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Visual Music: an Ethnography of an Experimental Art in Los Angeles

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Visual Music: an Ethnography of an Experimental Art in Los Angeles

by

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Report

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Dedication

To my parents, Edmundo and Arminda.

Acknowledgements

My idea with this study was to write a narrative where voices other than mine could be put together, and where the resulting consonances and dissonances could somehow delineate the field I was trying to understand. In that sense, I want to thank all my ethnographic collaborators for being part of this research. Hopefully I have not misrepresented any of them, and my own interpretation of their practices will be understood as a valid and thought-provoking point of view.

Other collaborators I would like thank include ethnomusicologists from the Group of Musical Studies at the Federal University of Rio Grande do Sul, Brazil, with whom I was associated from 2005 to 2008 and where I found a fruitful space to learn collaboratively about anthropology, musicology, and ethnomusicology. At the University of Texas at Austin I was also nurtured with stimulating ideas. Professors James Buhler, Caroline O'Meara, and Robin Moore assisted me in different ways during my studies. Professor Sonia Seeman was kind enough to read the whole draft and offer insightful suggestions. My special thanks to Professor Veit Erlmann for his support during all stages of my academic life in the U.S. With Professor Erlmann's motivation I felt comfortable to delve into analytical approaches and research topics that are outside the mainstream musicological/ethnomusicological literature.

My family has been another group of very important collaborators, always encouraging me in decisive moments. Thank you Edmundo, Arminda, Guile, Kim, Leo, Fi, Talita, Mari and Marco for investing in me. And thanks Sibbi for being part of my life.

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Abstract

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The University of Texas at Austin, 2010

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This Report focuses on social networks surrounding *visual music*, a sub-field of audiovisual experimental art in which hearing and seeing intersect, often through the music-oriented manipulation of abstract imagery and audio-visual synchronization. The discussion evolves from my fieldwork in Los Angeles, where I interacted with artists, archivists, publishers, institutions, software developers, and scholars. Taking into account Howard Becker's notion of art world, Pierre Bourdieu's ideas of cultural and economic capitals, and Bruno Latour's Actor-Network Theory, I try to understand how these groups have been trying to establish visual music-networks. Although elements of visual music have been present in various media and artistic trends (color organs, abstract films, VJing-DJing, etc.), the field's history and premises are still little known, in part because the very term 'visual music' is a contested one. Due to its entertainment/cultural industries, Los Angeles is a place where multiple processes of high tech differentiation coexist; since the 1930s the city's technocultural environment (from film production to academic programs on computer animation) has lured artists interested in visual music. Not surprisingly, the city holds the only two institutions directly related to visual music in the country. I navigate through this field by considering some intersections between science, art, and technology.

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Chapter 1: Introduction

How do people listen to music? The question, when understood in its full potential (what *does it take* for music to sound?), has been appealing enough to attract musicologists and ethnomusicologists. These are scholars who venture into 'webs of significance' and who, after extensive periods of data collection and deep analysis (of how musical practices are constructed and shared, are finally able to enlighten their audience as to *what* that sound is (or was) about; they inform us how certain musical practices *sound* through the bodies of those involved, and how sounds and bodies resonate with (or despite) other practices.

Let me ask something different: how do people see music, and how do they listen to images? What is the aesthetic justification for integrating sound with moving images, and how should these images look like? Should they be abstract, following the ideology of 19th century Western classical "absolute music," where non-representation becomes synonymous of transcendence and artistic autonomy? Suppose that you have decided to create such visual music: how would you do it? Would you build your own audiovisual synthesizer and perform it in real time, program using computer language, use off-the-shelf software, draw or paint directly on film celluloid, or would you manipulate images on a television set using magnets?

Where would you exhibit it? At a new media festival, fine art museum installation, electronic music party, movie theater, gallery, airport lounge, or at people's homes? How would you acquire the knowledge to create it? Would you just buy whatever material you had selected to work with and learn to do it by experimenting with your

friends, would you try to enter in an institution that would give you access to costly machinery and experienced personnel, knock on your mentor's door and ask for advice, learn by patiently assembling bits of information collected from Internet tutorials and email lists (these dazzling and ever-sprouting human-machine networks), or would you lock yourself in a room with 'nothing' but an idea, electric supply, and a box made of integrated circuits, silicon, metal, and plastic? After putting some thought on how much energy you would invest to create this visual music, would you take it as a day job, a night job, a hobby, or some kind of idée fixe that refuses to leave you alone? After that, how would you reach a verdict and say, "OK, this work *works*"? By comparing it to other works, or simply with the faith that your creation is valid to society and hence should be consumed/experienced? And if you came to the conclusion that indeed you work is *good*, how, where, and to whom would you show and sell it?

In nutshell (an open-ended one, if you will), these are the issues to be explored in this Report. I attempt to approach them from a set of intersections: between academic disciplines, technologies (audio, visual, analog, digital, film celluloid, and computer), and places (Los Angeles, New York, San Francisco, and Europe). Although I'm not going to answer all the questions posed above, I will investigate how people associated with a sub-field of experimental art in Los Angeles have been striving to create networks that can lead to what I will call, following Howard Becker, an art world – an artistic practice that has achieved a certain level of aesthetic, philosophical, academic, and economic stability.

My research tackles visual music, understood here as an audiovisual work in which hearing and seeing have compelling interactions (the question is, of course, what is 'compelling' enough), often through the music-oriented manipulation of visual material,

and through the use of varied levels of audio-visual synchronization - which, as I argue later, tend to establish different psychological, physiological, and aesthetic relationships with the perceiver. Although some maintain that static paintings may be 'visual music,' or that some visual music pieces also use representational imagery, my focus here is on visual music as *the interaction of abstract moving images and sound*. In that sense, I deal with the genre in relation to visual and sonic abstractionism. As I show, the idea of creating abstract moving images closely related to music or sound is entangled, on the one hand, in modernist ideals of aesthetic advancement through technological experimentation and, on the other, in alternative discourses that question notions of high art. This occurs, for instance, in attempts to efface the 'human factor' in aesthetic appreciation (such as by deploying music visualizer software), and to occupy spaces (virtual or real, YouTube or nightclubs) that have been associated by elitist art members with amateurism, naivety, and 'functionalism.'

Two quick caveats are in order: first, I am less interested in discussing music than in discussing sound-vision, for it is the cross-sensorial nature of visual music that I would like to grasp. It is important to highlight this aspect right away, for it sheds light on why many visual music works are still marginalized in many art-related fields: as we will see articulated in numerous ways, visual music is less about the specificity of the sound or the abstract imagery than about the interaction between the two. The dash in audio-visual is what has interested visual music artists, and it is what will interest us. Besides, many artists I have encountered don't have a formal background in music (and, tellingly, many don't want to have), but were trained as filmmakers, video artists, computer programmers, and digital artists. If they lack vocabulary to talk about sound as it is taught

in academic centers and sound studios,[1] they are constantly dealing with audio by integrating sound, or sound composition ideas, with moving images. Indeed, as I show in Chapter 3, the interest and emulation of musical ideas from non-musicians was one of the main aspects for the emergence and articulation of abstract art in the early 20th century.

Second, almost every aspect about visual music analyzed here originates from my fieldwork in Los Angeles and in the Bay Area during the summer of 2009, and from ongoing ethnographic incursions into the Internet. The best way I found not to be overwhelmed by artistic currents, technological developments, technocultural 'scenes,' and theoretical debates, was to keep focused on what was important to my ethnographic collaborators – audiovisual artists working with diverse technologies, archivists, institutional directors, software developers, and scholars. If I call them collaborators, it is not only because they are part of my fieldwork, but because they have established this fieldwork by linking me to people, books, artworks, events, and Web Sites.

Together we have created a temporary network that is here translated and entextualized, and whose connections and data are compared and sketched at a certain level of generality. The reader will notice that the collaborators' commentaries are not concentrated in one section (and certainly not at the end as an Appendix), but are rather extensively distilled and mixed with my own voice. I also want to stress that my interest

[1] For a discussion of the development and transmission of linguistic capital by sound-recording engineers, see Tomas Porcello, "Speaking of Sound: Language and the Professionalization of Sound-Recording Engineers," *Social Studies of Science* 34, no. 5 (Oct., 2004): 733-758.

is more archeological than historical,[2] in the sense that I am not trying to offer a detailed and hermetic narrative about visual music, but to collect and expose a handful of (often ambiguous) cases that are congruent with the ethnographic data. This applies whenever I move away from the empirical data, wether as I approach the past or deal with theoretical issues.

Among ethnomusicologists, attention to sound and technology has increased in the last few years. *Strange Sounds: Music, Technology and Culture*,[3] *Music and Technoculture*,[4] and *Wired for Sound: Engineering and Technologies in Sonic Cultures*,[5] have investigated how sound technology is manipulated by specific actors in specific environments. As places and people continuously engage in music circulation, for the ethnographer it has become less a question of whether communities embrace or ignore the use of technology than of *how* they interact with technology. Obviously, this is not to

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[2] "My intention is not to carry out an exhaustive observations of [concepts] themselves, to establish the characteristics that they may have in common, to undertake a classification of them, to measure their internal coherence, or to test their mutual compatibility; I do not wish to take as an object of analysis the conceptual architecture of an isolated text, an individual *oeuvre*, or a science at a particular moment in time. One stands back in relation to this manifest set of concepts; and one tries to determine according to what schemata (of series, simultaneous groupings, linear or reciprocal modification) the statements may be linked to one another in a type of discourse; one tries in this way to discover how the recurrent elements of statements can reappear, dissociate, recompose, gain in extension or determination, be taken up into new logical structures, acquire, on the other hand, new semantic contents, and constitute partial organization among themselves." Michel Foucault, *The Archeology of Knowledge* (New York: Vintage Books, 1972), 60.

[3] Timothy Taylor, *Strange Sounds: Music, Technology & Culture* (New York: Routledge, 2001).

[4] René Lysloff and Leslie C. Gay, eds, *Music and Technoculture* (Middletown: Wesleyan University Press, 2003).

[5] Paul Greene and Thomas Porcello, eds., *Wired for Sound: Engineering and Technologies in Sonic Cultures* (Middletown: Wesleyan University Press, 2005)

say that music and music technology are always one and the same thing, but that, with very few exceptions, they are part of multiple and ambiguous associations.[6]

My research deals only tangentially with the above-mentioned literature, since I'm not concerned with audio or visual technologically mediated cultural (con)texts per se, but with audio-visual ones; with cases that have challenged sensorial compartmentalization and institutionalization. Thus, most of these texts have helped me to think about the 'audio' in audiovisual, or the 'music' in visual music. Be it audio, visual, audio-visual, or audiovisual, I believe areas like visual music might help us to rethink about the relationship between audio and visual technologies. These areas might shed light, for instance, on ideas of 'bricolage' not only as represented by the practice of assembling different music styles and visual symbols, but of audio-visual associations that are much more pervasive in our digital age. Moreover, if we count the number of times ethnomusicologists teach music using audiovisual tools like YouTube, we might as well ask to what extent students are learning music *only*. Audiovisual technology has forged a new ethnomusicological episteme: it has transformed how many of us listen to music (to go back to my initial questions), and reshaped the ways sound can be discussed in ethnomusicology, especially as textual description and audiovisual performance are

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[6] For instance, the discussion of 'globalization in music,' the long distance studio-mediated circulation of sounds, has been around in the discipline for quite a while. See Timothy Taylor, *Global Pop: World Music, World Markets* (New York: Routledge, 1997); Veit Erlmann, *Music, Modernity, and the Global Imagination* (New York: Oxford University Press, 1999); Philip Bohlman, *World Music: A Very Short Introduction* (New York: Oxford University Press, 2002); and Steve Feld, "A Sweet Lullaby for World Music," *Public Culture* 12, no. 1 (Jan., 2000): 145-171.

just a few bits apart from each other now – assuming, of course, you have access to them.[7]

Whereas musicologists like Philip Tagg and Nicholas Cook have been investigating both popular and classical music from the audiovisual point of view,[8] their interest is more in analyzing the work and its reception than in following audiovisual production from an anthropological perspective. Moreover, although their research involves a semantic analysis of audiovisual media, they focus either on mass mediated or narrative representational images (usually both), and not on abstract experimental art. However, it seems fair to say that these scholars have advanced insightful analytical tools to deal with audio-visuality, and have helped to expand musicology's territory by approaching fields like Cultural Studies (where I often find too little textual analysis), (New) Media Studies (where I often find too little contextual analysis), performance studies, and ethnomusicology.

