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Victorian organ

Christine Dunn

Victorian Organ

By Christine Dunn

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for the Degree of Master of Fine Arts in the School of Film and Animation

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Abstract, “Victorian Organ”

This paper is a companion piece to my short film, “Victorian Organ”. This film is an effort to contextualize the mechanical, or man-made, within nature. It is an assertion that there really is no "man vs. nature"- (a radically illogical and inherently self-destructive notion), but only man as nature, in which case, alienation and disharmony ultimately lies in our own self-perception.

The impulse to identify a relationship between the mechanical and organic is inspired not only by my observations of our human society, but as a way to decode my own inner workings –an urge to reconcile seemingly major dichotomies like reason and emotion.

In the film, these ideas are illustrated by pulling the viewer through the innards of a self-winding, mechanically musical tree. The central metaphor is the encrypted code of the music box cylinder at the heart of the tree, whose rotating bumps dictate not only the notes of the tree’s song, but the pattern of cell growth-- a spinning mechanical chromosome. The cylinder is wound by a key nested in the center of the root structure, pushed by the tree’s own organically formed roots. The key eventually reaches its extreme point and reverses direction, turning the cylinder and playing out its code like a music box. This winding and unwinding is in keeping with the dual nature of the tree, and is a parallel theme to the harmony of complementary elements: 'concrete mechanical' and 'amorphous organic'.

The paper includes a discussion of the evolution of ideas that gave rise to this project, a description of the methods used in puppet-making, shooting and post-production, and appendices which contain the initial thesis proposal, film stills, an influence glossary, and other supporting documents.

Despite any reservations I have about how I could have done things differently with this film, it by definition serves as a tangible document of my preoccupations, interests, tendencies, and general mood over the time that I worked on it .To a person interested in putting herself in context, this qualifies it as a definitive success in at least one regard.

Victorian Organ

MFA Computer Animation Thesis Paper, 2005

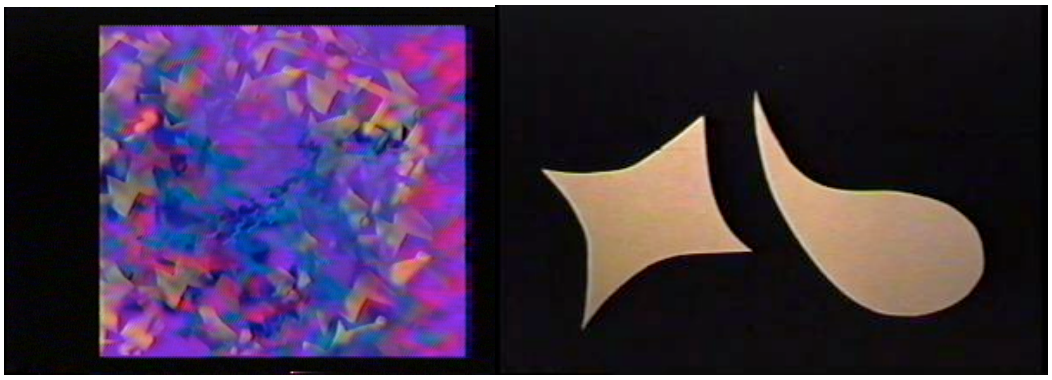
Rochester Institute of Technology

Christine Dunn

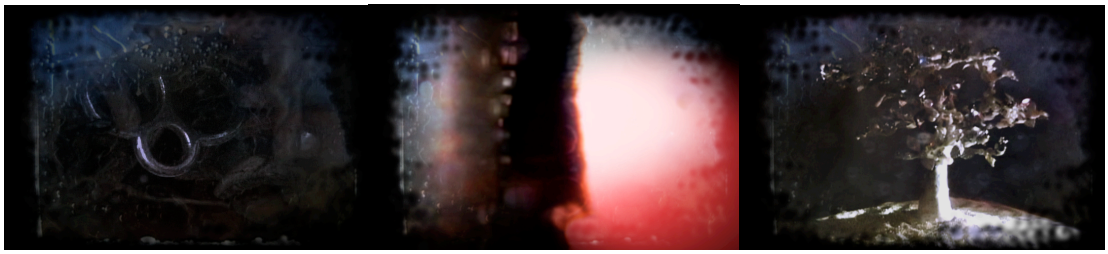
Introduction

This short film is an effort to contextualize the mechanical, or man-made, within nature. This requires as comprehensive a concept of nature as possible- one in which computers are as natural as seashells. If we consider our human curiosity, or our capacity for research and invention, to be a primary qualities setting us apart as a relatively new species, then the comparatively angular or blocky characteristic that dominates much of our man-made structures need not be seen as indicative of alienated, "unnatural" or shamefully inferior human craftsmanship. Instead, by adjusting our perspective, it can be viewed as a perfectly natural and even logical manifestation of our developing conceptual capacities--charming mimicry of the somewhat simpler organic mechanisms in an infinitely intricate world. This is an assertion that there really is no "man vs. nature"- (a radically illogical and inherently self-destructive notion), but only man as nature, in which case, alienation and disharmony ultimately lies in our own self-perception.

My impulse to identify a relationship between the mechanical and organic is inspired not only by my observations of our human society, but as a way to decode my own inner workings –an urge to reconcile seemingly major dichotomies like reason and emotion. I have compulsively been making images for years that depict an organic center spinning out into sharp clunky shards. I even have developed something of a personal logo…



I have always been a little preoccupied with natural dualities like the Sun and moon, earth and water, crystal and liquid; and the commonalities, distinctions, and relationships between them. I spent quite some time researching the curious molecular properties of glass and water, forming amateurish alchemical formulas. I had a special interest in those materials that refract light. Prismatic materials have always seemed to me to be in an idealized state, and seem to be a simple metaphor for a successful mind, while the spectrum revealed by a prism seems to be an appropriate metaphor for a film, or really any work of art. It follows that a spectrum/film is solid evidence not only of the content of the light/environment, but the content of the prism/filmmaker. Despite any reservations I have about how I could have done things differently with this film, it by definition serves as a tangible document of my preoccupations, interests, tendencies, and general mood over the time that I worked on it .To a person interested in putting herself in context, this qualifies it as a definitive success in at least one regard.



The attempt to convey these ideas is made by pulling the viewer through the innards of a self-winding, mechanically musical tree. The central metaphor is the encrypted code of the music box cylinder at the heart of the tree, whose rotating bumps dictate not only the notes of the tree's song, but the pattern of cell growth-- a spinning mechanical chromosome. The cylinder is wound by a key nested in the center of the root structure, pushed by the tree's own organically formed roots. The key eventually reaches its extreme point and reverses direction, turning the cylinder and playing out its code like a music box. This winding and unwinding is in keeping with the dual nature of the tree, and is a parallel theme to the harmony of complementary elements: 'concrete mechanical' and 'amorphous organic'.

