

New Eyes for the Mind

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1 INTRODUCTION

Live cinema is a new kind of cultural practice growing out of an intersection between traditions including experimental film and video, computer music, and VJ performance. In each of these areas, recent advances in digital media tools have allowed movement towards an common idea expressed as early as the eighteenth century: live performance with interrelated sounds and images. Until recently, would-be audiovisual performers faced the significant hurdle of designing and building their own tools. Now that affordable computers and projectors provide an accessible route to live audiovisuals, a groundswell of interest in live cinema is as inevitable as the use of available technologies by artists.

Live cinema is unique in offering the potential for a situated, shared exploration of subjective vision. The idea that one's experience of vision can be externalized is a common thread in experimental film and computer-mediated work. Artists using film struggled with the essential characteristics of the medium in order to record aspects of their inner visions. And through this struggle came many powerful works. The computer affords us the ability to manipulate light freely in time and space without indexing real-world images—a potential gateway to an infinite variety of radically personal visions.

Stan Brakhage described his vision of a generative live cinema in 1963:

“and already another [process] is appearing possible, the projector as creative instrument with the film show a kind of performance, celluloid or tape merely source of material to the projecting interpreter, this expression finding its origins in the color, or the scent, or even the musical organ, its most recent manifestations — the increased programming potential of the IBM and other electronic machines now capable of inventing imagery from scratch [...] The future fabricating machine in performance will invent images as patterned after cliché vision as those of the camera, and its results will suffer a similar claim to ‘realism,’ IBM being no more God nor even a ‘Thinking machine’ than the camera eye...” [1]

With the power of digital media tools comes both practical and conceptual difficulties. A live cinema performance requires many layers of technology, from performance interface to application software to graphics library to computer hardware to projector. Each layer has the potential to mediate, or affect the meaning of the work. When this mediation is not considered, or a response is not technologically within reach of the individual practitioner, digital media works convey unanticipated or distorted meanings.

Though live cinema technology involves new technological particulars, many of the underlying issues have already been explored in depth by theorists writing about film, video and computer-mediated art. Drawing from this literature and from my own experience as both toolmaker and live cinema maker, I will point out some of the ways that current technologies of seeing mediate creative activity. Most of these involve software tools designed according to commercial demands. Mimicing the film medium is one marketable affordance of computer software. Another is the easy generation of compelling visual complexity using 3D graphics hardware. Live cinema artists can only develop new and meaningful ways of communicating subjective vision by moving beyond the cinematic image as a model, and adopting a skeptical stance towards the visual power offered by software tools.

1.1 Why ‘Live Cinema?’

If my argument that we must move beyond cinematic models of vision has any merit, then it might seem strange that we are calling the practice ‘live cinema.’ As Lev Manovich points out, cinema is shorthand for a specific cultural tradition, a visual language. [2] Much of current live cinema practice, however, is concerned with generative and nonnarrative structures that place it outside of the cinematic tradition. The term does have benefits though. Practically, it's good to have a disciplinary tent big enough to accommodate a diversity of styles. More integrally, ‘live cinema’ is a powerful term because it contains the seed of a vitalizing contradiction.

Consider the dilemma faced as a viewer of live cinema. On the one hand, you have ‘live,’ a performer in a particular place and time, with a particular group of people, inviting you to witness his or her actions. The live performance situation focuses our attention on certain questions. What is the maker doing that acknowledges the presence of the audience, and

gives meaning to the occasion? There is a hierarchy of modes of liveness—any one can be the foundation for a successful work, but it must make sense within the logic of the world created by that work. Performing a concert is one thing, performing a surgery another. The experience of attending either may be meaningful, but for different reasons. Live means situated.

On the other you have ‘cinema,’ an immersive experience that asks you to look through the screen into another place, to be more engaged with that place than the physical world. David Lynch has minimally and evocatively described immersion: “It’s so magical—I don’t know why—to go into a theater and have the lights go down. It’s very quiet, and then the curtains start to open. Maybe they’re red. And you go into a world.” [3] Cinema means a-situated.