Framing this research from the anthropological standpoint was a difficult task. As I have mentioned, I'm interested in the kind of visual music that combines audio-visual synchronization with abstract imagery. Clearly, this combination is not exclusive of a particular localized 'community.' In that sense, no single self-contained field was 'there' waiting for me to observe it. Rather, I encountered multiple and loosely associated visual music practices. Both in terms of sound and images, the cosmopolitan environment in

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[7] According to a survey conducted by GlobeScan for BBC, more than 27,000 people in 26 countries, almost four in five people think access to the Internet is a fundamental right. BBC News, March 8, 2010, http://news.bbc.co.uk/2/hi/technology/8548190.stm (accessed March 11, 2010).

[8] See Philip Tagg and Bob Clarida, *Ten Little Title Tunes: Towards a Musicology of the Mass Media* (New York: Mass Media Music Scholars' Press, 2003); and Nicholas Cook, *Analysing Musical Multimedia* (New York: Oxford University Press, 1998).

which visual music members live has encouraged them to navigate across high and lowbrow conventions. As I show in Chapter 3, whereas the various abstract imageries I discuss tend to operate within a relatively narrower range of intertextuality, the sonic component ranges widely from pop to classical, from white noise to Gamelan music.

Since visual music works and artists circulate *both* in the musical and visual art worlds, I had to become familiar with diverse aesthetic current and ontologies in order to understand my collaborators' creative premises and aspirations. As much as it has been a challenge for them to mediate the two artistic threads and to establish an autonomous (or perhaps more legitimized) visual music art world, it was challenge for me to mediate approaches on the ethnographic level. I have chosen to put together those flexible enough to 'get through' what seems to be the unusual configuration of my topic.

Standard anthropological approaches seem to deal only tangentially with the issues I'm trying to tackle. For instance, in *The Anthropology of Art: A Reader*,[9] published quite recently, no single essay offers an ethnography of Western art production, let alone experimental art. With the exception of a few provocative theoretical endeavors like Alfred Gell's *Art and Agency*,[10] the Other for most anthropologists of art comes from the Third World. Also, I was able to find much research on art production in Western fragmented urban centers, except from a sociological/institutional point of view. Among anthropologists of art there seems to be a shared disinterest in zones where Westernized cultural products are considered excessively 'aestheticized' or elitist. Another challenge was combining presentational and virtual ethnographies: while one *or* the other has been

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[9] Morphy Howard and Morgan Perkins, eds., *The Anthropology of Art: a Reader* (Malden: Blackwell, 2006).

[10] Alfred Gell, *Art and Agency: an Anthropological Theory* (Oxford: Clarendon Press, 1998).

norm even among scholars of technoculture, during fieldwork I found myself having to work with both – for instance, I talked with collaborators about the virtual space and guided my conversation by paying attention to the information that was *not* online. Thus, on the theoretical level I dialogue with ideas that take very little for granted and offer enough room for me to probe into a wide range of issues. Instead of departing from notions of structure, hierarchies, domination, race, ethnicity, agency, sound versus image, machine versus human, I have tried to assemble localized networks by *following* discourses, machines, people, ideas, and places. (Of course, when I argue that the research did not originate from these concepts, this does not mean I have ignored them.)

Pierre Bourdieu's idea of symbolic, linguistic, economic, and cultural capitals has been so widespread in the humanities, and its use so widely incorporated into informal discourse, that there is always the risk of either approaching it too superficially or of following its premises to the point that the empirical data sinks below diagrams of capital dispositions. Particularly, I explore Bourdieu's *The Field of Cultural Production,* as the tension between economic and cultural gain, expressed again and again by my collaborators, as well as the distinctions of experimental and mainstream consecrated art, strongly resonates with his analysis of cultural production in France. Following Bourdieu, as a media city that headquarters powerful entertainment industries, Los Angeles-based artists have been constantly circulating close spaces that operate by translating economic and cultural capitals, hence 'subverting' the 'maturation' interval usually required by an autonomous fine art world. The question many visual music members in Los Angeles have been making is: How to promote a work as fine art by using high technology associated with commercial 'craft' or 'entertainment'? How to advance the idea that

artistic creation does not disappear once we enter into the age of mechanical reproducibility, but can in fact embrace its potential *as* legitimate as previous fine art works? This concern is certainly not specific to Los Angeles, and in the following chapter I consider how Futurists, Bauhaus members, and other experimentalists have been pondering on the ways the machine can enter into the fine art world.

I also look at and listen to the visual music network as an *art world*. In his book *Art Worlds*, Howard Becker proposed the concept of 'art worlds' to understand art from a materialistic (and sometimes anti-theoretical) perspective, rather than from the ideologies and discourses that surround it. Becker's move is important, first, in that it places ethnography at the center of sociological investigation, and second, in that it considers the many activities that take part in the construction of artworks and make possible – though not in a deterministic way – the very concept of artist. Becker attempts to understand how people engage in art by looking at the collaborative social fabric that sustains and justifies the establishment of art worlds. As we follow conventions of art creation, circulation, and appreciation, it is interesting to observe how divisions between art and non-art are created. As Becker puts it,

> To limit the analysis to what a society currently defines as art leaves out too much that is interesting: all the marginal cases in which people seek but are denied the name, as well as those in which people do work that outside observers can see might meet the definition but whose makers are not interested in that possibility.[11]

People who populate the visual music world have often disputed what should be included and what should be excluded from the genre 'visual music.' Because it encompasses such a variety of sonic and visual tastes, technologies, and interests, visual

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[11] Howard Becker, *Art Worlds* (Berkeley: University of California Press, 1982), 37.

music is a fragmented art world where practitioners often show explicit hostility to each other.[12] Whoever and whatever enters into a certain art world by embodying its name necessarily affects all the other participants of that world. In the case of visual music, in which canons, masters, and aesthetic premises are debilitated by the marginality of the field (at least until now, according to my collaborators), the attempt to establish internal distinctions becomes more difficult, as there is no central point from where an authoritative perspective can attack 'aesthetic misappropriations.'

Let me take the opportunity to state that my collaborators did not explicitly articulate the notion of 'art world'. In fact, many of them equated 'art world' with mainstream 'fine art world,' a field with institutionalized practices often hostile to technological innovation, and to which they are either not willing or not allowed to participate. Often not even the words 'community,' 'scene,' and 'collective' were used in relation to visual music in Los Angeles, and many times I heard that it was impossible to locate such practice. In the field of visual music, where experimentation, innovation, technological originality, and strong aesthetic convictions have been common elements, disagreements on whether there is or there isn't a 'visual music community' in Los Angeles tells a lot about the interactions between visual music members and the city. As much as I accept the artificiality of the network I have assembled during/as fieldwork, I don't think these individuals are insulated from each other's activities, but rather that they often *choose* to ignore certain associations. Going back to Bourdieu, "The network of objective relations between positions subtends and orients the strategies which the

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[12] As Bruno Latour puts it, "each actor will map out for the benefit of the analyst the empirical metaphysics to which they are both confronted." Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005), 56.

occupants of the different positions implement in their struggles to defend or improve their positions […]."[13] From the ethnographic point of view, following artists and artworks associated with moving abstract visuals and audio-visual synchronization – attributes that I have stipulated by observing how scholars and artists have been using the term 'visual music' – led me to aesthetic and institutional controversies that I by no means intent to minimize here.

These situations put the ethnographer in a dilemma: s/he can either give a partial and biased account, or an ambiguous and open-ended one. As I hope it becomes clear throughout my account, here I have chosen to invest in the latter. This is one of the reasons I'm not referring to this ethnography as 'collaborative' in the sense of conjointly written. Assuming the responsibility of assembling the final text allowed me to be as honest as I can about my experience. Undoubtedly, the multifaceted element of my fieldwork makes impossible any attempt to gather collaborators and ethnographer to produce a single authoritative text; some collaborators simply didn't want to be associated with others. Although I argue that my account is rhizomic in that is allows much space for individuals to articulate their ideas themselves, this text represents my view of the facts, and I accept the partiality of my own interests as much as I expect my collaborators to accept the sincerity of my endeavor.

Another inspirational source was Actor-Network-Theory (ANT), a concept put forward by scholars related to Science and Technology Studies since the 1980s. Bruno Latour's *Reassembling the Social: an Introduction to Actor-Network-Theory* offers a sociological approach that avoids taking 'society' as a given, but proposes instead to look

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[13] Pierre Bourdieu, *The Field of Cultural Production* (New York: Columbia University Press, 1993), 30

at it as something that is constantly *assembled* by its actors. The important aspect here is not only that ANT strongly denies the ethnographer's interpretation as something *above* those he or she investigates (Latour even suggests sociology as *infra-writing*), but also that it takes both humans and non-humans (machines, simians, dogs, rocks, etc.) as potential actors, as part of associations whose traces are followed and re-assembled by social scientists. In a similar vein, Thomas Porcello has proposed that we exchange "the discourse of 'They do, We theorize,'" to a more sensitive narrative that gives voice to "those do-ers who possess eloquent, theorized voices of their own." [14]

If some of these ideas show similarities of approach (art, as any other collective practice, is a relational field that involves much more than artists and their creations), they certainly show divergences. My position when dealing with theoretical issues is not different from when I tackle my collaborators' assessment of the art world they chose to be part of: rather than binding them into a unified argument, I allow them to shed light on the topic by considering their contradictions and disagreements.

The diagram below presents the human- and event-related associations established during fieldwork – a series of 'followings' that occurred in the summer of 2009. The arrows represent explicit indications ("you should talk to this person," or "you should attend this event"); quotation marks indicate events, which are linked to the individuals or institutions that sponsored them; boxes with individual(s) names inside are institutions (iotaCenter and the Center for Visual Music being the main nodes).

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[14] Thomas Porcello, "Afterword," in *Wired for Sound: Engineering and Technologies in Sonic* Cultures, 272.

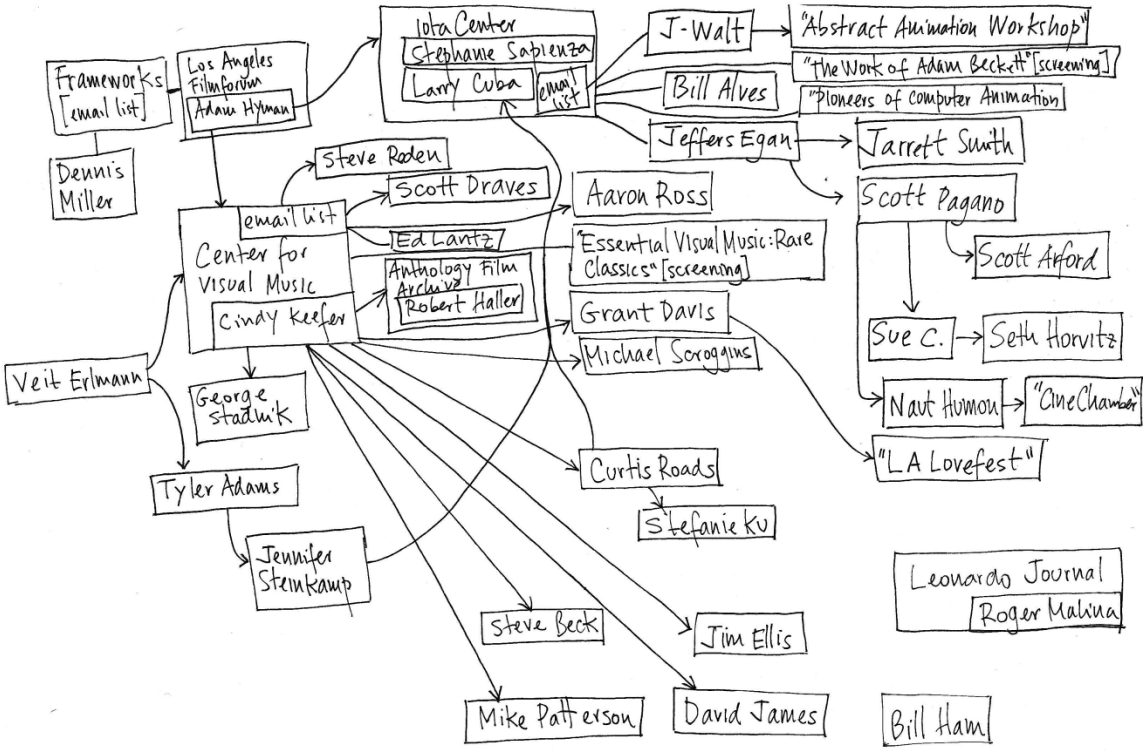

Fig. 1. Human rhizome-fieldwork. The series of followings through which the ethnography was assembled.