More layers of metaphor are at work. The surface of the image is constantly veiled by transparent hand-painted glass slides, periodically changed out by a mechanical arm, much like looking through a Viewmaster. This glass veil functions both as representative of the unavoidable and ever-changing personal filters of our own perspectives, and to frame the experience as safely detached, while overwhelmingly intimate.
The concept of mechanized musical growth extends to the blossoms of the tree—at the zero point between winding and unwinding, jingle bell buds open as silver flowers, extending red spiral stamens, once the key has been wound to its limit and begins its reversal. Pearls and jewels, dotting the white sands from which the tree grows, are also embedded in the roots and trunk of the tree, as ingested bits of experience. The glazed white body of the tree, stained with moss and veins, shows the tree's identity as a semi-translucent birch tree.

Evolution of themes

At the start of this project, the concepts I focused on were substantially different than the set of concepts that characterize the film in its present state. Luckily I kept a journal of the evolution of these ideas, so now I can chart the film's development, and understand how I arrived at point B from Point A. This is especially useful given the film's abstract nature- while in the thick of brainstorming, lots of these concepts have been tricky for me to get my own head around, much less translate effectively to another person. This is because I was constantly pushing myself to conceptualize more and more deeply the structure of my environment and myself, to crystallize it as best I could, to develop a blueprint for life as I experienced it. This is no doubt a tall and lofty order, if not downright naïve and ridiculous, and I consistently exhausted and confused myself. However, now that some months have passed, I can look back and trace the line of breadcrumbs. If nothing else, I've supplied myself with a blueprint for my own thought patterns and conceptual tendencies, which is actually the most useful perspective I could have hoped for.

The central root of all this began with the number 222. I began noticing the number make frequent appearances in my life about 10 years ago. It was not haunting me to the extent that I feared for my sanity, but enough to warrant a casual investigation. I researched any associations that may have been assigned to this number in history, various numerology significances or number lore. A handful of interesting stories surfaced, but I had trouble being satisfied with a smattering of unconnected meanings. What finally found resonance with me was, of course, a more scientific explanation: 222's role in phi, or the golden ratio.

Entire volumes have been written about the golden ratio, its stunning mathematical properties and singular role in the design of natural structures. The golden ratio and the corresponding Fibonacci sequence factor into growth patterns in all sorts of organisms, supplying an unmatched recipe for growth potential. This is due to phi's quality of extreme "irrationality," which in mathematical terms, means that expressed as a fraction, it takes more theoretical digits to express it than any other conceivable number. Phi is referred to as the "most irrational" number.

This discovery grew into an ongoing curiosity with blueprints and growth patterns. Initially I planned on a documentary of sorts, elucidating the pervasiveness and beauty of this number called phi. The fact that what was termed the phi phenomenon plays such a huge role in explaining how we experience cinema, also supplied me with a comforting sense of synchronicity, despite the fact that this phenomenon is not golden ratio related, per se. I was at the outset, so inspired simply by this magical number, a straightforward account of its importance seemed to be the way to go. I underestimated my tendencies toward abstraction and elaboration. This version, included on the following page, is one of the earliest, and already shows signs of generous use of artistic license.

1. montage of 222 popping up everywhere going from realistic to dreamy.
2. Title card: "I wondered why this number was everywhere to me."
3. Title card: "This is why"
4. Title card: "Φ"
5. Enter dark wet cavernous passage. OK phrase that a bit differently.
Pattern on walls is sunflower pattern - looking cellular. Passage curves. We travel along it. only one wall is visible
6. Periodically, (according to Fibonacci sequence) we get close enough to wall that we bust through a particular cell and enter a little mini world.
Each mini world will last about 20 seconds or so and illustrate some particular facet of Φ. For example - trigonometrical properties of it found in nature. This will be demonstrated with organic visuals and not numbers. But a distinct pattern will be emphasized. The mini worlds will quickly culminate and pop us out back into the passage.

7. The curving gets tighter and more worlds get closer together. But finally after maybe one fifth mini world, we pop back into passage and see that our path has created a trail of the cells along the wall. View follows trail forming a coiled set of particles which represent a fingerprint. It hovers horizontally at the central point of this passage/cavern, as if suspended in fluid, moving slowly
8. We travel along the trail, approaching the core of the fingerprint. We arrive quickly and once we arrive a fusion occurs and an explosion of growth in opposite directions occurs. This is demonstrated by 2 growing trails spiralling out in different directions. Fibonacci rhythm and possibly a unison of sorts is achieved.
9. Fade to white, fade in of a relatively normal looking garden of plants, growing quietly and quickly. We join a particular plant whispering 222 then sprouts, 222 then sprout following a path outside the stem. We hover above it and see that the tips of its leaves form a logarithmic spiral. which keeps growing
END

By the time my thesis proposal was submitted, the first substantial mutation had occurred. This next strategy was to demonstrate visually the golden ratio, rather than deliver it in a poetic or narrative documentary style. I wanted my film to BE an example of the golden ratio rather than just talk about it.
See Appendix A for the full thesis proposal. Below is an excerpt.

Working Title:phi
Producer: Christine Dunn
Budget(actual): 1,760

Start Date: 9/1/04
End Date: 5/1/04
Running Time: 5.5 min.

"Story"
An experimental piece using the Golden Ratio as a unifying principle.

Background
Phi is a never-ending, never-repeating number 1.6180339887. It is the "most irrational" number conceivable because the sequence derived from its mathematical expression (the Fibonacci sequence) takes the longest to converge. This allows for the greatest possibilities of growth or seed placement or particle bouncing or what-have-you prior to overlapping or collision.

The Golden Ratio can be described as follows: the lesser is to the greater as the greater is to the whole. This is the principle used in creating fractals; a macro in the micro relationship. The Golden Ratio and phi are seen in the structure of the nautilus shell as a logarithmic spiral, in the arrangement of rose petals, patterns of animal breeding, refractions of light and shapes of galaxies. Since this number has been identified by humans, it has been used in designing cathedrals for optimal acoustics, in audio cables for optimal resonance control, and in much architecture, among many other things.

Synopsis
The number 222 has been following me around for years. When I investigated its significance, it led me to the Golden Ratio, or phi. 222 is directly related to the Golden Ratio in the context of ideal, resource maximizing patterns of growth, namely in the phyllotaxis of plants. This is to be the guiding principle in the making of my film. This film will be an experimental expression of the Golden Ratio, rather than an instructional film about the Golden Ratio.

My aim is to create a work in which all development is governed by this number. Some organic abberration will factor into maintain a certain level of unpredictability. However, central elements of color, movement and sound will be carefully coordinated to progress according to this ideal pattern of growth. The Golden Ratio will be used as a blueprint to shape this film. The structure of a growing plant will be used as the initial inspiration; a jumping-off point for production. Imagery will be very fluid and unified yet revealed to be comprised of many, many tiny particles acting in unison.

Approach
This will primarily be an AfterEffects project. I will shoot some live footage and some stop-motion. Most aspects will be animated and I will experiment with some particles and PaintEffects. Despite using different media, the work will be very smoothly blended and cohesive.
The music will be based on the Fibonacci sequence, and created by a qualified individual yet to be determined.