The two ways of looking are fundamentally incompatible. Each practitioner must choose how to grapple with this contradiction as a starting point for creative engagement. Some live cinema performance works with immersion, some against it, some in uneasy negotiation. Likewise, the two histories of critical thinking about performance and moving imagery offer complementary entries for existing bodies of theory, another vitalizing force on the work.

Another way of reading ‘live cinema’ is that the cinematic object itself becomes something more live through the ongoing presence of its maker. The reality of a film’s existence in the world, as Nicky Hamlyn has pointed out, is in the sum of all its screenings, each a unique experience. [4] Typically the maker is divorced from most of this reality. Live cinema practice maintains the connection between film and maker, framing a process not just of planting but of cultivation, tending.

2 SUBJECTIVE VISION

“My camera is an inner camera which doesn’t do very well when it points out at external reality. I’m trying to focus on something and bring it back alive from the uncharted areas of the inner image, inner space.”

–Jordan Belson

The practice of live cinema is uniquely positioned to afford the communication of internal visual experiences. All of our seeing is ultimately subjective — the individual mental experience of vision is as closed off to minds outside our own as any of our thinking. Visual experiences which occur with the eyes closed, however, bypass the demonstrable commonality of the eye as sense organ and focus our attention on particular aspects of subjectivity. We can point to several major categories of these experiences.

2.1 Closed-Eye Vision

The first category which comes to mind may be the phosphene activity familiar to any of us who have rubbed our closed eyelids as children and attended in wonder to the results. Textures and forms based on the eye’s physiology are the entrance point to this ‘closed-eye vision.’ If followed further, whether through meditation as by Jordan Belson, or mechanical means as by Brion Gysin with his *Dreammachine*, a wide range of visions can manifest in an territory of immanent phenomena between abstract patterns and Signs.

Jordan Belson followed his closed-eye vision into a personal world of moving imagery grounded in universal forms, influenced by technology, and pointing to cosmogeny. In order to write these visions onto the medium of film, Belson made his own elaborate optical apparatus to film dynamic systems of fluids and gases. Though he has kept the details of these systems obscured in order to focus attention on the imagery, the amount of physical grappling required to turn the recording apparatus into an inner camera is clear. His success in capturing the sensual instants which manifest a concrete yet immaterial reality is unparalleled. In the *Vortex Concerts*, held in San Francisco’s Morrison Planetarium between 1957 and 1959, Belson applied a subset of his film apparatus to the making of live cinema. A collaboration with composer Henry Jacobs, the concert series was a vital forum for a group exploration of subjective vision. [5]

2.2 The Mind’s Eye

The imagery of the mind’s eye is another category of subjective vision: our conscious and often intentional internal experience of material objects as well as abstractions. Edward Small, in his essay “Motion Pictures, Mental Imagery, and Mentation,” has considered the complex relationship between these mental images and the film artifacts that represent them. [6] Another, more pragmatic description of this kind of vision comes from Richard Feynman’s anecdote about his young skepticism toward the idea of visual thinking:

[I said,] “But thinking is nothing but talking to yourself inside.”

“Oh yeah?” Bernie said. “Do you know the crazy shape of the crankshaft in a car?”

“Yeah, what of it?”

“Good. Now, tell me how did you describe it when you were talking to yourself?”

So I learned from Bernie that thoughts can be visual as well as verbal. [7]

Motion Sketch, created in 1991 by Scott Snibbe, is an experiment in abstract visual communication which gives us a direct route from mind's-eye vision to live cinema practice. Inspired by the work of Oskar Fischinger and Len Lye, Motion Sketch maps hand motions through a mouse or drawing tablet to moving hard-edged abstractions. Communicating subjective vision on a phenomenological level is a concern Snibbe has made explicit: "By acknowledging [...] fundamental principles of perception, we can open up possibilities already present in screen-based dynamic media." [8] The user of Motion Sketch can select shapes, then add motion as well as changes in attributes such as color, size and drawing style. This activity creates short loops which can be built up additively to form more complex animations. Commercial motion graphics tools in 1991 were not able to afford an experience like Motion Sketch — writing his own software allowed Snibbe to make an elegant new tool, compelling and easily accessible yet deep in expressive potential.