Whereas at some points I discuss visual music as art world and within fields of cultural capital, I also talk about it as an important node of human-machine interaction. Technology and art have become an area of increasing interest in a vast number of academic fields. Walter Benjamin's already canonized *The Work of Art in the Age of Mechanical Reproducibility* summarizes what I take as the ambiguous political potential of the art machine. Benjamin argues that reproducibility has effaced from the artwork its aura, the material uniqueness and inviolability attributed to it. The distinction between what is art and what is technology reveals how the work of many experimental artists was/is seen, and how these have been assimilated by the fine art institutions and media markets. As much as many artists enjoy creating and exploring cutting-edge technology, they are quick to secure their position as unique creators, inserting notions of aura into

their artistic creation. Not surprisingly, Los Angeles is the place in which tensions between 'art' and 'craft,' 'authentic' and 'commercial,' 'mainstream' and 'avant-garde/ experimental,' etc are easily detectable. Tellingly, there too is where one can find the only two institutions in the United States directly concerned with preserving and promoting visual music.

The Report is arranged into a series of assemblages, each chapter offering a fragment from which visual music is mapped and analyzed. Chapter 2 deals with experimental art and its relation to machinery in art, science, and technology. Whereas the relationship between artists and scientists has been a constant since ancient history, the explicit and systematic collaboration between them, or the direct application of scientific experiments in art, is much scarcer. *Leonardo*, a network that includes a journal, a book series, a web site, and educational programs, is one of the few organizations in the United States (and worldwide) to promote and document research in experimental art and science as fields of possible creative cooperation. *Leonardo* is a space for the production and circulation of symbolic capital directly associated with the visual music art world.

Chapter 3 presents an historical overview of visual music. I start with an archeology of abstractionism, focusing on some trends within modern art that have used absolute music as an ideal of non-representationality and artistic value. I then focus on a few techno-art trajectories within visual music, including color organs; abstract film animation; light shows, video art, electronic music, and intermedia; computer programming and music video; and digital art, the VJ/DJ scene, and the development of computer software. As I will argue, one important discursive 'node' (the agglutination of practices, contexts, people, texts, events, or objects) is the term 'visual music' itself.

Although artists and scholars have employed it sporadically to describe visual works with musical connotations, it was in the 1980s that the term was used to embrace a wide range of techniques, technologies, and art forms that shared principles of direct audio-visual interaction. As I mentioned before, groups who feel that visual music has come to embrace what they see either as excessively 'popular,' 'commercial,' or aesthetically questionable, have started to avoid using the term and constructed strong arguments against its use. As a cross-media and polyaesthetic art genre, people and works are constantly entering and leaving the umbrella 'visual music.'

Chapter 4 focuses on Los Angeles and its cultural geography, starting with an overview of urban ethnography and the literature about the metropolis. Based on participant observation and conversations with collaborators, I follow a few individual trajectories to better understand how visual music artists have interacted with the city. Although I argue that visual music is a transnational phenomenon that has gained impetus in certain metropoles across the globe (which undermines the idea of self-enclosed fieldwork), Los Angeles features an impressive technological and entertainment infrastructure, especially in terms of music and film production. Experimental artists working with film, computers, and other instruments for audiovisual performance have migrated to L.A both to have access to expensive technology required in their experiments, and to work in or around the city's cultural industries. Accordingly, throughout the 20th century these industries became the most profitable, distributed, and consumed locus of cultural production in the world. As film scholar David James told me concerning Los Angeles' centralized mass media infrastructure and its influence on Los

Angelenos, “Every cab driver in L.A. has a screenplay that he’s trying to sell. In L.A. there’s no real way in which you can escape that.”

Chapter 5 focuses on institutions and events as central components for the formation of art worlds. I describe the institutional ethnography conducted at the iotaCenter and the Center for Visual Music (CVM), and consider how they have established a visual music community in L.A. I then describe important events related to visual music and its many technocultures, some of which I attended during fieldwork.

Chapter 6 attempts to look at things from a social sciences perspective. The chapter is a reflexive endeavor to understand this area of experimental art as an evolving cultural practice in which notions of mainstream, popular, industry, commercial, entertainment, and collective, interact with notions of alternative, authentic, individualized, fine art, and aesthetically permissible. As I show, technology and technique in visual music have been factors that have, at the same time, maintained and undermined these divides – maintained because they tend to inform people how to evaluate a work; and undermined because artists and artworks often navigate *across* them.

I conclude by stating what kind of ethnomusicological work this research has attempted to put forward. I seek to address the main challenges I have faced during and after fieldwork – challenges that I share with some ethnographers. The more I find how certain ethnomusicological discussions about music and the formation of nation-states, and debates of music and/as/in culture that ignore how media has mediated ideas (and the more I see how some ethnomusicologists subscribe to notions of ‘otherness’ without noticing how these are actually forged and reinforced by mass media itself); the more I

think serious reflection on how machines intersect and *act* is required. In investigating the audio-visual in-betweenness of visual music, I have done my best in following Gilles Deleuze and Félix Guattari's advice that "it's not easy to see things in the middle, rather than looking down on them from left to right or right to left: try it, you'll see that everything changes."[15]

[15] Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press, 1987), 23.

Chapter 2: Experimental art, science, and technology: a few nodes

As he disembarked in New York and walked into the increasingly popular movie theaters, the French writer George Duhamel was horrified to witness the ways the modern machine had transformed both art and life into pieces of an urban engine. In his narrative *Scènes de la Vie Future* he condemned the modern American city, filled with movie theaters and phonographs, as the factory of another kind of human collective: the lethargic and mechanized crowd. He writes,

> Here everything is false. False: the life of the men on the screen, false, the type of music scattered over us from I don't which screaming devices. And, who knows, false, this human multitude as well, which seems to dream of what they see and to move quietly with sleeper's gestures. Everything is false. The world is false. Perhaps I am not myself, but a simulacrum of men, an imitation of Duhamel [translation mine].[16]

Four years after Duhamel's passionate disapproval of what was the prevailing idea about technology-as-progress, the Museum of Modern Art of New York held the "Exhibition of Machine Art." One of the reviewers wrote in the journal *Design*, "Springs, gears, cables, chemical, capsules, carpet, sweepers, and kitchen cabinets are among the useful objects shown. They have been selected for the Exhibition not only on the basis of their usefulness but for their beauty of form, finish and material."[17] One of the scholars invited to report on the exhibition, the philosopher of pragmatism John Dewey, declared to the press, "I hope that all those who are skeptical about the aesthetic possibilities of machine production will see the Exhibition. To my mind there is convincing proof that

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[16] Georges Duhamel, *Scènes de la vie future* (Paris: Mercure de France, 1930), 51.

[17] *Unknown*, "Beauty of Form in Machine Art," *Design* 35, no. 10 (April, 1934), 8

there is no essential opposition between production for utility and for beauty."[18] Another scholar, Professor Charles R. Richards, head of the Museum of Science and Industry, is quoted in the same review: "The true function of the designer for the machine […] is first of all not to try to reproduce in the machine the creations of the craftsmen. These latter very often naturally express themselves in plays of fancy which result in ornament."[19] For Richards the artist should explore the intrinsic qualities of the machine, creating objects that were beautiful in their precision and lack of 'fancy' ornamentation. Ornament was indeed under attack in debates about modern art. Already in 1908 the architect Adolf Loos asserted, "The lack of ornament is a sign of intellectual power."[20] For him ornamentation in any aspect of life (clothing, decoration, architecture, etc.) was a requirement only for criminal and primitive minds.

In this chapter I discuss some intersections of art and science in relation to technology. As debates on the topic are much broader than space here allows, I want to follow a few nodes related to experimental art that will prepare the ground for examining visual music in the following chapters. The term 'experimental art' is used here as a creative field in which artists may (1) combine two or more conventional art form or establish what they see as a new art form; (2) employ new (and often highly personal) techniques on well-known material (e.g. film celluloid); (3) exhibit/perform their work in unconventional ways; (4) employ cutting-edge technology, often by constructing or programming the art-machine themselves; and (5) engage in aesthetic debates about

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[18] Ibid., 25.

[19] Ibid.

[20] Adolf Loos, "Ornament and Crime," in *Crime and Ornament: The Arts and Popular Culture in the Shadow of Adolf Loos*, ed. Bernie Miller (Toronto: YYZ Books, 2002), 36.

mainstream art, popular/elitist art, commercial art, or 'old' art; and (6) express strong attitudes towards the utopian and spiritual component of their art.

Having said that, a few remarks about this definition must be made. First, I do not consider experimental artworks as 'experiments' in the scientific sense of the word; they are not (or not necessarily) seen as intermediary stages towards the confirmation of a hypothesis, the establishment of a causal relationship, or the resolution of a problem. For experimental artists there is hardly a final masterpiece; rather they see their oeuvre as the sequence of projects related to an unattainable aesthetic ideal, or to the maximum exploration of the materiality of objects. Eventually some of their ideas must be put aside until the proper conditions emerge (e.g., the development of a piece of technology). As one collaborator stated, "Every piece is an experiment. Trying something new, trying a different way to create color, for example."

Second, I make a distinction between avant-garde and experimental art. Whereas the former implies a collective desire to overcome a 'rearguard,' the same doesn't necessarily occur with the latter. The Utopian Socialist Henri de Saint-Simon coined the term 'avant-garde' in the 19th century to designate those artists, politicians, scientists, and industrialists who would be responsible for establishing a new social order. Saint-Simon predicted a 'magnificent destiny' in which the arts would have "a positive power over society, a true priestly function, and [march] forcefully in the van of all the intellectual faculties."[21] Accordingly, the concept of 'genius' in art was an important discursive articulation between the Romantic and Modern avant-gardes, connecting early 19th

[21] Quoted in Linda Nochlin, "The Invention of the Avant-Garde: France, 1830-80," in *Avant-Garde Art*, ed. Thomas B. Hess and John Asberry (London: Collier-Macmillan, 1968), 5

century romanticism and its admiration for the natural with early 20th century modernity and its admiration for the mechanical.

The avant-gardes in art and politics are involved in establishing new visions of social and aesthetic orders. As Harold Rosenberg suggests, "There is no such thing as an avant-garde individual, except as a followed or leader."[22] Experimental art, on the other hand, includes cases where isolated individuals assemble their own machines, without expressing their ideas as artistic advancement. Moreover, many of these individuals do not come and are not interested in stepping into the fine art world; often they occupy spaces less associated with technoscientific research than with art production. Thus, whereas the avant-gardes attempted to 'expand,' 'advance,' and 'surpass' art world conventions, experimental art tend to explore unconventional practices in blurred zones, including cases where notions of mainstream, popular, commercial, and 'old' are integrated. In that sense, experimental art encompasses avant-garde art.

Third, experimental art production demands places where artists can have access to specific tools, which becomes a challenge for those using cutting-edge technology. For instance, if the cost of hardware and software required for creating high resolution digital graphics has dropped considerably since the 1980s, it is important to note that most people still cannot afford this equipment. Using high technology for making art becomes a problem when art institutions refuse to legitimize the practice as 'art,' undermining the possibility for experimental artists to get funding.

Experimental art is a cosmopolitan phenomenon that, often enacting the museum geopolitics, is associated with (and eventually an association of) specific cities.

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[22] Harold Rosenberg, "Collective, Ideological, Combative," *Avant-Garde Art* , 83-84.