This satisfied me temporarily and was passed by the committee, but soon of course my mind had wandered further. Instead of illustrating simple relationships and natural structures, almost as a morphing montage of literal cross-sections, I wanted to capture and incorporate more fully the aspects of "organicness" that are not perfect and simple. I wanted to communicate how seemingly random things do have a pattern, or at least to investigate this notion. I wanted interplay between randomness and structure. I wanted to capture natural light phenomenon and other natural curiosities like chemical reactions. I wanted to somehow distill them, and arrange them in a golden ratio type fashion, that would grow on its own according to phi principles, but would maintain messy characteristics of natural aberration, fused together by an overriding formula (namely phi). This, then, seemed appropriate as a more thorough and inclusive expression of my sense of the world.

Soon enough, another major turning point came along, and mutation of my focus yielded a different sense of organization. I began to feel, for one reason or another, like some sort of tangible progression of action needed to be described--not just an ongoing display of patterns and smatterings. This mutation in approach was especially messy and took plenty of time to reform into something remotely satisfying. I wanted to identify a literal embodiment of these concepts I'd been developing, like a dream translates concepts into symbols. The importance of some mere scraping of conventional communication to my human audience became a strong factor, and I felt pressure to codify my ideas into a course of action that was performed by recognizable or semi-recognizable objects, (however hopelessly heavily encoded and obtuse it may end up). This was partly to qualify as a storyteller, and partly to challenge myself to do something I sincerely found more difficult, and therefore supposedly more satisfying. I recognize great value in my dreams, and sought to achieve with my conscious mind what naturally arises from my subconscious. I also felt that a film communicating in this manner would be speaking in a purified and crystallized language of dreams, like myth or fairytale, which can be at once infinitely personal and somehow universal. It was at this point that I began the

attempt to tackle the abstract and the concrete at once. My jury is still out on how successful or wise of an endeavor that may have been.

With this increased consideration for the audience factor, I began to ponder the role of humans in this world of codified growth, and to develop a model for how we operate within this system. I pondered the dichotomy between mechanical and organic forms, purely for the sake of sorting out how to merge them. I sought to identify the relationship between human constructions and natural structures, and to demonstrate how man-made objects can fit unequivocally into the grand scheme of nature, given the right perspective. I grew increasingly frustrated with the prevailing sense of alienation from nature that people take for granted: this sense of separateness struck me as entirely illogical and in desperate need of correction. I began to make metaphorical associations between fluid, natural organic forms and more simplistic, minute or crystallized elements and mechanical human structures, with the variable being relative perspective.
The following treatment describes my initial, somewhat nebulous ideas for how to communicate this visually.

Christine Dunn
A Treatment Attempt for an Abstract Film:
The form and function of a music box being a metaphor for **our understanding** of the inner workings of a plant (and nature in general). Involves the Golden Ratio and transference of codes. The resulting quasi-mechanical tree being a charmingly ridiculous demonstration of how we must categorize nature and break things down into chunks to understand them, when really nature is quite fluid and full of tiny tiny tiny pieces.

Ideas for Imagery:

I. Starting with a close-up of the spring mechanism for the music box being wound, and the bumps on the cylinder gradually appearing, out of focus, to pluck teeth on the steel comb. Frame rate being very slow, maybe 1fps, but increasing steadily with the winding of the spring. The structural elements of each frame shown are steady, but the picture is never static. It appears as though the emulsion is always spilling or melting between frames. (To illustrate the irrepressible quality of nature vs. the mechanical). This spillage eases and is less noticeable as the frame rate reaches normalcy, but always subtly present.

II. THE FUZZY PART
The bumps begin to synchronize with the apparently random "spillage". A pattern is developed. The pattern is hurled through the air in paths secretly modeled after my handwriting. The bump patterns land on cobwebbish, nebulous material and compel it to turn, grow and reproduce itself in a golden ratio-type fashion, emitting the same code as was hurled upon it. This new growing structure is a hybrid of mechanical and natural. The branchings loosely represent leaves, etc.

III. Gradually we see glimpses of an overall structure being something like a crystallized tree. We realize that if the spillage is allowed to happen enough in one spot, the affected part appears more diamond-like, and globs of light begin to replace what had been globs of ink (0r the "spillage"). The constant turning and branching of the many pieces of this structure mimics the winding of the spring.

Discussed in class. Let's see what you do! 10/00.
History is made by the interaction of the organic with the inorganic (here: tree, machine). Or rather, the interface of inorganic/organic is the locus of culture. (!)
The impulse/mechanism of the music box also produces frame-by-frame animation. (Part I)
Part II: Pattern is "developed"; identified by the audience. Finally: a tree.
Part III: Resolution. How does the tree resolve/relate to the machine (of animation?)? Part III is the "fuzzy part" for me.
The parts make an argument.

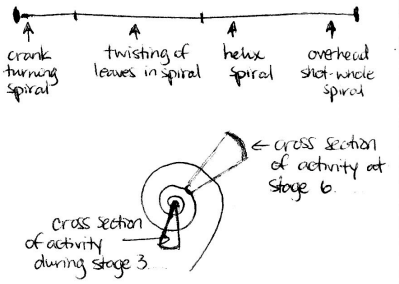
The first representational elements appeared in the form of tiny gears and cilia which would exchange their materials, melt and crystallize into each other, but soon the idea of one central tree as the site of all these interactions took hold, cliché as it may be. The fusion of mechanical and organic was embodied in this tree by its dual identity as tree and self-winding music box.

The initial plan was to use the tree as a stand-in for humanity in general, and to have the tree assemble a crude, more mechanical replica of itself after carefully inspecting its own functioning. The flowers were to function as eyes, branches as hands. This was to show how humans seem to want to match or exceed their innate procreative abilities with our cognitive creative skills, which would theoretically demonstrate a level of total self-understanding/self-mastery. As the tree built this replica, it would compulsively build more and more of them in a frantic effort toward perfection, but each replica would disintegrate quickly due to varying degrees of imperfect design and non-self-sustainability. In the meantime, in the tree's fervor it has failed to notice that it has been dropping seeds, which have been growing into tiny healthy plants all around it. The end of this version was to have two flowers, one from the main tree and one from a sapling, look straight at each other and recognize the irony. Their spiral stamens would spin around each other generating the sunflower pattern indicative of phi and this would close out the film.
The "Final Script" detailing this plan follows on the next 2 pages.

Christine Dunn Final Script 11.10.03	"Actual Action"	"Other Visual Info"	Sound
1	A plant-like form is subtly visible around edges of frame. A crank in the center of frame begins to turn.	Webby, mossy atmosphere. Plant is quivery. Fps is slow - but emulsion of image seems quite active.	Clicking of crank, some atmospheric clinking or buzzing (faint)
2	Oscillations within plant stem and leaves become visible. Crank continues. (metal)	Particles flow within lines of oscillation - in 2 opposite directions. The inner flowing seems to be sucking inward, growing stronger. Fps is increasing.	Faster clicking of crank (atmospheric noise)
3	Snap occurs. Frame is overwhelmed with activity of particle movement. Many layers interacting. Plant's inward flow of particles seems to be feeding out to form a mechanical replica of itself.	Mechanical replica is churning out its own particle flow, audible as music box. Stem of mechanical tree is similar to music box cylinder. Mechanical tree grows only thru flow of real plant. Image is rather chaotic. Leaves & stems are spinning (Emulsion active.)	Sudden explosion of tiny noises, music box sound.
4	The particle flow that feeds the mechanical tree slows & stops. Mechanical tree dissolves, real plant's oscillations seem to reach an equilibrium - almost.	Patterned particle flows still bouncing around emitted by real plant. Active emulsion devours the mechanical tree. Image still rather chaotic.	Busy particle buzzing sound, reaching equilibrium.