The work of Robert Seidel gives another exploration of mind's eye vision, one that focuses more on an emotionally charged interiority. In his work *_grau*, he turns conventional animation tools into an inner camera by resisting their affordances in much the same way that Belson has resisted the indexicality of film. *_grau* depicts an internal visual experience during a car crash, a brush with death which brought on a rush of visual associations and a sense of vastly expanded time. Seidel exteriorized this intense moment by stretching it out into ten minutes and structuring the imagery around suspended organic forms in slow motion. Drawing on a wide variety of sources from 3D scans of his own body to visualizations of abstract concepts, the images are made and manipulated using multiple transformations in the 2D and 3D domains. [9] The result is a very personal imagery. Seidel's work shows us how mastery of digital image tools allows their use as a lens into an analog internal vision.

2.3 Dreams

Closely related to mind's-eye vision is the vision of dreams. Dream imagery is often symbolic and narrative, rarely if ever nonobjective. Watching clouds, or staring into the fire, are starting points for daydreaming, but we don't typically have dreams about doing these things. Likewise, cinematic techniques used to indicate dreaming—extreme wide angles, warped mirrors, soft focus—have no connection to our actual dream-seeing except for a kind of conceptual distance from wakeful seeing. They are effects afforded by the technology of the camera which distance the cinematic image on film from the eye's image on the retina. The resulting differences from the indexical have been incorporated into the language of cinema as 'dreaminess,' but there is nothing inherently dreamlike about them. They are a purely cinematic cliché. Our field of vision isn't necessarily any wider in dreams than in waking life, objects don't tend to be particularly warped or blurred.

By attending to the actual phenomena of dream vision, we can imagine ways to externalize dreams more truly using digital tools. In general, the malleability of the digital image, whether indexical or generated, holds the potential for a more faithful externalizing of subjective visions than has been possible through film. Any visual perception which we can recall, we can attempt to hold in the mind and work towards on the computer. But like film, image-processing software affords particular kinds of cliché vision. Careful consideration of both the phenomena of internal vision and the structure of media, as in the examples above, is needed to realize the potential of live cinema.

3 TECHNOPHORIA

Tools have biases. Any tool for making images affords certain kinds at the expense of others. While some operations on the digital moving image — resequencing, scaling in time and space, compositing — can be considered fundamental elements of media creation, tools typically provide more idiosyncratic effects which differentiate them in the marketplace. Creative work that uses these effects inhabits a problematic territory: its meaning is generated in part from commercial decisions made by the tool's designers.

When a work's primary interest lies in some novel use of technology, its maker can usually be diagnosed with a condition known as *technophobia*. In the technophobic state, one is captivated by the shock of the new, and is susceptible to mistaking the merely novel for the meaningful. Nicky Hamlin has also pointed out the existence of this condition, as the "Faustian euphoria surrounding digital media and virtual reality." [4] Faustian because, in using a tool which promises the creation of compelling visions, the maker cedes control over meaning. In extreme cases, such as when software demos are modified and used in VJ performance, the resulting work may function primarily as an ad for the tool. In short, the technophobic approach asks not "what do I want to do," but "what can I do," complicit in any cultural systems which happen to facilitate the doing.

3.1 Polygon Lust

Compelling visuals, those that catch and hold the eye, are a common feature of live cinema practice. Compellingness is orthogonal to meaning — more of one does not imply more or less of the other. But catching the eye is a marketable quality on its own, and so tools have been designed to make good eye traps. Imaging software and hardware are still young technologies, in which each new generation gives us a perceptible increase in capability and an accompanying jolt

of novelty. Graphics accelerator hardware, which is evolving rapidly, affords the generation of complex visuals at rapid frame rates. Live cinema makers typically harness these graphics engines using software tools for real time work such as Jitter, Processing or vvvv.

A complex moving scene can engage our brains' pattern matching and spatial planning systems to distraction. This is the same kind of mechanism that makes Tetris such an effective drug. A friend of mine remarked about a shot late in the movie *AI*, when a future air vehicle coalesces smoothly from a group of cubical fragments, that it was "the best five seconds of the movie." While in this case I tend to agree, I'll add that the novelty of this kind of image and the ease of making it have led to its emergence as a new visual cliché. As soft focus stood in for dreaming in the cinema, polygon graphics have come to signify futurity. A recurring image in the digital culture scene is that of the body fragmented into triangles. Only outer surfaces are represented, the minimum information needed to create an image by approximation of reflected light. Through faults in this representation either intentional or not, the brittle polygonal structure and the void within are revealed. Phenomenologically, the body becomes a shell. Is this hollowing out really a quality so central to our current perception of ourselves?