Cosmopolitanism, like its relative term postmodernism, is understood here less as an experience democratically shared across the globe than what can be called the pan-sensorial consumption/experiencing of 'otherness.' Whether or not s/he recognizes, the cosmopolitan who is able to embrace/afford alternative cultural expressions through sight, hearing, taste, smell, and touch is the exception rather than the norm. The cosmopolitan experience is sensed through the body of a Western elite.

Discussions about machines have an interesting trajectory: as industrial revolutions set socioeconomic paradigms that became the signs of (post)modernity, machinery and the skills to operate and develop it have become associated with human exchangeability and – ultimately – obsolescence. Among social theorists and philosophers, the industrial machine occupies an ambiguous position; in the words of Martin Heidegger, it can be either the 'supreme danger' or the 'saving power.' One also finds this ambiguity in Karl Marx, Max Weber, Georg Simmel, Walter Benjamin, Siegfried Kracauer, and Theodor Adorno. While I am not interested in digging too deep into the topic, I want to briefly mention these authors before getting into Futurism, the Bauhaus, and the art machine.

For Marx, while the industrial machinery was "the most powerful instrument for shortening labor time, [it] becomes the most unfailing means for placing every moment of the laborer's time and that of his family at the disposal of the capitalist for the purpose of expanding the value of his capital."[23] At the same time, machinery was the social construct that could help to forge a society in which the individual achieves the "greatest

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[23] Robert Tucker, ed., *The Marx-Engels Reader* (New York: Norton, 1978), 707.

possible development of his varied aptitudes."[24] As the Marxian argument goes, the development of machinery as fixed capital would lead to the overcoming of capitalism.

Similar to Marx, Max Weber investigated the machine within the context of industrial labor. For Weber, machinery development – what he calls 'rational technology' – was a natural articulation of capitalism and a crucial component in the larger process of material production and mechanization. This notion is embedded in Weber's somewhat pessimistic idea of rationalization. Technology then represents the materialization of a series of social practices (bureaucracy,[25] types of authority, 'disenchantment of the World,' the rise of the 'iron cage,'etc.). In art, law, or communication, technology is the discursive node of modernity, both in its potential for integration and conflict.

Martin Heidegger, on the other hand, deals with technology from a phenomenological point of view. In *The Question Concerning Technology*, he distinguishes the 'anthropological' definition of technology and the philosophical one. While the former considers technology as an *instrument* of human activity and focuses on the relationship between master (the human) and means (the non-human), the latter tries to go beyond causality and instrumentality to access technology's 'essence.' For Heidegger, instead of trying to dominate technology as an instrument only, we should observe its unfolding more attentively. Extending the philosophical notion of *Dasein*, Heidegger argues that the increasingly ubiquitous presence of technology takes part in deeper transformations of our ontological constitution.

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[24] Ibid., 413.

[25] "The specifically modern communication networks (public land and waterways, railroads, telegraph, etc.) can be considered as pacesetters of bureaucratization." Max Weber, *Sociological Writings*, ed. Wolf Heydebrand (New York: Continuum, 1994), 77.

Both Marx and Weber have forged theoretical frameworks from which Georg Simmel, Siegfried Kracauer, and Walter Benjamin would draw. If Weber and Marx analyze rational technology in the urban environment from the socioeconomic perspective, Simmel is perhaps one of the pioneers in proposing an urban cultural anthropology. Examining ideas put forward by Simmel, Kracauer, and Benjamin, film scholar Ben Singer suggests the notion of modernity as related to a psychological and physiological shift. As he shows by combining these ideas with narratives about modern life found in comic magazines and sensational newspapers, early 20th century habitants of the metropolis suffered overstimulation and subjugation of the body by the machine. Familiar faces, as indicators of 'community,' were imploded and enmeshed in massive migratory waves and in the systematic occupation of machines. Gradually machinery would extensively co-exist with humans in their private and public spaces. Gradually *these* objects would become familiar – the next step being a technical issue of how to further humanize the machine.

It is this kind of urban ethnography of the cosmopolitan and the transitory that Benjamin, along with Kracauer and Simmel, devotes much of his work. Unlike Duhamel, whose ethnography showed technology as deplorable instruments of reality distortion and human fragmentation, Benjamin approached technology on two levels. Not only had technology led humanity to the ultimate mastery of nature, but it had also "unleashed the beneficial elements of the human propensity to play."[26] While the first level can be associated with Marx's notion of the incomparable superiority of machines as converters

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[26] Beatrice Hanssen, "Benjamin or Heidegger: Aesthetics and Polititcs in an Age of Technology," in *Walter Benjamin and Art*, ed. Andrew Benjamin (London: Continuum, 2005), 82.

of raw material, the second level relates to the ever growing fascination with the emulation of otherness projected by the machine.

For Benjamin, the encounter between art and industrial technology emerged with the Jugendstil, a late 19th century art movement associated with Art Noveau and Arts and Crafts that proposed the synthesis of art, furniture, decoration, and architecture. Jugendstil artists inserted an aesthetic evaluation of form and design into objects that were by then evaluated by their functionality only. It was Jugendstil, Benjamin argues, that first envisioned new technology and art as collaborators instead of competitors. Through this process, art production associated with industrial production, and art consumption became an everyday practice, articulating the taste for the modern as the modern in taste. Of course, this taste for the modern was not homogeneous: whereas in Paris and Nancy Art Nouveau artists were exploring with biomorphic imagery, in Vienna – where Loos would argue against the ornament – and in few industrialized German cities the use of geometry both in form and content was prevalent. The notion of 'simplicity' and 'transcendence' through non-representational imagery in design would be crucial to forge a 'Bauhaus taste' for the modern in the 1920s.

As Singer's account about the modern metropolis implies, modernization is the process of constructing increasingly efficient machines, to an extent that the urban fabric becomes itself a giant machine. As Simmel would argue, "It seems as if the modern person wishes to compensate for the one-sidedness and uniformity of what they produce

within the division of labor by the increasing crowding together of heterogeneous impressions, by the increasingly hasty and colorful change in emotions." [27]

In discussing the changes in modern life, social theorists were quick to link cinema and the hyper-stimuli of modern life. Both in *The Arcades Project* and in *The Work of Art in the Age of Mechanical Reproducibility*, Benjamin states that film is the art form that better re-presents modern times: "Of all the forms of perception, the tempo and rhythms, which lie preformed in today's machines, such that all problems of contemporary art find their definitive formulation only in the context of film." [28] Interestingly, Benjamin is quick to criticize abstract films – the first visual music pieces on celluloid – by stressing that abstraction could be 'dangerous.' It seems that, following Marx's rationale, Benjamin compares 'abstraction' with money market.[29] Also, he often shows some uneasiness with the insertion of the auratic discourse – privileged in previous fine arts – into what could be the critical potential of filmic expression. For him, the social function of film was to inaugurate a 'new region of consciousness' that could only exist in conjunction with technology.

As we see, the industrialization of art and the tension between 'art' and 'business' and 'art' and 'craft,' a topic that recurs in conversations with collaborators, was already

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[27] Quoted in Ben Singer, "Modernity, Hyper-stimulus, and Popular Sensationalism," in *Cinema and the Invention of Modern Life*, ed. Leo Charney and Vanessa Schwartz (Berkeley: University of California Press, 1995), 93.

[28] Walter Benjamin, *The Arcades Project* (Cambridge: Harvard University Press, 1999), 194.

[29] Marx equates abstract labor with exchange value and concrete labor with use value. Abstractedness becomes the process of dissociating praxis from value, and of measuring both from the capitalist market point of view.

part of the intellectual debate in late 19th century Europe.[30] If my interest is not to base my fieldwork on modernity and its machinery alone, I do want to create a bridge between these contexts – I am convinced that the discussions are similar and can shed light on each other. However, in discussing discourses about modernity and postmodernity in relation to visual music I try to be careful about contextualizing my collaborators' practices as 'modern' or 'postmodern.'

In what follows I address two important avant-garde currents in the early 20th century, the Bauhaus school and Futurism, focusing on how aesthetic principles and machine deployment were related. Following Saint-Simon's prediction about the evolutionary role of the avant-garde art, both Bauhaus and Futurist artists promoted art as the epicenter of new social horizons (horizons with diametrically opposed political tones, one must say). The two groups had considerable impact in the European and American artistic field. If we may argue that early modern artists' treatment of technology tend to be more poetic and personalized, post-World War II intellectuals would further associate the use technology in experimental art with scientific experimentation. I also discuss some other nodes about the 'two cultures' debate. Linking all these narratives is the inclination for innovation in incipient technoscientific art worlds.

Futurism and Bauhaus

"*Car l'art ne peut être que violence, cruauté et injustice* ["Art, in fact, can be nothing but violence, cruelty, and injustice"]. *Le Figaro* readers in France who read the

[30] "[…] mass-produced Art Nouveau objects illustrate the way that the style could engage with the growing industrial might of Germany, while also confirming the artists' concerns about bastardization of the new style by big business." Stephen Escritt, *Art Nouveau* (London: Phaidon, 2000), 357.

newspaper on February 20, 1909, would find this and other statements by the Italian Filippo Tommaso Marinetti, the avant-garde artist who wanted not only to surpass the old, but to burn out the old. The article, titled *Le Futurisme*, known as the "upsetting incendiary" (in Marinetti's words) Futurist Manifesto, led to heated debates across Europe on the utopian role of art in constructing a modern world. For the futurists, the industrial machine (the car,[31] the wheel, the locomotive, the gun), in all its violence, 'masculinity,' danger, speed, loudness, and vitality, was the emblematic modern object, the steel body that would ultimately destroy old romanticisms, nostalgias, and moralities – the goal was nothing less than becoming the Nitzschean *übermensch*.

Nature should not be emulated, but complemented, mastered, and opposed. Every medium, concept, and art form should be advance towards this ideal. A few Italian artists joined Marinetti's call for an art of the sensorial overload. Not surprisingly, machine industries also saw in the aesthetics of techno-speed (what Tim Benton calls 'machinolatry'[32]) a way to express and advertise the burgeoning of industrial products.[33] Art becomes a war-machine; artworks and manifestos become weapons in aesthetic-ethic

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[31] According to Tim Benton, "By 1909 Turin already had 20 car manufactures, Milan had 15, and Fiat employed 3,000 workers, producing around 1,500 cars a year." Tim Benton, "Dreams of Machines: Futurism and l'Espirit Nouveau," *Journal of Design History* 3, no. 1 (1990): 19.

[32] Ibid., 24.

[33] As some scholars point out, though, the interest of Marinetti and the futurists in industrialization was much more symbolic than it would appear from their manifestos.

battles.[34] As one futurist would put it, "Art and war are the great manifestations of sensuality […]." [35]

By assembling his own machinery (a common practice in experimental art), the painter Luigi Russolo blurred notions of music and non-music. According to his *The Art of Noises: Futurist Manifesto* [1913], the gradual expansion of musical sound from consonance and suave harmonies to dissonant sounds would ultimately lead to the music of noise. The modern brain-machine, which for Russolo had already assimilated futurist vision, should new assimilate futurist hearing. In 1913 he constructed the Intonarumori (27 in total), noise machines with controllable pitch and volume.[36] Noise, the already present soundscape in urban modern life, offered the sonic richness and complexity to put music to another level. All one had to do was to listen:

> Let us wander through a great modern city with our ears more attentive than our eyes, and distinguish the sounds of water, air, or gas in metal pipes, the purring of motors (which breathe and pulsate with an indubitable animalism), the throbbing of valves, the pounding of pistons, the screening of gears, the clatter of streetcars on their rails, the cracking of whips, the flapping of awnings and flags. [37]

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[34] "The battle of Turin has remained legendary. We exchanged almost as many knocks as we did ideas, in order to protect from certain death the genius of Italian Art." Umberto Boccioni, Carlo Carrà, Luigi Russolo, Giacomo Balla, and Gino Severini, "Technical Manifesto of Futurist Painting," April 11, 1910, http://www.unknown.nu/futurism/techpaint.html (accessed March 10, 2010).

[35] Valentine de Saint-Point, "Futurist Manifesto of Lust," January 11. 1913, http://www.unknown.nu/futurism/lust.html (accessed March 10, 2010).