Christine Dunn
Final Script
11.10.03

	Actual Action	Other Visual Info	Sound
5	A reprise of Stage 3-4 takes place, but w/o the "snap." A quasi-mechanical tree is formed by the inverted particle flow of the real plant.	This tree is made of tinier pieces than the first tree. It moves more smoothly. Chaos level is tapering off. Still active emulsion, but image is becoming clearer.	Pitch created by 2nd tree is substantially closer to atmospheric particle buzz pitch.
...	These last three stages	overlap each other...	
6	Real plant more clearly visible. No mechanical entity present. Helix of particles in twisting string seen within different stems.	Helixes were previously unnoticeable.	More calm atmospheric buzz.
7	View shoots upwards, twisting to overhead shot. Double helix forms from 2 stems overlapping. They twist in opposite directions and spew particles which generate more helixes, stems, plants, etc. No conflicting particle flows.	The spiralling in opposite directions generates a sunflower seedhead-type pattern within the nebulous clouds of particles. Image structurally begins to resemble opening frame. Fps slows down. Fade out.	Very calm harmonic buzz.



humans = real plant (initial)
human understanding = mechanical trees
particles of life/oscillation stringy patterns = bumps on cylinder music box/steel teeth that play them.

Soon enough, I adjusted the plan to accommodate for the fact that animating a tree which builds a replica of itself may be more ambitious to perform in stop-motion than I had the patience for. I abstracted the idea even further until I had settled on this "Final Script" of November 10th. The replicating of the tree would be depicted by particle flows with similar relationships and activities as the previous version. These sequences of replicating action were inextricably linked to the winding of the key. Winding up would feed the growth of the more mechanical-esque replicas, and winding down would allow for growth within the original tree. This metaphor was to emphasize the association between free release and health, and self-imposed tension as counterproductive stress. The images would be subject to layering and interactivity between the overlapping substances, building to a frenetic climax in which the winding exhausts itself once and for all, and frees the plant from wasting energy on mechanical replicas, instead leading it to irrepressible healthy reproduction.

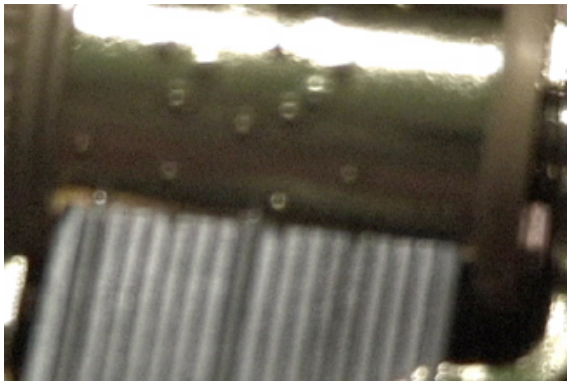
At this point I ceased writing out storyboards and scripts, and began rounding up materials to film. You may note that the film as is, does not involve any replicating or particle flows, and is in fact more or less a display of symbiosis between mechanical and natural forms, illustrated by a tour through a musically mechanical tree. In the course of puppet-making, filming and editing, issues of practicality began to have an impact on the content of my film. The shot list gradually became more related to what I could manage to describe visually at the time, than what had been carefully planned. I think this is partly what gives rise to my slight and vague sense of dissatisfaction with the project. I developed so many more ideas, layers and nuances to my message than I had the patience to execute and deliver in one concise little package, that I feel like inevitably something significant has been lost in translation, though obviously the mood, theme, and basic elements come through.

In poring over the notes of this project, I've begun to see all this in a new light. I recognize the tree as a direct symbol of myself, more so than I initially could admit. I recognize the mechanical content of this tree as being analogous to the chunky connectivity of logic or rational thinking which fuels me, which is

somehow fused with the fluid organic emotion running through me constantly unrestrained, and the film as more of an investigation into the relationship between the two, but without any substantial developments or grandiose realizations resulting. I think that this lack of definitive "moral to the story" or glorious conclusion in the film is what leaves me with the sense of incompleteness. This is mostly because my previous film "particle valentine" was structured with an explosive finale of hopeful revelation, and I automatically sought to match its success with this film, by expecting it to take a similar form. I now look upon "Victorian organ" as more of a process document, a sort of a study for a film using the same symbols, but with a much more visceral and open resonance. I'm motivated to express more clearly in this next film, what I started with, but was too distracted by clever metaphors and sociological intellectualizing to communicate fully in the first: my own growth.

Materials /Process

The first thing I set about doing in the shooting preparation process was to gather objects with tiny gears and delicate mechanisms. I scoured thrift stores for clock motors and music boxes and gathered a handful of these gadgets to get on film. The clock motors were rather tricky to actually get to show motion, so I settled on working with the music boxes. I shot them up close, with lights underneath or from above, from every angle, just to get a sense of the kind of visual rhythms I could record while they were running.

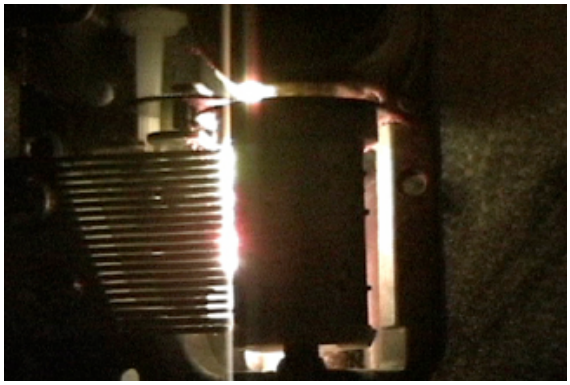


I also gathered lots of photos of plant cross-sections from biology books in the public library. I scanned several of them and used them in my After Effects compositions along with the mechanical footage. The second shot of the film, a close-up of the turning cylinder, was one of the first I began to develop.

The opening shot, involving the turning crank and roots, took a lot of preparation, and a lot of trial and error. First I made a structure out of wire to provide the shape of the root s, then covered it in clay (and a random pearl or two as rhizomes), dipped it in dirt and hot cocoa powder, and set it with hairspray. This was relatively successful visually, but proved difficult to animate effectively, due to the stiffness of the wire compounded with the heavy layers of clay, etc. I secured this root puppet on a raised cardboard surface that came with my cable modem. This allowed me to manipulate the old-fashioned key which stood in for a music box crank, positioned in the center of the roots, from underneath. This key was found in my grandfather's house but no one remembers what it might belong to. I shot at least four different versions of the root scene, combining stop-motion and real-time footage in various ways, using various lighting schemes, and eventually settled on one that I could at least work with in the computer, with the help of frame blending and time manipulation.

