boring when problems arrive at complete understandings. This is why process is always more important than end. The Renaissance masters perfected the representation of the human body through a careful and then new scientific approach. With the same canvases, the same paints and brushes, the Mannerists refused to be content and pushed to continue the process through new interpretations. Without this segue we could not have moved forward into the Baroque. For me bruised elbows were better tools than training wheels. Process is not necessarily knowing the outcome and at times not caring. Process is sometimes being happy with unpredictability and chance.

Chance has been my savior. It’s interesting, that difference between chance and the random. Chances are deliberately factoring a random variable into my code for an effect, the program won’t render as I intended. Experience has been that randomly altering a variable has the best chances of coming out more or less interesting. Chances are that sometimes the best stuff is already there.

PROBLEM SET 4B, JOSEF ALBERS AND WASSILY KANDINSKY

In problem set 4B we are given the task of writing a program creating a dynamic composition of two contrasting elements. I chose to use line and color as my primary visual elements. The image appears very much like a UPC bar code consisting of exclusively vertical lines with the exception that in some areas the lines do not expand from the bottom to the top of the paper. The positions of the lines are determined by variable in a repeat command.

I was very much inspired by the possibilities for the illusion of movement in static images created by Josef Albers in his early work with glass, color and light in the 1920’s. Albers was able to create aweing works in glass using only the simplest elements of line, color, and space. I particularly found his Skyscrapers series inspiring. In this series of works created with colored sandblasted flashed glass and paint, Albers horizontally arranges lines varying in only two weights (thickness) and four lengths. It is in the positioning of the lines in a square space, much like the dimensions of the paper in DBN, that creates a feeling of movement. Specifically, each type of line (based on weight or thickness) is stacked horizontally in varying quantities parallel to the X-axis with an origin at some point on the Y-axis (much like a bar oscillator on a stereo equalizer.) As groups of lines the length varies but within each group width and length are uniform. In areas of the composition the length of line groups may overlap in numerical coordinates along the X-Axis but never in their position on the Y-Axis. The effect is a staggering of horizontal lines, each line never touching another, in varying lengths and widths. This creates an illusion of motion using primarily the effect of contrasting line length, width and color/value in the space. In this series, Albers creates one template and simply introduces color or inverts color to create new pieces. In Skyscrapers A (also known as Skyscrapers I), Albers chooses black for the background and white for the lines and he inverts this scheme in Skyscrapers B (Skyscrapers II). (Guggenheim, figures 29-32) In my composition, I instead chose to arrange my lines vertically and compromise between Albers works with a background (paper) of gray (value = 30). I disregarded Albers restriction of keeping the lines within groups and uniform and instead enjoyed the effect of having lines create their own groups based on variables yet remaining strictly vertical. The lines parallel to the Y-Axis beginning at any point on the X-Axis created an effect of a disjointed bar code. It is in the relation of the differing line weights that visual associations of line groups can be made. Contrast in height of lines is within the composition are responsible for the illusion of movement.

I was further intrigued by the visual explorations of Wassily Kandinsky. Kandinsky borrowed from a rich precedence in the humanities. Notably, two events that “shook his being” were viewing Monet’s Haystack and a performance of Wagner’s Lohengrin at the Court Theater. (Holtzman, p. 70) He was further known to draw extensively from other contemporaries such as Braque and Matisse. What impresses me is the rigorous approach Kandinsky took to his craft, in particular, his studies on the systems of angles, lines, planes, color. In his studies for his paintings, Kandinsky drew simple schematics varying proximity of lines. In one study, he arranged the lines much like I had done in 4B varying experimenting
with uniformity and contrast of line proximity. Using this method, he was able to create a dynamism using contrasting only one visual element of proximity while retaining uniform line length, width, and height. (Ibid, p.82)

Both of these artists set an analog precedent to the problem and it is something I’d like to explore in both media.

**Problem Set 5C and Kite Flying**

In this problem set we are given the challenge to write a program relating a 10-point polygon to the position of the mouse. Unlike the implied visual dynamism of the 4B, this problem not only demands actual dynamism but interactivity. I chose to create a triangular shaped decahedron consisting of 10 points rather than creating a decagon. Eight points are aligned on the base of the triangle. Two lines emanate from each base point to one of two points that form a convergence point creating an illusion of a side of a triangle. Those two points are connected by one line. Each side has a difference value (white, gray and dark gray). The position point of convergence on the white side is determined exactly on the position of the mouse. The decahedron seemingly twists and flips to accommodate the movement of the mouse.

There have been art movements and there have been art movements based on art and movement. Such a phenomenon can be seen in the works of the Dadaists and the Surrealists. Movement-based and time-based art forms were enjoyed long before the twentieth century, dance for example, but movement in non-living media particularly lends itself to the early twentieth century with the popularity of motion film and the early questions and use of media and art forms by the Dadaists and later Surrealists. Marcel Duschanp was instrumental in giving path for these new forms of expression using time-based media. And it is not necessarily required that the media itself be time-based, but the use of the media be time-based. Photography for example was pioneered in the early to mid-nineteenth century by photographers such as Louis Jacques Daguerre, William Henry Talbot Fox and Matthew Brady. But the photograph remained more or less a realistic capture of a moment and related no more a sense of motion than most paintings of the period, and arguably less in spite of its enhanced realism. It was the pioneering of sequential photography by Edward Muybridge that gave us the first glimpses of an art form to come. It was at the turn of the century that saw an explosive rise in interest in time-based art forms and designs. This explosion manifested partly in the works of the cubists, De Stijl artists and the new typographers. (Meggs, 209-210)