[36] "Each instrument was made of a wooden parallelepiped sound box with a carton or metal speaker on its front side. The performer turned a crank or pressed an electric button to produce the sound whose pitch was controlled by means of a lever on top of the box. The lever could be moved over a scale in tones, semitones and the intermediate gradations within a range of more than an octave." Valerio Saggini, "Intonarumori," February 21, 2004, http://www.thereminvox.com/article/articleview/116/1/31/ (accessed February 4, 2010).

[37] Luigi Russolo, "The Art of Noises: Futurist Manifesto," in *Modernism and Music: An Anthology of Sources* ed. Daniel Albright (Chicago: University of Chicago Press, 2004), 180.

In the 1910s the Futurists were attempting to destroy the past first and foremost by destroying the institutions. Before the decade was over, German intellectuals and industrialists were, on the other hand, joining forces to build a new art institution. For Achim Borchardt-Hume, the Bauhaus community of masters and students resembled "modern scientists working in a University laboratory, they understood teaching as a collective research endeavor rather than as the transmission of a fixed canon of knowledge." [38]

The Bauhaus, established in Weimar [1919-26] and later in Dessau [1926-33] and Berlin [1933], was an art school that fostered cooperation between craftsmen and artists. In the *Bauhaus Manifesto*,[39] the school's founder Walter Gropius stated the attempt to create art as a model for (communist) social transformation. He concludes the manifesto by appealing:

> Let us therefore create a new guild of craftsmen without the class-distinctions that raise an arrogant barrier between craftsmen and artists! Let us desire, conceive, and create the new building of the future together. It will combine architecture, sculpture, and painting in a single form, and will one day rise towards the heavens from the hands of a million workers as the crystalline symbol of a new and coming faith.[40]

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[38] Achim Borchardt-Hume, "Two Bauhaus Histories," in *Albers and Moholy-Nagy: From the Bauhaus to the New World*, ed. Achim Borchardt-Hume (New Haven: Yale University Press, 2006), 70-71.

[39] The art manifesto, popular in post-French Revolution feuilleton journalism and a hallmark of early 20th century modernisms, was instrumental for the circulation of ideas and creation of aesthetic networks. Both in the Bauhaus and Futurists we see an attempt to expand artistic innovation as a culturally significant event. The manifesto represents this links as the envision of a new national horizon, a marketing strategy, and a political statement. Manifestos are not only explanations of the rules of the game for creating artworks; they are artworks in their own way.

[40] Walter Gropius,"Bauhaus Manifesto," (1919), http://www.dmoma.org/lobby/Bauhaus_manifesto.html (accessed February 1, 2010).

Although my institutional fieldwork was not directly focused on a place like Bauhaus, investigating Bauhaus's ideals and activities has allowed me to better understand the viewpoints of many ethnographic collaborators. The concern with theorizing and documenting experimental art, the craft/art dialogue, notions on the knowledge of learning and learning of knowledge, have all been central aspects in the establishment of techno-artistic institutions around which visual music artists circulate.

Early on the Bauhaus established commercial contacts by having sales representatives both nationally and internationally. Although the Weimar Bauhaus had public funding,[41] it was the *Syndikus* who had the responsibility to make the school financially viable, and it is on this level that tensions between aesthetic-political ideals and economic constraints become visible. For instance, regarding the production of more expensive and customized objects in the workshops (in counterpoint to the official institutional agenda), Anna Rowland states: "Rather than just producing Bauhaus models serially, the workshops were clearly prepared to work according to individual client's requirements, and therefore on a small, personal scale."[42]

The workshops were designed to stimulate individual creativity; the students were encouraged to think about the possibilities of the material itself (wood, paper, canvas, steel, celluloid, etc.), and to combine diverse art forms (e.g., painting, sculpture, theater) in two- and three-dimensional space. The creative power of the student was not directed to individuals skills, but to a general principle of curiosity, experimentation, and do-it-

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[41] This kind of relationship between experimental art worlds and government would has been followed in many European countries.

[42] Anna Rowland, "Business Management at the Weimar Bauhaus," *Journal of Design History* 1, no. 3/4 (1988): 154.

yourself. For Gropius, if artistic talent would not blossom in some students, these would at least leave the school with some useful craftsmanship.

More than 50 years after the emergence of Bauhaus, George Stadnik would describe his learning process through a very similar method: "We worked with everything. We worked with film, video, audiotapes, slides, theater pieces, sculpture, inflatables, and pure light." As I show in Chapter 4, art schools like CalArts, which focuses on art production using different media and forms of expression, would further employ the methods of knowledge transmission instituted at Bauhaus.

The first Bauhaus exhibition in 1923 was titled *Art and Technology: A New Unity*. Technology was incorporated not only as tools for the production of functional art objects (an idea already promoted by the Russian constructivists), but also as an aesthetic element with almost infinite possibilities. Not only design and a modern aesthetics of simplicity[43] emerged with the mechanical reproducibility of the art object, but also experiments exploring the audio-visual potential of the machine. At Bauhaus Ludwig Hirshfeld-Mack constructed and performed his *Reflectorial Color-Play*, which, according to William Moritz, was a "large color-organ instrument that required several people to play it."[44]

László Moholy-Nagy, a faculty member at the Dessau Bauhaus from 1923 to 1928, was one of the major theoreticians and practitioners of experimentation in painting,

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[43] Design, painting, sculpture, theater, all experimented with Kandinsky's abstractionism for seeing and producing reality: shapes could be simplified into pyramids, cubes, and spheres, and colors into yellow, blue, and red.

[44] Moritz, William. "Color Music – Integral Cinema," in *Poétique de la Couleur* (Paris: Musée du Louvre, 1995), http://www.centerforvisualmusic.org/WMCM_IC.htm (accessed July 10, 2009).

sculpture, printmaking, photography, film, sound, and industrial design. For him art, science and technology formed a triumvirate, and the machine embodied the potential for political change inside and outside art worlds: "Everyone is equal before the machine. I can use it, so can you."[45] Under his instruction, the foundation course at Bauhaus established a programmatic alignment with the industry. The shift included a different concept of the craftsman – not as the handmade-object producer, but as the conceptual creator who oversees and directs the process of production. For instance, in his 'telephone paintings' [1922] Moholy-Nagy suggests a new kind of artistic autonomy in the age of mechanical reproduction. As he explains, "I had the factory's color chart before me and I sketched my paintings on graph paper. At the other end of the telephone the factory supervisor had the same kind of paper divided into squares. He took down the dictated shape in the correct position."[46]

When discussing the aesthetic integration and experimentation of auditory and visual stimuli, the Bauhaus was an important moment, as it agglutinated visual artists and musicians in an anti-compartmentalized (or 'panaesthetic') paradigm. For instance, Johannes Itten, one of the first to join the Bauhaus at Weimar, had written on color theory influenced by J. M. Hauer's thoughts on twelve-tone music. Both Wassily Kandinsky and Paul Klee were particularly interested in the relationship between visual art and the non-representational quality of musical structures. As I show in the next chapter, abstract art offered the means for visual artists to emulate a spiritual facet that, until then, only music

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[45] Quoted in Achim Borchardt-Hume, "Two Bauhaus Histories," in *Albers and Moholy-Nagy: From the Bauhaus to the New World*, 69.

[46] Quoted in Peter Vergo, "Music and Abstract Painting: Kandinsky, Goethe and Schoenberg," in *Towards a New Art: Essays on the Background to Abstract Art 1910-20*, ed. Tate Gallery (London: Tate Gallery Publications, 1980), 88.

could exert. The Governing Board of the Circle of Friends of the Bauhaus included the musicians Adolf Busch, Herbert Eulenberg, Edwin Fischer, and Arnold Schoenberg – the latter being instrumental in the field of audiovisual theorization.

Experimental music has been another important trend in the avant-garde modernist movement. As an artistic movement, the Futurists promoted an approach to technology that had considerable impact on musicians like Edgar Varèse, Pierre Schaeffer, Pierre Boulez, John Cage,[47] and other electronic music composers who have composed and researched sound and sound experience. After World War II, European countries funded the establishment of institutions dedicated to artistic and scientific experimentation with the new technology developed during (and because of) the war. The composer, writer, broadcaster, engineer, musicologist, and acoustician Pierre Schaeffer, who was part of the French resistance during the war, in 1951 founded the *Groupe de Recherche de Musique Concrète* in the French Radio Institution. Having access to a tape recorder (a recent technology) at FRI opened a whole new universe for Schaeffer.

Schaeffer's approach is similar to Russolo's in that it defends a technologically mediated expansion and 'liberation' of the musical sound. However, it seems that his interest is less in promoting noises as a modern condition and creating machines to produce them than in manipulating everyday sounds. Unlike conventional compositions that, based on (abstract) concepts of form and arrangement, result in the creation of (concrete) sounds to be performed, Schaeffer's composition method goes from the

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[47] "Wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating. The sound of a truck at fifty miles per hour. Static between stations. Rain. We want to capture and control these sounds, to use them not as sound effects but as musical instruments…. We can compose and perform a quartet for explosive motor, wind, heartbeat, and landslide." John Cage, *Silence*: *Lectures and Writings* (Cambridge: MIT Press, 1966), 3.

concrete (raw sound matter) to the abstract (musical structures) — hence the expression *musique concrète* (Schaeffer coined the term in 1948). Techniques of film editing such as mixing and collage were adapted to sound editing, and Schaeffer's electronic pieces relied not on pitches and harmony, but on 'sound objects.' The possibility of registering and controlling sonic events – what film theorist Michel Chion calls 'sono-fixation' – creates a schizophonic effect[48] where sounds become increasingly nomadic and (potentially) anonymous objects to be (re)used. This mimetic transcultural phenomenon becomes problematic for artists working with digital media as it can devaluate their art in the eyes of institutions that operate within the auratic paradigm. It seems to me that art as a market in the age of mechanical reproducibility is less about the loss of aura than about its relocation.

The potential of synthetic sound would also quickly migrate to the popular music arena. In the same year Schaeffer coined the term *musique concrète* in France, the electronic music composer and inventor Raymond Scott was assembling his sound-effects generator *Karloff* in the United States. In the 1950s Bob Moog met and visited Scott and incorporated Scott's sound-producing circuitry in his Moog modular synthesizer. "By the late 1960s, everyone from Wendy Carlos to the Beatles had recorded with Moog's instruments."[49] A few years later Scott was in Los Angeles developing synthesizers for Berry Gordy, founder of the Motown record label.

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[48] Murray Schafer coined the term in his *Tuning the World* (New York: Knopf, 1977). I'm referring to it as 'schizophonic effect' rather than 'schizophonia' because I don't share Schafer's somewhat pessimistic portray of this process.

[49] Jeff E. Winner, "The World of Sounds," in *Unbound Sound: Sampling Digital Music and Culture*, ed. Paul D. Miller (Cambridge: MIT Press, 2008), 193

Besides ideas about the new possibilities of manipulation of audio-visual material that new technology allowed, the aesthetic potential of the machine was also explored in relation to a visual and sonic dimension that some devices were capturing for the first time. The dialogue between visionary avant-garde artists and scientists – between imagined and factual realities – has been important in legitimizing the position of these artists. For instance, for my ethnographic collaborator Robert Haller, who was part of the American avant-garde cinema scene in the 1960s and 1970s, science and film have been closely related:

> You got physicists from one side and avant-garde filmmakers from the other, and they are meeting and illuminating each other. If you ask me 'does avant-garde filmmaking have a purpose?' I would say yes, it does: it anticipates the direction of our expanding knowledge and it's just rewarding to look at in its own right.

Similarly, George Stadnik believes that his artistic output, which draws from an interest in light manipulation, resembled the images captured in outer space:

> Lately it's been pretty amazing how some of the pictures I end up getting are very close in what people are seeing in the universe. And I know how I got those pictures – using simple elements of refraction and distance and spatial relations between optics and elements of light sources. Science has always been a part of my thinking, always. The physical universe is probably the best source for information for art, and the best inspiration for art. You look at the silk bulb: it's the most amazing structure in the world.