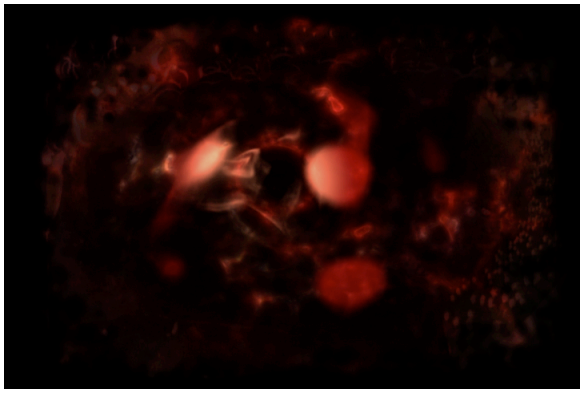
The rotating glass slides which cover each shot in the film, are actually close-ups of tiny panes of a candle holder that my mother gave me. I shot each one in front of a window, to capture the details of their color and bubbly gluey residue shining through. What proved challenging was to turn the candle holder in a

steady intermittent fashion that would suggest a movement similar to film frames, or a Viewmaster of sorts. This too, required plenty of computer manipulation after the fact. I'm sure it required at least 3 different renderings before I had something ready to composite.



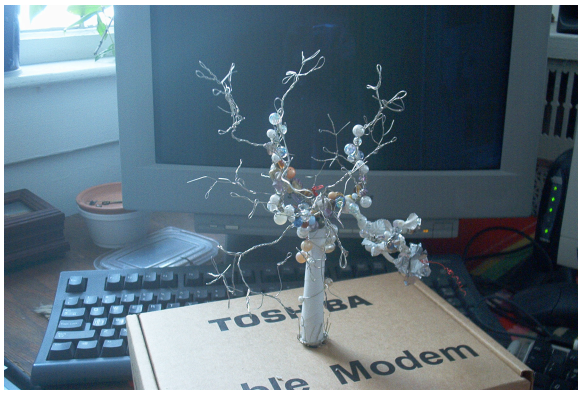
The third and fourth shots incorporated footage of a music box motor that I recorded with a rotating colored light underneath, designed to light up a crystal frog given to me by my sister. I shined it through the comb that played the melody (The melody was "My Way" by Frank Sinatra- the second shot used my "Daddy's Little Girl" music box motor). This footage was very striking in some places but generally very dim and full of heavy pixel noise. At first this was disheartening, but I worked with it and worked with it until it was usable. What I did to hide the noise was to slow down the frame rate, use some blurring and some frame blending, until the pixels slowly blended into each other for a squirmy Petri-dish effect. I was very proud of myself for working with a flaw until it was an asset.

The white bursts in the fourth shot are based on footage of incense smoke rising towards the camera, against a black velvet background. I adjusted the contrast, speed, and used the glow effect to emphasize the thicker parts of the smoke, and also layered the footage over itself from varying directions. The red cellular flying objects in the fifth shot are also sourced from this same footage, but manipulated slightly differently.



The background of this red shot was generated by layers and layers of plant cross-sections, moving in a synchronized fashion to simulate a pulse. In this shot we travel through a nerve, (or through a flower is another interpretation), and emerge outside the tree. At this point we wander through the branches and explore the intricacies of its outer structure, floating about like a bit of pollen or snow. In the second half of the film, I incorporated footage of real Rochester snow in almost every shot. All the shots of the outside of the tree are made using 3D lighting, time manipulation and various filters, including the close-up of the jingle bell/flower bud. I had a Eureka moment in Jo-Ann's Fabrics when I realized that jingle bells would be the perfect flower buds- metallic, musical, and appropriately structured. Finding jingle bells made of metal that was soft enough to be manipulated in stop-motion proved basically impossible, but I improvised as best I could. Some shots were cut that showed a flower blooming, purely because the movement was just too chunky. One survived and relies heavily on frame blending.

The final shot of the full tree involved a substantial amount of Vector Paint to hide the tray that holds the tree. When shooting I set up a fan to give some movement to the branches, and used the same rotating colored light that I used for the music box cylinder/comb shots. The pulsing light that surrounds the tree is sourced from a clip of a 35mm film image being projected through a port glass window. I work as a projectionist, and captured some stock footage of mechanized light movement to include in my film.



I built the tree puppet using a clay base that I baked in the oven, which encased a Bic pen supporting the trunk. This base is taped securely to the center of the clear tray, which is actually the "glass" portion of an inexpensive picture frame. A network of wires is wound around the pen within the tree, and feeds out to form the branches. The trunk is wrapped in paper, clay and white flower binding tape. Bits of dried plant leaves are pressed into the clay of the trunk to lend an organic quality to its surface. These plant bits are from a mysterious blue flowering plant that grows behind the Little Theatre where I work. Forming the branches and the flowers took lots of time. Winding tiny beads, bells, clay and hand-painted silver leaves around each section took no small amount of energy. The gradual construction of the tree was underway for at least six weeks.

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The red wire curling stamens are meant to mimic the exposed central nerve of the tree and the spiral winding of the tree's cranking mechanism. The ground which surrounds the tree is a mixture of white craft sand, very tiny clear decorative balls, and extremely tiny silver and pearl balls. There is also a sprinkling of various beads from the same batch as those used in the branches, to suggest that the tree is either absorbing them from the environment or occasionally shedding them, or both. I shot some great footage of the rotating colored light shining up through the sand and beads, which suggested a glowing pulse from the root structure of the tree, but ended up cutting it because the pixel noise was just too distracting.

I would have benefited from being more particular about my lighting while shooting. I overestimated the capacity of my little MiniDV camera to capture well in low light, and pixel noise was a constant problem. By the time I was at the stage to really wrestle with this problem, I did not have the will to go back and re-shoot. I generated at least an hour of raw footage that needed to be gradually whittled down into usable shots. The "finalist" clips were then

polished, pruned, tuned, and woven together until they were aesthetically smooth enough to include, or deemed unnecessary. Out of my handful of projects completed to date, I cut the most from this one in final editing. I expected to be reluctant to ditch material I had spent hours and hours working on, but it was actually a great feeling to throw some weight overboard, and only use the best of the best.

Soundtrack

The soundtrack consists of audio I recorded myself, layered over some elements I downloaded as a base. The base elements include whale songs, which I slowed down to about half speed, and parts of "D/P 2.1" from Disintegration Loops by William Basinski, which supplies a subtle electronic haze of sorts that flows in and out. The other noises, which I recorded myself with my video camera, include the creaky, squeaky wind-up of my 16mm Bolex camera, and the sounds of a wooden xylophone and a toy piano I bought specifically for the film. It may seem as though there are many more elements than this, but I manipulated each clip in various ways using SoundEdit 16, and saved different versions of each. This supplied me with an assortment of ingredients to weave together in Soundtrack, the accessory program to Final Cut Pro.