A work like E. V. Day's sculpture "Bride Fight" (2006), in which two wedding dresses — real, not virtual — face off suspended in an angular ecstasy of fragmentation, makes a good case for it. But for every "Bride Fight," a multilayered work which playfully critiques the world-as-polygons aesthetic, there are far more images and animations based on this fragmentation primarily because the tools afford a compelling visual experience.

Alvy Ray Smith has said that "reality is 80 million polygons." [10] Whether the number is per frame or per second does not really matter here, as either is so far distant from our current real time capability. But in live cinema the gulf between polygonal representation and reality is one of kind, not of degree. Manipulating imagery in a sufficiently flexible and interesting way, one that does justice to the live situation, will always allow the deep structure behind the images to be perceived. No matter how well the surfaces are finessed, the structures of polygon graphics mediate the meaning of live work they enable.

3.2 Effects

Besides creating visual complexity, another common affordance of live cinema tools is the ability to apply effects. Effects are systems with their own identities like "Gaussian Blur," "jit.tiffany," or "Color Corrector," external to and predating works that incorporate them. Effects have their own reasons for being. As part of an image-making process, they leave traces of these reasons. They may point to the past by remediation of film, invoking various shades of nostalgia which set the stage for storytelling. Or they may point to the future by enabling novel visual experiences that are compelling until pop-cultural saturation (remember morphing?) sets in. In attentive practice, though, effects can help create a live cinema which functions in the present. Varying the parameters of multiple effects is a common style in VJ practice, one that ties changing qualities of the image to sound and the performer's motions in real time. When no single effect is allowed to dominate, the qualities of the effects can be mutually obscuring. The resulting work points mainly to the liveness of the changes.

There are definite parallels between this approach and the way Brakhage used the film camera, consciously struggling with its affordances and tying his image making to embodied subjectivity in his dance of filming, an effort to make "all technical explorations the direct expression of acts of seeing." [1] To foster this direct expression in live cinema, use of effects must be taken beyond cinematic models.

Analyzing the relationship of digitally produced works to the tools that afford them is a complex task because of the many layers of mediating structure. From codec to graphics library to effects to application software, each layer can have an effect on the visual qualities of the finished work, and tools for each layer may be chosen independently of the others.

The medium of film, on the other hand, was coinvented with a single dominant tool, the camera. Many filmmakers such as Brakhage, McLaren and Len Lye who successfully externalized subjective visions did so by accessing film development technology at levels normally restricted to technicians [11], or bypassing the usual apparatus altogether by painting or scratching directly on film. Live cinema presents not just one tool to grapple with, but complex systems of tools that must be problematized in order for the practice to attain the mature self-awareness of experimental film.

4 WE WRITE OUR OWN SOFTWARE

Toolmaking has been a major preoccupation of many practitioners in experimental moving imagery. This is a consequence of the desire to push technology toward personal vocabularies of form and motion, as well as the lack of any commercial apparatus for the practice. From Père Castel and his *clavecin oculaire* around 1740 [12], to John Whitney Sr. and his gunnery computer turned animation machine in 1960, to current programmers working in live cinema, many artists have spent at least as much time building tools as making works. This approach is valorized by the live cinema community, as evidenced by the many statements in artist biographies like "so and so's video installations and performances are created exclusively with his/her own custom software."

Making one's own tools allows a deep engagement with the technology of live cinema, an approach that resists technophilia. Textual programming languages in particular prevent push-button gratification and force a structural understanding of one's work. One such language, Processing, is an open source software project that was explicitly designed as both a tool and a critique of dominant software culture [13]. Processing is an extraordinarily accessible environment that has catalyzed a vital community of systems-focused visual creators.