In visual music, imagery of expanding galaxies, fractals, biochemical reactions, quantum physics, physical optics, temporal mechanics, geometric series, logarithmic spirals, etc., have all inspired artists. Leonardo da Vinci, the "universal man," is often cited as the ultimate experimentalist who was able to cross numerous fields of

knowledge. Centuries later he came to symbolize the ideal balance between art and science.

Leonardo and the Two Cultures

> On the threshold of beauty science and art collaborate.
>
> - Edgard Varèse

University of Cambridge, May 7, 1959. The English novelist and physicist C. P. Snow[50] delivers the lecture *Two Cultures*, lamenting the divide between artists and scientists in the academic environment. He argues that science is more than a professional area in Western societies that deals with rational and functional knowledge. Science is rather a *culture* that "cuts across other mental patterns, such as those of religion or politics or class."[51] During the lecture Snow expresses concerns about the antagonism that quickly formed between scientific and artistic institutions at the turn of the 20th century. Since then more and more "the feeling of one pole became the anti-feelings of the other."[52] Snow advances the idea that it is precisely the "clashing point" between these two cultures that should produce "creative chances." As I discuss below, Snow's lecture continues to generate debates about the merits and ways of integrating the two creative fields.

In 1968 UNESCO organized the "Symposium on Technology and Artistic Creation in the Contemporary World." The idea was to examine, among other things, "existing potentialities for inter-relationships and future prospectives and direction in the

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[50] Roger Malina introduced C. P. Snow's article to me.

[51] C. P. Snow, *The Two Cultures* (Cambridge: Cambridge University Press, 2008), 101.

[52] Ibid., 104.

arts and science fields resulting from such new technological phenomena as the computer, atomic energy, automation, television and synthetic materials." [53] Scholars and artists from different fields of experimentation who attended the event include the composer Pierre Schaeffer, who stated, "There is little difference between art and technology. Both the wheel and the harp are functional. Man always engages in art and science simultaneously." [54]

A few months before the UNESCO convention, the kinetic artist and research engineer in rocket propulsion Frank Malina founded *Leonardo*, "An international journal of the contemporary artist." [55] As many artists working in this field had been developing personal and innovative techniques, the idea of *Leonardo* was to document these ideas in the same way scientists have used journals to share and document their findings. By establishing a channel of communication for experimental artists, Frank Malina proposed a trial and error paradigm in the art world that was already conventional in science. For him, "Needless re-discovery and repetition of errors can only be minimized by the free disclosure and exchange of information and experience gained by the practitioners of art and of science." [56]

According to Roger Malina, who has been directing the organization since 1982, the journal has already published about 7,000 people, most of them working with

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[53] D'Arcy Hayman, "Unesco Symposium on Technology and Artistic Creation in the Contemporary World," *Leonardo* 1, no.4 (Oct., 1968): 441.

[54] Ibid.

[55] Frank Malina, "Aims and Scope of Leonardo," *Leonardo* 1, no. 1 (Jan., 1968): 1.

[56] Ibid., 1.

experimental art. His view of the organization suggests a still small but loyal circle of people:

> *Leonardo* is a non-profit activity that definitely is not profitable. The first thing is how you just survive, and have enough money coming in to pay a few people to keep the machine running, that's the big challenge. Right now there may be 20 people running *Leonardo* projects of different kinds, and it's very international, it would be nice to get these people together. We did a conference a couple of years ago in Prague, but we don't have the regular series of conferences or places where these people can meet. […] We actually only sell 1,000 subscriptions a year, which is slightly frightening.

From a social sciences perspective, the range of debates generated in and from *Leonardo*, the shared vocabulary and aesthetic premises (usually embracing technological innovation), and the human network that the journal constructs, are important elements for the establishment of a discursive node – and eventually for the emergence of new art worlds. Of course, Snow's plea for an engaged dialogue between the two cultures has been constantly addressed in *Leonardo*. For instance, Victoria Vesna, currently co-director of the Art/Sci Center at UCLA, has recently advocated for a Third Culture, a creative field able to transcend the animosities between humanities and sciences. Again, Vesna places new technologies as the main building block for the establishment of this field. The reason for the Third Culture to be sprouting from universities is that "academia is generally friendlier to someone searching for a yet-to-be-defined path than industry, with its pressures to produce." [57] In another publication, Thomas Jacobsen questions the two cultures paradigm by presenting a transcultural framework for the psychology of

[57] Victoria Vesna. "Toward a Third Culture: Being in Between," *Leonardo* 34, no. 2 (April 2001): 122.

aesthetics and arguing that "many fruitful, fascinating bridges between the arts and the sciences will be built in the future." [58]

In relation to visual music, both synesthesia (the production of one sensorial perception through the stimulation of another) and audio-visual metaphors have been consistently discussed in *Leonardo*. A few examples of recent publications: Richard Land presented 'Chomara,' an instrument that can "paint with lights on a translucent screen as a function of time";[59] B. M. Galeyev has discussed the 'synesthetic nature' of music (pitch-size and pitch-brightness correlations); painter-musician Katherine Lubar has examined pitch-hue correspondences, proposing a new paradigm for the use of color;[60] Evelina Domnitch and Dmitry Gelfand have introduced the 'Camera Lucida,' a 'sonic observatory' that uses sonoluminescence to convert sound waves into light;[61] and Fred Collopy has introduced 'Imager,' a computer-based instrument for painting in real time and follows the tradition set forth by Thomas Wilfred and his *lumia* in the 1920s.[62]

The journal also encourages examination of the ways artists and scientists have affected each other's work in the past. For instance, Marcel Duchamp and other French modernists, who were searching for new ways to understand and visualize geometries

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[58] Thomas Jacobsen, "Bridging the Arts and Sciences: A Framework for the Psychology of Aesthetics," *Leonardo* 39, no. 2 (April 2006): 155-162.

[59] Richard Land, "Non-Verbal 'Discussion' Using Music and Kinetic Painting," *Leonardo* 1, no. 2 (April 1968): 121-123.

[60] Katherine Lubar, "Color Intervals: Applying Concepts of Musical Consonance and Dissonance to Color," *Leonardo* 37, no. 2 (April 2004): 127-132.

[61] Evelina Domnitch and Dmitry Gelfand, "*Camera Lucida*: A Three-Dimensional Sonochemical Observatory," *Leonardo* 37, no. 5 (October 2004): 391-396.

[62] Fred Collopy, "Improvisational Lumia: Painting Along with Musicians," *Leonardo* 34, no. 4 (August 2001): 353-354.

and dimensions, avidly read Henri Poincaré [1854-1912], the prolific French mathematician who hinted at chaos theory.[63] Temporal connections are also constructed through *Leonardo*, strengthening the field of experimental art as a cohesive and transnational practice. For example, Ina Blom has suggested links between the Dada artist Raoul Hausmann, who in the 1920s constructed a device to transform sound signals into light signals and vice versa, and video art pioneer Nam June Paik. As the article argues, for both artists the audiovisual technology was an instrument to mediate tactility, touch, and detachment.[64] In that sense, 'archaeology' seems to be a suitable concept for understanding this aspect of *Leonardo*, as authors uncover a still little explored past and the select particularly nodes.

Leonardo has received more attention from artists than from members on the other side of the two-cultures divide. Malina explains that a renewed interest in collaborating with scientists has been visible because "new generations of artists who are sufficiently scientifically of technically literate, can actually engage in a real collaboration." More people not trained as scientists are able to engage in technical scientific discussions. Migration from research laboratories into 'popular culture' also occurs at a faster pace. According to Malina, "You're beginning to see games that involve brain coupling to the game, or physiological coupling to the game. In the technology area there's a rapid migration, and obviously hacker culture participates in that in general. There's an explosion, I'd say, of artistic and cultural uses of devices of all kinds."

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[63] See Gerald Holton, "Henry Pincaré, Marcel Duchamp and Innovation in Science and Art," *Leonardo* 34, no. 2 (April 2001): 127-134.

[64] Ina Blom, "The Touch through Time: Raoul Hausmann, Nam June Paik and the Transmission Technologies of the Avant-Garde," *Leonardo* 34, no. 3 (June 2001): 209-215.

Another ethnographic collaborator has given an interesting explanation for this renewed interest in science-art conjoined projects:

> Stefanie Ku - Because of the collaboration with nanotechnology, I think artists are really trying to attract more scientists. It's easier to get funding when you have a scientific purpose, like going inside the human body and doing 3D medical imaging.
>
> Leo Cardoso: So if you're 'just' making art, that's not good enough [joking]…
>
> Stefanie Ku: Right, if you make all the awesome representations of the human body cells (they don't even look like cells!) then it's great [laughs].

Although not an artist himself, Malina has been theorizing about the different possibilities and implication of incorporating technology in art production. I quote him in full:

> If you look at what technology allows you to do, you can take an existing human sense, like hearing, and you can augment it, so when you wear a headphone you can hear sound at a distance, you can hear things coming from very far away. So you're augmenting your hearing but you still hear the same kind of sounds that you would hear normally. That's augmented sense. You can also use devices and tools to extend your senses; you can wear goggles that are sensor of infrared light, and your eyes don't see infrared, so you're not augmenting your vision, you're allowing it to extend to other lights that your eyes can't see. That's an extended sense.
>
> And then, devices can also allow you to develop what I would call 'new senses.' That is capturing energy that's flowing to a space, which your senses never detect. An example of that would be gravity waves, which flow through you and are actually changing the geometry of space.A body isn't able to detect those, you have no senses that interact with that. Now scientists are building a gravity wave detector that are 5km in size; the human body is the wrong size to detect gravity waves. It's the same with all kinds of high energy, atomic particles (that are flowing through your body all the time) but none of your senses work with that kind of energy. We now study world in what I would call these new senses. One of the things that is interesting is the way artists systematically explore these sensory environments, and I call this making science intimate or visceral. Artists work with these devices, and they make them accessible to our sensory perception, our aesthetic perception. I think that some of the interesting work that artists are doing with these various kinds of devices is indeed allowing us to create the kinds of aesthetic constructs that we have about our everyday life, pleasant sounds or unpleasant sounds, interesting

> sounds or non-interesting sounds. Suddenly artists are able to do this in other regimes, and bring in these other things that are going into one's personal aesthetic integration of what is going on.

One of the major shifts in the field of experimental art to which I constantly return is the emergence of the personal computer in the 1980s. According to Malina, "If you go back to the publications from 1984 to '94 […], computer graphics and animation became something that artists could do in their homes." That was indeed what my collaborator J-Walt has been doing in the last 20 years. Combining his knowledge of computer animation programming with his keen interest in geometry, he started to play with mathematical equations in his computer to create abstract patterns. As he recalls, "I discovered fractals from this scientific American article August 1989. It showed the equation for how to do the Mandelbrot fractals, and I was like 'oh, I want to do this.'"

If the home computer has brought a significant shift in the field of experimental art production in the 1980s, in the 2000s its mobility would also change the space of audiovisual performance. Grant Davis (aka VJ Culture) has been part of the VJ scene in the U.S. since the 1980s and notes the ways technology constrains aesthetic possibilities: "VJing up until the late 1990s was mostly VHS decks, film loops, and a few hardware things. It wasn't until the laptop was fast enough to process video that it really took off, like audio had, for manipulation. In 2001, 2002: that's when we really saw that curve of what you could do with video."

Of course, experimental art does not necessarily require the use of cutting edge technology. Scott Arford, a San Francisco-based artist-architect, creates visual music works that rely heavily on noise and distortion. He has developed ways of integrating sound and images by converting audio to/from video input signals. For Arford, the

abstractedness of both sound and video encourages a more direct relationship between the audience and the materiality of technology. He explains,

> A lot things came about came about of just hanging around and saying, "Well, what *if*? What if you take the audio out and plug into the video in? What does that look like?" Or the other way around, "how does the video signal sound like?" That's a really simple thing. There's very little translation involved, no algorithm converting some sound into image, it's just 'pff' (sound of plugging a wire) [laughs]. Again, that's something that for me is really important, this kind of directness, and it goes back to creating this intense visceral experience, as little mediation between the electronic signal and the experience of it as possible. I mean, there's ton of translation going on in technology, but the relationship in those kinds of work is really clear to me. It may be not always clear "does the sound make the image or the image make the sound?" But what's clear is that there's a strong relationship between the two, image and sound are inseparable.