Reference materials

Victoriana, 1966 James Laver, Hawthorne Books NY
From Music Boxes to Street Organs, 1967 R. DeWaard, Vestal Press, Vestal NY
Plant Marvels in Miniature, 1960 C. Postma, John Day Co. NY
The Golden Ratio: The story of Phi, 2002 Mario Livio, Broadway Books, NY
The Bride of Science, 1999 Benjamin Woolley, London Press, UK
Visual Music, 2005 Ari Wiseman, Judith Zilczer, UCLA Publishing, LA

Appendix A- Thesis Proposal

MFA Thesis Proposal

phi
(working title)

Christine Dunn
5/6/04

Approved for submission by Stephanie Maxwell
Thesis Committe Members:
Stephanie Maxwell
Lorelei Pepi
Nancy Ghertner

Stephanie Maxwell, Advisor

Working Title:phi
Producer: Christine Dunn
Budget(actual): 1,760

Start Date: 9/1/04
End Date: 5/1/04
Running Time: 5.5 min.

"Story"
An experimental piece using the Golden Ratio as a unifying principle.

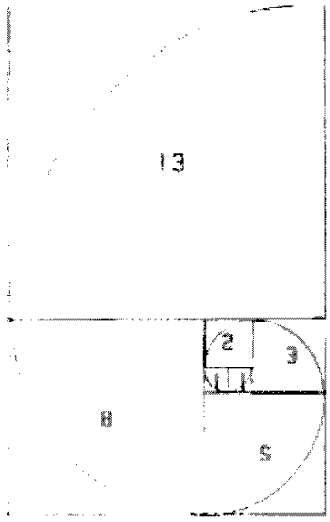
Background
Phi is a never-ending, never-repeating number 1.6180339887. It is the "most irrational" number conceivable because the sequence derived from its mathematical expression (the Fibonacci sequence) takes the longest to converge. This allows for the greatest possibilities of growth or seed placement or particle bouncing or what-have-you prior to overlapping or collision.

The Golden Ratio can be described as follows: the lesser is to the greater as the greater is to the whole. This is the principle used in creating fractals; a macro in the micro relationship. The Golden Ratio and phi are seen in the structure of the nautilus shell as a logarithmic spiral, in the arrangement of rose petals, patterns of animal breeding, refractions of light and shapes of galaxies. Since this number has been identified by humans, it has been used in designing cathedrals for optimal acoustics, in audio cables for optimal resonance control, and in much architecture, among many other things.

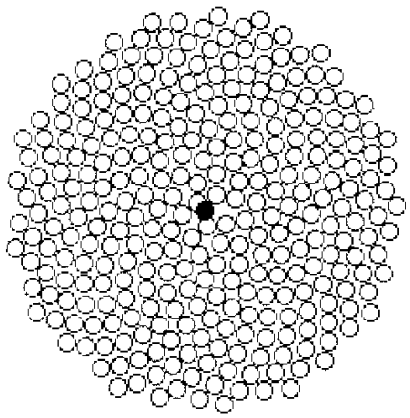
Synopsis
The number 222 has been following me around for years. When I investigated its significance, it led me to the Golden Ratio, or phi. 222 is directly related to the Golden Ratio in the context of ideal, resource maximizing patterns of growth, namely in the phyllotaxis of plants. This is to be the guiding principle in the making of my film. This film will be an experimental expression of the Golden Ratio, rather than an instructional film about the Golden Ratio.

My aim is to create a work in which all development is governed by this number. Some organic abberration will factor into maintain a certain level of unpredictability. However, central elements of color, movement and sound will be carefully coordinated to progress according to this ideal pattern of growth. The Golden Ratio will be used as a blueprint to shape this film. The structure of a growing plant will be used as the initial inspiration; a jumping-off point for production. Imagery will be very fluid and unified yet revealed to be comprised of many, many tiny particles acting in unison.

Approach
This will primarily be an AfterEffects project. I will shoot some live footage and some stop-motion. Most aspects will be animated and I will experiment with some particles and PaintEffects. Despite using different media, the work will be very smoothly blended and cohesive.
The music will be based on the Fibonacci sequence, and created by a qualified individual yet to be determined.



This is a diagram of a logarithmic spiral using Fibonacci numbers.



This is a diagram of the arrangement of seeds on the head of a sunflower. The number of seeds in each spiralling row is a Fibonacci number.

Budget Summary

Industry Production

Wages and Salaries	94,200
Pre-Production/Research and Development	14,475
Administrative	100
Distribution	1,250
Subtotal	110,025
Contingency (~10%)	11,000
Total	**121,025**

Student Production

Wages and Salaries	0
Pre-Production/Research and Development	350
Administrative	0
Distribution	1,250
Subtotal	1,600
Contingency (~10%)	160
Total	**1,760**

Wages and Salaries

	Budget	Actual
Wages (above the line)		
Director @ flat rate	30,000	0
Writer @flat rate	10,000	0
Producer @ 20% box office take	TBD	0
Wages(below the line)		
Stop Motion		
Lead Animator @$50/ sec x 300 sec	15,000	0
2nd Animator @$30/ sec x 200 sec	6000	0
camera operator $50/ hr x 50 hours	2,500	0
Computer Animation/ Effects		
Lead Animator @$50/ sec x 300 sec	15,000	0
Post-Production		
Compositor @$50/hr x 120 hours	6000	0
Music		
Composition	5000	0
Performance @$50/ hr 3 hrs x 3 musicians	4500	0
Recording @$50/ hr x 4 hrs	200	0
Wages and Salaries subtotal	**94,200**	0
Administrative		
Communications(phone/fax/postage)	100	0
Administrative subtotal	**100**	
Pre-production/ R&D		
Storyboarding @$10 frame x 50 frames	500	
Research and development		
test materials and supplies for set	750	350
hardware(computer, camera, etc.)	3225	
software	10,000	
Preproduction/ r&d subtotal	**14,475**	**350**

Production and Post-production included in Wages and Salaries

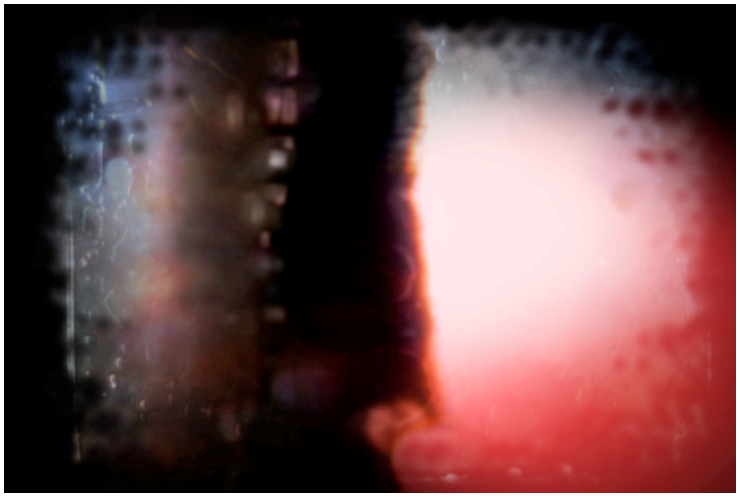
Distribution		
Release Prints		
VHS tapes @$1.00 tape x 30	30	30
DVDs @$2.00 disk x 10	20	20
Advertising	50	50
Festival entry fees	150	150
Travel	1000	1000
Distribution subtotal	**1250**	**1250**