Though programming is a valuable conceptual tool, understandably not every artist wants to write code. Just as 'moving visual thinking' can be a subject for live cinema, it is an important way of conceptualizing the work's structure. I propose that by considering the phenomena of subjective vision and the structural aspects of live cinema technology, it is possible to design software tools for the practice that are less complex than programming languages, yet flexible enough to enable a plurality of visions.

4.1 Subjective Vision Phenomena

To make tools which can capture a wide range of internal visions, it will be necessary somehow to refer to different qualities of these visions, to catalog them. The language of phenomenology can be of help here. Gaston Bachelard's *The Poetics of Space* is the classic text on how qualities of different places shape our experience. Bachelard's phenomenology examines "the psychological being of an image, before any reduction is undertaken." [14] Though his analysis is based on examples from written poetry, by classifying qualities of experience evoked by different types of spaces such as houses, nests, shells and corners he points the way to a grammar for subjective vision. Attending to our own experience, we can investigate some qualities of seeing. How is our subjective vision framed? How is it focused? How is space projected? With open-eye vision the answers come mainly from physiology, but the more mental the visual phenomena, the more personal the exploration.

Classifying subjective phenomena will create lists of alternatives to qualities of the camera eye, such as its Renaissance projection of 3D onto 2D space. There is a wide variety of possible projections that can be recognized as phenomena, then translated to mathematics for computer implementation. As Manovich points out: "Although digital compositing is usually used to create a seamless virtual space, this does not have to be its only goal. Borders between different worlds do not have to be erased; different spaces do not have to be matched in perspective, scale, and lighting; individual layers can retain their separate identities rather than being merged into a single space; different worlds can clash semantically rather than form a single universe." [2] These alternate projections recall the fluidity of dream space, the feeling we try to describe by saying things like "I was standing in the kitchen of our old house, then it was the train station, but it was still the house." Alternate projection strategies can externalize dream spaces more meaningfully than a cinematic jump cut or a 2D effect.

4.2 Beyond Medium

Digital work can be projected at arbitrary resolutions, via different technologies. Though the visual results of different kinds of projection can be quite different, live cinema artists generally make do with whichever kind is available, and the combination of frame rate and resolution that works best with their laptops. Likewise the software tools and any performance interface used all create different contexts for the live work. The engagement of live cinema with its materiality necessarily differs from the structural-materialist approach to film or video, because live cinema is not media specific.

When a fluent degree of control over digital imaging technology is achieved, it can become a lens into a wide variety of subjective experience that is phenomenologically analog. A sound recording presents by and large the same qualities to the listener whether its sampling rate is 44kHz or 96kHz. At a sufficiently high image resolution, the same is true for pixels. Through the sampling theorem, we can verify the reality of the underlying analog signal which is reconstructed. Pixels do mediate the image, but as resolution increases their mediation tends toward disappearance, and a preoccupation with them tends toward the banal. The experience of seeing as humans is a commonality which provides a more fertile ground for a personal live cinema than the quirks of technological artifacts.

5 CONCLUSION

The budding practice of live cinema is unique in offering a situated group exploration of subjective vision. In seeing work which successfully conveys the interiority of the performer, audience members are invited to be present in their own bodies, attend to their own experiences of seeing. The diverse possibilities inherent in this situation can only be explored by moving beyond traditional cinema as a model for both creative work and new tools.

The commonly heard question "what do you use," meaning what software, shows the importance given by the live cinema community to tools. But choosing software is only the start of the creative engagement. An understanding of how tools mediate meaning is needed to exteriorize a personal vision. Live cinema is not a specific medium that one can engage, rather an area of practice involving various media and tools. A deep consideration of the enabling tools will be fundamental to live cinema's development.

I'm excited about group efforts to make tools for live cinema which are less professional and more amateur — professional signifying a kind of polish that tends to erase qualities of individual vision, and amateur in the sense of loving the work. Privileging the subjective vision of the maker has been viewed by some as a reactionary position. I propose that it has only seemed such within the context of arguments that grapple with a false dichotomy: personal desire versus a responsibility to a collective. In the digital media landscape of today, full of tools and distribution systems that tend to replace the individual viewpoint with a commercial rather than a communal one, celebrating personal vision is a radically democratic goal.

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