The immediacy in Arford's approach resembles the Bauhaus's do-it-yourself principle, in that it originates from the materiality of the object. Closer to Arford, however, is the 'anti-establishment' approach shared and cultivated by many Bay Area artists. The importance of using noise as a means to provoke the immediate connection between the perceiver's body and the artwork was often mentioned by the ethnographic collaborators, and was definitely part of some events I attended.

As I have attempt to show, an important thread connecting experimental artists through the 20th century has been the desire to create machines that promise a much richer sensorial reality. Moholy-Nagy considered this desire intrinsic to the human condition.[65] In the following quote, Aaron Ross, a visual music artist, summarizes many

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[65] "It is a specifically human characteristic that man's functional apparatuses can never be saturated; they crave ever new impressions following each new reception [...]. From this perspective, creative activities are useful only if they produce new, so far unknown relations." Quoted in Achim Borchardt-Hume, "Two Bauhaus Histories," 72.

of the aspects mentioned throughout this chapter in relation to the intimate relationship between machine and artist. He explains that his work

> Is always a dialogue with technology; always about what I want to do and what the technology is capable of doing. There's also pushing the boundaries and exploiting the limitation, or at least feeling out the limitations of technology. Yeah, it's much more advanced than it was 20 years ago, but… someday we'll have a jack that we plug into our skull and we'll dream and picture will come out, or we'll dream and then someone else will just plug that into their skull and experience it. Now, you can have a vision in your head: trying to bring that to the screen can be done, but not without a lot of heavy lifting. I don't want to get to point where I have something in my head that I want to visualize and find that I can't do it.

Immersive art, virtual reality, the direct visualization of thoughts, the pan-aesthetic imagination, the potential of the art-machine to establish phenomenological and cognitive 'shortcuts,' the desire to disembody creator and receiver and reterritorialize their presence into the work of art itself (as the futurists stated, "We shall henceforward put the spectator in the center of the picture"[66]). All these elements conjure up the sublimation of the modern Self not through its fragmentation, but through its dissolution.

Admittedly, this chapter gave a very broad starting point and a few nodes that illustrate how social theorists, scientists, and artists have approached the human-machine interaction. It also described how experimental artists have created associations to promote the machine as an art instrument. Again, I am not concerned in portraying a coherent landscape, but in pointing a few cases in which experimental art practices were condensed; moments in which this often individualistic field of cultural production evolved into nodes that amplified the circulation of ideas and artworks. The following

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[66] Umberto Boccioni, Carlo Carrà, Luigi Russolo, Giacomo Balla, and Gino Severini, "Technical Manifesto of Futurist Painting (March 1910), http://www.unknown.nu/futurism/techpaint.html (accessed April 13, 2010).

chapter steps more fully into visual music, starting with the emergence of abstract art in the early 20th century, reviewing the various technocultural contexts associated with the genre, and concluding with a brief discussion of audio-visual synchronization.

Chapter 3: Abstraction, music, and visual music

From Isaac Newton to 1970s psychedelic light shows, from Oskar Fischinger to MTV, ideas about audio-visual fusions have crossed a wide range of fields, movements, media, and premises. A typical urban phenomenon, visual music is better understood as a constellation of practices and narratives that often have coexisted without crossing each other, or without having someone making the connections and showing that there is coherence in the constellation, thus justifying the use of an encompassing signifier. Because the field was carved out by so many people (historians, [new] media theorists, scientists, painters, musicians, filmmakers, and digital artists), different interests and approaches have emerged. In this Chapter I focus on how 'visual music' as an all-embracing term was established and how people have accessed it. What interests me as an ethnographer is that the attempt to construct visual music as an art world that does not depend on the specificity of the material employed (celluloid, computer, television) is relatively recent. In that sense, I was able to witness an art world autonomous enough to have its own events, canonized artists, literature, aesthetic premises, but still without internal cohesion. What I saw was rather different 'technocultures' (more below) articulating very similar ideas but with different points of reference.

There are two main ways of considering visual music works. In the first and more prominent way, a piece establishes a close interaction (synesthetic, some would say) between what you see and what you hear, to the point where, as Jordan Belson puts it, "You don't know if you're seeing it or hearing it."[67] The second way of experiencing

[67] Quoted in Gene Youngblood, *Expanded Cinema* (New York: Dutton, 1970), 158.

visual music takes the term 'visual music' more literally (and the term 'music' more figuratively), and presents moving images drawing on principles of music composition – motives, structure, counterpoint, etc. The piece is silent, as the 'music' is purely visual. My definition of visual music relies mostly on the first premise, and it tries to be broad enough to include works created by my collaborators have, or those they classify as visual music. For this, I had to consider the audiovisual elements that would allow me to navigate through these practices. I discuss visual music as the combination of moving abstract imagery with some kind of audio-visual synchronization. These two components are present in the vast majority of visual music work I have come across during this research, but they are *not* universally accepted as defining parameters of the genre. The visual music works I refer to here were shown at the Center for Visual Music, the iotaCenter, and at other events I attended in Los Angeles and San Francisco, in addition to numerous works available on the Internet.

Since abstraction is a central component in my definition, I start discussing the emergence of abstract art in the 20th century, and examine the conviction that music, due to its immateriality and self-sufficient composition principles, represents the ideal of all art forms. From abstract art in painting I move to the establishment of visual music as a field that has gained prominence in the film animations of Oskar Fischinger and in the writings of William Moritz. I then briefly discuss the narrative of abstractionism and sound as I encountered it in different technocultures – color organs, abstract film, light shows, video art, MTV and music videos, VJ/DJ performance, and digital art. Many of these practices are examined based on my ethnographic experience, which has allowed me to understand the constellation of visual music practices as potentially both

collaborative and conflictive. The chapter concludes with some reflections on the effects of visual music from a psycho-physiological point of view, especially in relation to audio-visual synchronization.

Emergence and maintenance of abstract art

> Every aware person is conscious not only of standing at the beginning of a new style period, but at the beginning of a totally new art, an art with forms that mean nothing and represent nothing and remind one of nothing, yet that will be able to move our souls so deeply, so strongly, as before only music has been able to do with tones.
>
> - August Endell

Abstract art has been a crucial artistic current since its emergence in the first decades of the 20th century. The genre has many trends and points of origin that continue to be investigated as abstraction spreads into digital art; space here allows me to mention only those facets connected to the ideas expressed by my collaborators. Experimenting with aesthetic ideas previously explored by Impressionists, Symbolists, and Cubists, abstract art has further empowered the artist less as a follower than as a creator of reality, embodying the premises of avant-gardism; it has been placed in the fine art world as a powerful means of expressing (or not expressing) personal ideas relying on the immediate sensuous experience of shape, color, texture, pattern, and arrangement. "Abstract art is a conquest of the self, and the self is a world – the universe without end. As long as the artist knows what he knows, wants what he wants, holds what he holds, and is that which he is […], his work contains a power of persuasion which will assert

itself sometime, even if nobody notices it today."[68] I go back to this issue of individuality as freedom of the Self in Chapter 4 when talking about life in the metropolis, but I want to remark here that there is indeed a close relationship between the emergence of abstraction – the emergence of any experimental art – and modern urban life, where the individual craves for a connection with what is *in*-dividual in him/her. Both phenomena interact with the idea of a different subjectivity forged through abstraction: the artist incorporates the abstract quality (impersonality) that modern life has achieved in the metropolis; by arguing that they are able to manipulate and transcend this abstractedness through their work, the individual role of the avant-garde artist is thus assured.

There seems to be no question that whatever and however one sees things as abstracts or as abstractions, this varies from person to person, and depends on the type of abstraction (geometric, biomorphic, cyborganic, etc.), and symbolic capital ("What I see was made by Jack Pollock, therefore I see abstract art"). Artists working with abstraction are aware that this semantic openness might in fact keep broader audiences away from their art. For collaborator Jennifer Steinkamp, "People generally don't like abstraction, they don't know how to connect to it; writers don't know how to write about it. Just a very small portion of the population really appreciates." Indeed, to approach abstract art from an anthropological perspective is to walk on thin ice. Bill Alves, another collaborator, argues that abstraction has lost much of its appeal with the emergence of postmodern art. For him, postmodern artists

> Want some kind of narrative; often some kind of social relevance – some obvious social relevance. Whenever art goes through these pendulum swings of interesting techs or social relevance, anything that's smacks of something that doesn't reach outward externally to the world is labeled as isolationist,

[68] American Abstract Artists, *The World of Abstract Art* (New York: G. Wittenborn, 1957), 6.

> something like that. And abstraction by its nature usually points inward. In that way I think it has its relevance to people, to audiences, to one's own mind.

For better or for worse, most collaborators recognize that abstract art and modernity are linked and are often conflated. For better, because the early 20th century was a period in which the aura of the artwork-as-prophecy and of the artist-genius was based on shared aesthetic principles; for worse, because, as Bill Alves states, it can be associated with notions of ethnocentrism, elitism, and isolationism. Abstract art emerged from a complex node of visual, textual, artistic, scientific, and spiritual narratives. To list a few of them: decorative art,[69] architecture, mathematics and geometry, ethnographic objects, photographic techniques, psychology, new technologies of the machine, spiritual sciences (Theosophy in special), and East Asian tenets about inner enlightenment (e.g., Buddhism and Hinduism). "Above all," art historian Mel Gooding argues, "Music provided the example of a purely non-representational art with variation of formal structure and great affective power."[70] Indeed, if there is one main argument leading towards visual abstraction, it is music. Music as an ideal among abstract artists is the first trend I take into account.

The aesthetic premise of abstraction in visual art can be roughly summarized as the following: instead of presenting forms, shapes, and colors with the intention of reproducing *characteristics* of a given object or any 'external reality,' abstract artists create visuals that either do not 'depict' anything beyond the work itself, or that represent

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[69] As Ernst Gombrich argues, associations between abstraction and some kind of underlying truth, as well as a sense of harmony based on geometric forms (principles that abstract artists would strive for) were explicitly stated in the 19th century literature on ornament art and design. Ernst Gombrich, *The Sense of Order: A Study in the Psychology of Decorative Art* (Ithaca: Cornell University Press, 1979).

[70] Mel Gooding, *Abstract Art*, (London: Tate Gallery, 2000), 7.

ideas too powerful to be associated with language or the visible world (their work is conceived as a 'window' to this invisible different dimension). In both approaches the materiality of the art object should engage the perceiver in a unique spiritual/aesthetic experience. For some artists, abstraction is understood not only in visual, but also in conceptual terms, since the visuals are employed in multiple mediums. In other words, abstraction is abstracted from its materiality, incorporating different objects and converting them into pieces of abstract art. As digital artist Scott Draves argues, "The core of my thinking and my work is independent of its presentation. The core is abstract."

Before going into more ideological premises surrounding abstract art in relation to music, it is important to mention that the non-referentiality of abstraction as approached by artists in Europe and in the U.S made the genre one of the first expressions of the 20th century where theories, ideals, and artworks circulate transnationally even without the support of mainstream art institutions. For that to happen, however, the possibility to register and print images with better resolution was crucial. In that way, "The dissemination of printed information soon led to a desire for the interchange of art objects themselves and a growing number of independent exhibiting groups were formed in order to show avant-grade work unacceptable to academic institutions." [71]

Drawing from Immanuel Kant's metaphysics and from Eastern philosophy, the philosopher Arthur Schopenhauer was one of the main intellectuals to place music as an ideal to be followed by other art forms. The immateriality and non-referenciality of music made it the ultimate mimesis of 'Will' ("the innermost essence, the kernel, of every

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[71] Susan Compton, "The spread of information leading to the rise of abstract art in Europe," in *Towards a New Art Form*, 178.

particular thing and also of the whole"[72]). According to Schopenhauer, it was through music that the artist would be able to "reveal the innermost essence of the world, pronouncing the most profound truths in a language his reason cannot understand, drawing, like a galvanized sleepwalker, conclusions about things of which, waking, he has no conception."[73] His impact on art was to further imbue the artist with moral responsibilities of manifesting Will.