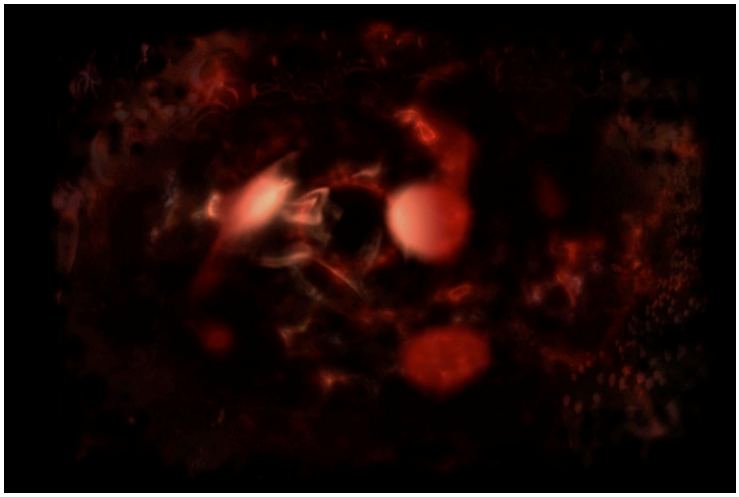
Schedule

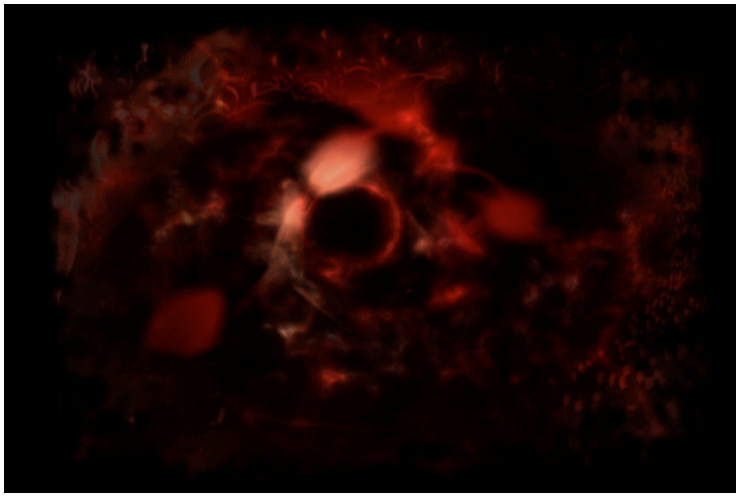
Begin	9/1/03
Research and development completed	11/1/03
Logical Plan for shooting completed	11/15/03
Gathering of first round of footage completed	12/25/03
Basic Structure settled upon	1/20/04
Supplementary shooting completed	2/22/04
Compositing/Editing/Rough cut completed	4/1/04
Finalizing/tweaking/expanding completed	4/21/04
Print to tape completed	5/1/04
Screening	5/*/04

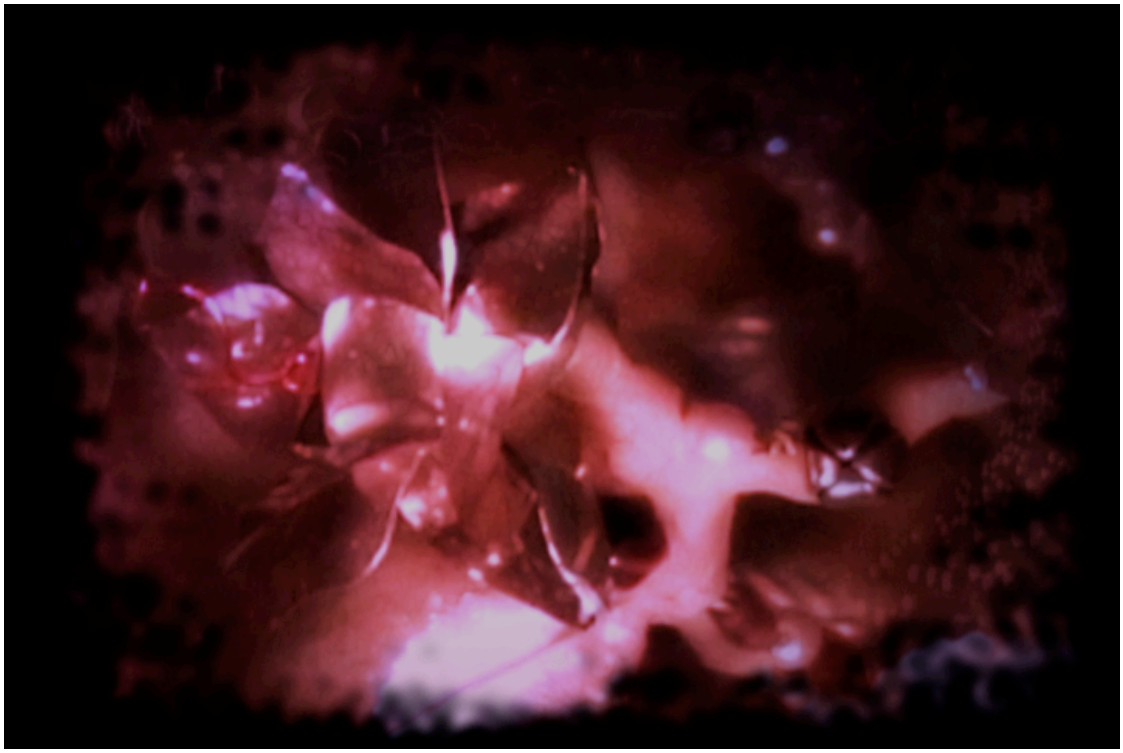
Appendix B- Storyboard

Appendix C- Film Stills









Appendix D- Influence Glossary

Phi

As I mentioned earlier, I happened upon the number phi through its connection to 222. The number phi, 1.618….also referred to as the golden ratio, can be described by the balance achieved when the ratio of the whole to the greater is equal to the ratio of the greater to the lesser. To divide a circle's area into the golden ratio, the lesser segment is defined by radii placed at 0 degrees and 222.5 degrees. This figures into natural growth strategies by dictating the phyllotaxis (leaf growth) patterns of a substantial amount of plants, like roses and sunflowers. By using this ratio, each bit of the plant is assured the best chance for maximum exposure to sunlight, without being shadowed or overlapped by other bits of growth. This is due phi's quality as the most "irrational number", which means that out of any conceivable number or ratio, it takes the longest to converge into a finite decimal quantity, or to repeat itself.

Quay Brothers

I must admit a strong influence by the Brothers Quay. Being affected by the work of the Quays necessarily involves influence from Svankmeyer as well, of course, but I identify more strongly with the atmospheric dreaminess of the Quays. Their short "The Comb" is my personal favorite, since it is a direct representation of a dream. I feel right at home with their improvised metaphors and delicately gritty aesthetic, but I think my style is sort of a saccharine, feminine variation that incorporates literally fluid elements.