But it is the introduction of notable works by the Surrealists that we begin to find an adoption of time based three-dimensional forms. For example, Man Ray’s “Object to Be Destroyed” is a metronome with a cutout image of an eye attached to the dial. In fact, writes Rosalind Krauss, the “real movement was not always in question but, rather, what one might call the burgeoning significance of the metaphor.” (Krauss, 120-123)

After playing with the programmed solution to 5C, I thought of kite flying as an analog solution. Kite flying has been considered an art form by many, particularly the Chinese. In many ways, I saw the curious triangular form on the screen attached to the mouse like a kite on strings. The wind being a variable, changing not only the form of the kite but how the kite responds to the tug of the strings. But this type of response is always intimately dependent on a cause and effect relationship. The solution for 5C does not loop nor does it have the capacity to move without stimuli. In the same way, a kite even on a windy day does not effectively fly without a user providing the dynamic tension. It would be interesting to program an environment where a user could model a kite and set variables for how the kite would act in that environment. Once satisfied, the user would go about constructing an actual kite or instead continue setting environments and kite forms that could and would never be realized apart from simulation.

**Problem Set 2B: The Perceptual Glitch and the Infinity Box**

In this problem set we are asked to create a perceptual glitch reusing at least one similar part using the ‘command’ command. I chose define a command for a square and place those squares in such a manner as to provide the perceived front and rear sides for cubes. I connected the top right, top left; bottom left and bottom right corners to their pair to form the outlines of the cubes. I placed the top cube slightly over to the right to give a sense of depth. A gray value was placed via a command into that space forming a
parallelogram between the bottom of half of the second box and the top half of the first box reinforcing the perception of depth. The boxes are then anchored to the perimeters of the space by diagonal lines emanating from the corners of the squares.

In the comments I cited inspiration from Tatlin’s constructivist sculpture “Corner Relief.” (Krauss, 54-55) In this sculpture Tatlin used the corner of the gallery space to suspend the object hence integrating real space into the installation. We find this interdependence of object and space much like the earlier allusion to computational design and the humanities. Unlike some kinetic mobiles, the anchored image engages you, as if the object were taking a position on an issue. The simulation of this sort of imagery, I realize is only a transformation of Tatlin’s analog to a DBN. My interest remains in the meaning and value of simulations. The search for an accurate representation of perception has enjoyed a long history with modern one-point and multiple-point perspectives only being realized in the early Renaissance. The mastery of the representing a three-dimensional form on a two-dimensional surface was completed at the end of the Renaissance with the event of Raphael. As I wrote earlier, several artists were not yet satisfied and continued the process. Many artists became fascinated by the elements of visual perception and discovered situations where the visual would be apparently deceiving. M. C. Escher was particularly adept at this type of visual deception and was known for his representations of correct perspectives of impossible spaces. Today we can find this being further explored by mathematicians visualizing abstract number theory and creating forms impossible to exist in the real world.

I began work on a project called the infinity box that I consider to be analogous to this problem set. An infinity box is a box with two holes, one at either end. One hole allows you to peer into the box, the other to allow light to enter the box. The objective is to create an illusion of infinite space to the viewer peering into the box by modification of surfaces and light distortion. This can be done in several ways such as drawing shapes/patterns on the inside of the box to give the illusion of distance, concealing the light source and allowing the incoming light to refract about the box using mirrors and reflective surfaces. The process involved designing a computer-generated model prior to construction.

CONCLUSION

Putting computational design within a historical context, artists and designers have yet to find unique and inventive ways of asking. Artists, designers and even seasoned programmers venturing into new computational territories, both in theory and practice, find themselves recording and mapping the unfamiliar to a familiar language whether it be a grid or another analogous model. It is often at this point they discover existing tools of analysis inadequate and are compelled to modify or design new tools. When the “mapping to” of knowledge is only possible in a situation requiring new tools, particularly in cases where the technology/media have no precedent; designers can only make sense through a historical experience entrenched in the humanities. “However, evidence of the use of such extensive computational visualization techniques in the humanities is lacking.” (DiSalvo, 85)

In his abstract for “Philosophy and Visual Representation: Imaging the Impossible,” Carl DiSalvo writes, “Visualization techniques used in science and the arts for the advanced analysis of information and theories can and should be similarly used in the humanities. Within the discipline of philosophy there are both the possibility and the necessity to examine and present ideas using visualization techniques.” Further “Scientists and artists are creating computational visualizations that explore both reality and assumed reality in unprecedented form with advancing levels of sophistication. The inherent possibilities of computational visualization for exploration, investigation, experimentation and, ultimately, representation are unlimited. (Ibid, 83.)

The artist and visual designer must take the steps to experience the process at a raw level. That is, design is only fully realized when the designer is aware on all/many levels. This applies to the digital/computational artist in the now as much as it did years ago in Ruskin’s contention that the artist/craftsman to be intimately and entirely involved in the process from conception to artifact. This continues in the Bauhaus’ later belief that new materials and methods necessitate new forms. The designer can only hope to see the fruit of these new forms only by beginning that process of thinking and the process of exploring now.
REFERENCES CITED


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