Vespertine written/performed by Bjork Gudmundsdottir

Hands down my favorite album to date, Vespertine has been one of the strongest influences on my psyche in the past few years. The concept of intricately programmed micro-noises paired with raw and passionate vocals is the direct aural equivalent of my mechanical-organic visual model.

Pagan poetry is my favorite track on the album, which speaks of personal blueprints and core identities. This song is significant not so much as an inspiration for the soundtrack, but for the concepts it describes.

Apparition Series by Sigmar Polke

This triptych of huge abstract paintings captured my attention at the Louisiana Museum in Denmark a few years ago. Each painting is easily thirty feet high, and stretched with an animal-skin-like material. Layers and layers of translucent paints and varnishes (which reportedly include substances from asteroids) have been poured and drizzled on its surface, manipulated by tipping the canvas to control the flow and composition. These paintings struck a chord with me because of their impressive immensity, their elaborate and free-flowing intricacies (which still maintain a compositional balance), and the subtle structure revealed underneath. (See following page)

Automatic music

Automatic music is the term for any sort of device contrived specifically to emit a pattern of noises by a single manual impetus. Automatic music, namely the music box as the chief representative, interests me as a sweetly crude predecessor to more complicated gadgets like computers, which ultimately approach artificial intelligence, and also for its association with Victoriana and juvenile simplicity. I stumbled upon another item of synchronicity when I discovered that the Pallaird-Bolex company, which is a legendary designer of motion picture devices, began as a company specializing in music boxes.

Victoriana

Besides the fact that my middle name is Victoria, or possibly because of this, I identify strongly with Victorian sensibilities. My impression of them is one of hopelessly elaborate efforts at emotional repression, which result in an overflow of excessively ornate, compulsive and delicately structured design. This correlates to my interest in the reason vs. emotion relationship. It was also during this time that many of these music boxes and motion picture contraptions were being born.

Ada Lovelace

Around the time of my research for this project, I read a book by Benjamin Woolley on Ada Lovelace, titled "The Bride of Science: Romance, Reason and Byron's Daughter". He describes the particulars of Ada's life and her work surrounding Charles Babbage's prototype computer, known as the Analytical Engine, in the1840's. While the device was entirely created by Babbage, with Ada acting as muse at most, she did publish notes specifying how one might use the Analytical Engine to calculate Bernulli numbers, along with her English translation of an Italian publication about the device. It is these notes which are often named as the first computer program. Ada Lovelace's story resonated with me as an account of a person consumed with the broad possibilities of encoded patterns and their manipulation. Her writings about the Analytical Engine are inspiringly poetic, referencing the potential for elaborate pieces of "music" generated by the Engine.

Color Organs

A main, early representative of the notion of visual music is the color organ. This is the term given for an assortment of devices, developed independently and typically with different names denoting their inventor, for which the main function is to display colored light patterns in a fashion somewhat parallel to the experience of notes of music, via keyboard. These devices began to be developed in the 19th century, and were contemporary with some forms of automatic music.

Despite numerous and varied incarnations, the color organ never quite caught on as a household item. Nonetheless, the concept of visual music is alive and well today, with a rich history of much debate and experimentation. Color music resonates with me as yet another variation of pattern made manifest—but in particular, one that challenges our standard ideas about the sensory experience. Visual music may be often dismissed as merely a charming curiosity, but I consider it to be of substantial philosophical importance.

Seadragons

When filming jellyfish at the local aquarium for one of my first film projects, I happened upon a tank of Leafy Seadragons. These creatures are extremely unique and relatively rare, living only in certain parts of Australian coastal waters. They are cousins of seahorses, and bear resemblance, with the exception that seadragons have evolved to mimic seaweed in appearance, ostensibly as a camouflage. Seadragons have captured my respect and admiration as a gorgeous and delicate example of blurred lines in a traditional dichotomy, plant and animal.

Appendix E- Press Release for Victorian Organ. Submitted and screened only at MadCat 2005.

victorian organ

by Christine Victoria Dunn

A celebration of the musically and mechanically organic.
an experimental animation, digital video, 5 minutes

...the message...

This film attempts to contextualize the mechanical, or man-made, within nature. The comparative crudity or blockiness that seems to be characteristic of most man-made structures, need not be seen as evidence of alienated, "unnatural" or shamefully inferior human craftsmanship. Instead, it can be viewed as a perfectly natural manifestation of our developing conceptual capacities--charming mimicry of the somewhat simpler elements of an infinitely intricate world. This is an assertion that there really is no "man vs. nature", but only man as nature, in which case disharmony is only manifest through, or lies in, our own self-perception.

...the metaphor...

The attempt to convey this message is made by pulling the viewer through the innards of a self-winding, mechanically musical tree. The central metaphor is the encrypted code of the music box cylinder at the heart of the tree, whose rotating bumps dictate the pattern of cell growth-- a spinning mechanical chromosome. The cylinder is wound by a key nested in the center of the root structure, pushed by the tree's own organic roots. The key eventually reverses and turns the cylinder, playing out its code like a music box. This winding and unwinding is in keeping with the balanced nature of the tree, and is a companion theme to the harmony of complementary elements: 'concrete mechanical' and 'amorphous organic'.
More layers of metaphor are at work. The surface of the image is constantly veiled by transparent hand-painted glass slides, periodically interchanged by a mechanical arm, much like looking through a Viewmaster. This functions both as representative of the unavoidable and ever-changing personal filters of our own perspectives, and to frame the experience as safely detached, while overwhelmingly intimate.
The concept of mechanized growth extends to the blossoms of the tree-- jingle bell buds open as silver flowers, extending red spiral stamens. Pearls and jewels, dotting the white crystal sands from which the tree grows, are also embedded in the roots and trunk of the tree, as ingested bits of experience. The translucent white body of the tree, stained with moss, stands as a fantastical birch tree.

...the delivery...

This film stems from an obsession with ideal growth, codes and perspectives. Far more time, (maybe too much!) was spent researching the golden ratio, phyllotaxis, clockwork music, color organs, Victorian aesthetics, and the roots of computer programming, than in actual construction, shooting or editing of the project. The tree was built using a wide assortment of materials- some traditional, like clay and wire, others improvisational, like hot chocolate mix and hairspray. Some sequences were shot using stop-motion, others were sourced from real-time capture (MiniDV) and animated in AfterEffects. The soundtrack was made using noises from my Bolex camera, film projectors, toy piano, wooden xylophone and whale songs. These clips were all woven together using Soundtrack, on my Mac G4.

I was born in Newport, Rhode Island, 26 years ago. Technically, my endeavors as a digital artist began in the 80's, as a child using MacPaint. I later earned a B.A. from URI in Studio Art, specializing in filmmaking and computer art. I'm now completing my M.F.A. in Film and Animation at RIT-- this project is my thesis film. My previous film, "particle valentine", has earned me awards and met with great reception at roughly a dozen international festivals, namely Slamdance, Chicago Underground, Antimatter and Not Still Art. I plan to spend my energy studying and promoting the work of experimental motion picture makers- a film librarian by day, video artist by night.

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