The idea of non-referential 'pure' music was not always present in Western music, but it came to the fore in the late 18th and early 19th century, and is especially linked to German/Viennese artists and intellectuals such as Eduard Hanslick. (Not surprisingly, the visual artists and designers who most passionately engaged in the debate about abstractionism, and who took music as the prototype of artistic and spiritual purity, were members of German and Russian artistic circles.) For these artists and aestheticians, absolute music was 'pure' instrumental music in that it didn't depict or emulate anything outside itself (no text, no program, no imitation of birds, etc.).[74] This type of music was defended as "pure form, according to canons that are internal to itself."[75] The rise of

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[72] Arthur Schopenhauer, *The World as Will and Representation*, vol. 2, trans. E. F. J. Payne (New York: Dover, 1966), 110.

[73] Quoted in Peter Vergo, "Music and abstract painting: Kandinsky, Goethe and Schoenberg," 47. Compare this argument with what my collaborator Robert Haller has to say about visual music potential: "People used to talk about the music of the spheres, which is of course rubbish, but there is visual music. And the visual music speaks directly to the nature of the universe. That's why a care about visual music: because I think it speaks more fundamentally to the human condition than people are fully aware of. But I think they will become more and more apparent as time passes.

[74] As Roger Scruton observes, it is interesting to observe how the attempts to define absolute music discuss less what it is than what it is not. Roger Scruton, *Grove Music Online*, s.v. "Absolute Music," http://www.oxfordmusiconline.com.ezproxy.lib.utexas.edu/subscriber/article/grove/music/00069?goto=absolutemusic&type=article&pos=2 (accessed December 11, 2009).

[75] Roger Scruton, "Absolute Music."

structural thinking in music is due in part to the search among proponents of absolute music for objective parameters to discuss and evaluate the 'internal' harmonic and motivic relationships of classical composers.[76]

Drawing from Schopenhauer's insights on music as well as on ancient Greek drama, the composer Richard Wagner followed an aesthetic route different from the proponents of absolute music. Arguing that it was not possible for musical sound to mean its own structural organization only (music always expresses something), Wagner argued that the ultimate power of art lay in the combination of sensorial experiences. He refers to this multimedia project as *Gesamtkunstwerk* (total artwork). Despite the fact that the Romantic expressive idea articulated by Wagner relies more on figurative metaphors and other recognizable signs than abstraction, it provided fertile soil for modernist musicians and visual artists alike to take part in creating the 'artwork of the future' (the title of Wagner's famous 1849 essay), where sonic and visual elements would share the same aesthetic intent. The premise was not necessarily that artworks are interchangeable and translatable, but, to quote Kandinsky, that "each art […] display[s] that extra element which is essential and peculiar to itself, thereby adding to that inner sound which they have in common a richness and power that cannot be attained by one art alone."[77] Many artists who embraced the cinema in the first decades of the 20th century were imbued with the task of using the media as the ideal instrument to create a *Gesamtkunstwerk*.

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[76] One paradigmatic example of this objectivity is Heinrich Schenker's structural musical analysis. See for instance Heinrich Schenker, *Free Composition* (New York: Longman, 1979).

[77] Quoted in Walter Frisch, *German Modernism: Music and Arts* (Berkeley: University of California Press, 2005), 116.

'Absolute' and 'abstract' art are distinct in the sense that the former points inwards to the specificity of musical sound, while the latter points outwards by advancing the possibility unifying different art expressions. This aspect links the two ideas I have mentioned above – music as the expressive goal, and abstraction as a panaesthetic principle. Abstract visual artists were in fact operating between these two premises: they considered the 'internal' aspects of musical sound in creating visual works, which was to be found in 'absolute music' (first and foremost J. S. Bach's instrumental pieces), arguing that visual abstraction, which quickly branched out into different visual tropes, was in fact the closest to music other arts could get.

Thus, absolute music was incorporated into visual abstraction, which became an important underlying aesthetic, crossing fields of visual art and expanding ideas about multimedia art and the transcendence of the object (and of the subject through the object). As art historian Peter Vergo puts it, "The task of all the arts was to express the 'internal,' whether that 'internal' was the artist's own innermost thoughts and feelings, or a mysterious reality which lay behind the mere outward appearance of things. Hence the 'external' differences between one medium and another became largely irrelevant now that the task of every art was 'internally' the same."[78]

Of the modern artists who have created and theorized on pure abstraction in relation to music, perhaps the most influential was Wassily Kandinsky, a painter who argued that, "With few exceptions and deviations, music has, for several centuries, been the art which employs its resources, not in order to represent natural appearances, but as a means of expressing the inner life of the artist, and in order to create a unique life of

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[78] Peter Vergo, "Music and abstract painting: Kandinsky, Goethe and Schoenberg," 42.

musical tones."[79] Encouraged by Kandinsky and his colleagues at Bauhaus and abroad, debates on the correlations between sonic and visual stimuli drew as much from spiritual as from scientific premises.

The most often common elements in debates about audio-visual analogies during modernism are tone (hue/pitch), rhythm, and structure. In the 1900s and 1910s the concept of synesthesia became common among artists searching for these kinds of analogies. Used to describe a neurological condition in which one sensorial stimulus targets the response from another sensorial apparatus, today the term has been used more poetically by scholars to describe any circumstance where two or more stimuli are experienced as one unified phenomenon. Artists often criticized the idea as preventing each art to develop and explore its 'unique' expressive voice. To name just two influential names, American art critic Clement Greenberg, recognizing the influence of music to the emergence of abstract art, argued in 1940 that synesthetic art is a "widespread artistic dishonesty which consists in the attempt to escape from the problems of the medium of one art by taking refuge in the effects of another."[80] Among musicians, post-Wagnerian modernists condemned what they saw as aesthetically naïve attempts to relate music and visual arts. Film theorist/composer Hanns Eisler promoted a modern music "which has freed itself from the *Musikdrama*, the programmatic school, and synesthesia, and is working with might and main at the dialectical task of becoming unromantic while

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[79] Wassily Kandinsky, *Kandinsky: Complete Writings on Art*, ed. Kenneth C. Lindsay and Peter Vergo (Boston: G. K. Hall, 1982), 154.

[80] Quoted in *Visual Music: Synaesthesia in art since 1900*, ed. Kerry Brougher et al (New York: Thames & Hudson, 2005), 282

preserving its character of music." [81]

In their 1915 manifesto modestly entitled "Futurist Reconstruction of the Universe," Giacomo Balla and Fortunato Depero stated, "We will find abstract equivalents for every form and element in the universe, and then we will combine them according to the caprice of our inspiration, creating plastic complexes which we will set in motion." [82] Indeed, another crucial concept – and one directly related to visual music – that would integrate modern artists in the 1910s and 1920s working with different art forms (sculpture, film, light show, painting, architecture) is kinetic art, which was investigated by historian of art and technology Frank Popper in his groundbreaking *Origins and Development of Kinetic Art*.[83] During this period significant psycho-physiological experiments were being conducted. Unquestionably, these experiments had a great impact on artists as they were exploring abstraction and attempting to simulate movement, for instance, through the use of color. These experiments include the

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[81] Quoted in Daniel Albright, *Modernism and Music: An Anthology of Sources*, 95.

[82] Giacomo Balla and Fortunato Depero, "Futurist Reconstruction of the Universe," March 11, 1915, http://www.unknown.nu/futurism/reconstruction.html (accessed April 6, 2010).

[83] According to Popper, "the coincidences are particularly striking in the period around 1910, when special attention was being given to the problem of movement and to the machine aesthetic. Cubists, Futurists, Rayonnists, Orphists, Vorticists and Expressionists may be opposed to one another in their theoretical assumptions, but they make use of familiar procedures for the expression of movement." Frank Popper, *Origins and Development of Kinetic Art* (Greenwich: New York Graphic Society, 1968), 223.

discovery of the phi phenomenon (Wertheimer 1912),[84] the beta-movement (Wertheimer 1912),[85] the gamma-movement (Kenkel 1913),[86] and the theta effect (Thorne 1935).[87]

According to Popper, "It was around 1920 that plastic artists with abstract tendencies first began to take part in cinematographic projects."[88] While many early 20th century abstract artists did not pursue film or other current cutting-edge technology, a few did migrate from canvas to celluloid. The fact that many would have to adapt to a different collective art world allows us to better understand many of the tensions experienced by visual music artists. From the conjunction of kinetic art and abstract art, two trends strongly related to modern art, a constellation of trajectories started to condense. One of these nodes would be defined as visual music, especially in relation to the abstract films of Oskar Fischinger, Mary Ellen Bute, Norman McClaren, Jordan Belson, John and James Whitney, and others. It is to the literature on visual music that I now turn.

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[84] "Illusion of movement produced by two fixed objects or shapes of similar form when one of the two appears shortly after the other has disappeared – but in another place." Frank Popper, *Origins and Development of Kinetic Art*, *105*.

[85] Still images combined by the brain into surmised motion. See *Wikipedia*, s.v. "Beta movement," http://en.wikipedia.org/wiki/Beta_movement (accessed December 8, 2009).

[86] "Illusion of expansion or contraction produced by an isolated shape appearing for a relatively short time." Frank Popper, *Origins and Development of Kinetic Art*, 105.

[87] "A point of light is observed through a prism with one eye and through a piece of red glass with the other. If the prism is revolved, it is the red light which appears to turn around a fixed white point." Ibid., 105-106)

[88] Ibid., 68.

Visual Music

> These avant-garde abstract color films are, in a fundamental, way the human experience of remembering the future. This is where we are going. If you would understand what the human species is all about: it's going to visual music! That's where the world is.
>
> – Robert Haller, 2009

Art historians and critics have used the term 'visual music' to describe works by abstract painters who explicitly attempted to integrate musical concepts into their work. For instance, in discussing František Kupka's work, Mel Gooding states that, "Like Kandinsky, he conceived of painting as a kind of visual music […]." [89]According to Judith Zilczer, artist and art critic Roger Fry was one of the first to use the term to describe works of art that "give up all resemblance to natural form, and create a purely abstract language of form – a visual music." [90]

In his *Contemplating Art*, Jerrold Levinson defines visual music as "a structured organization of colored presentations in time, such as might be provided through the medium of color film." [91] He then categorizes visual music as a 'transformational hybrid form,' somewhere between the juxtapositional form (different art forms put together but perceived as distinct expressions, such as vaudeville) and synthetic form (the conventionalized merging of artistic expressions, such as the opera). Levinson further argues that the lack or recognition of visual music is due to the insufficient relationship between visual and auditory cognitive apparatuses. According to him, abstract color film

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[89] Mel Gooding, *Abstract Art*, 25.

[90] Quoted in Judith Zilczer, "Music for the Eyes: Abstract Painting and Light Art," *Visual Music: Synaesthesia in Art and Music since 1900*, 25.

[91] Jerry Levinson, *Contemplating Art* (Oxford: Clarendon Press, 2006), 109.

fails to reproduce any musical experience through the association between visible hue and audible pitch because colors cannot suggest key changes, relationships between tones, perception of consonance and dissonance, tonal motion (harmonic progression), and tonal duration, which are the foundations of music composition. The two main problems in this view is that it uses psycho-physiology to explain the 'inefficiency' of an art form, and that it presents an ethnocentric view of music and the possibilities of audio-visual interaction. Not only is tonal progression not necessarily the essence of musical experience, but visual music is not limited to hue-pitch correlation – and here we can see why visual music scholars often show some discomfort with the term synesthesia.

Definitions of visual music vary widely among scholars and artists. A few ideas about the term: new media scholar and artist Fred Collopy argued that visual music is "a bad name for a field of art. It puts music in the noun position, reducing visual to the role of a modifier."[92] VJ Grant Davis says his visual compositions are not much part of the visual music canon since he also uses narrative. He explains that "I'm not always following direct interpretation of the music, so I might have more narrative based visuals. I kind of weave in and out [visual music]." Robert Haller asserts that, "Visual music, I suspect, always involves rhythm. It always involves a kind of order, and always is and has to be pleasant to look at." New media artists Jeffers Egan appeared to be less concerned with terminology: "I don't know if there's a proper definition, I don't prefer one or the other. Some days I'll call it visual music, some days I'll call it light cinema, some days I'll call abstract cinema…" J-Walt, on the other hand, suggests that the term is

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[92] Fred Collopy, e-mail to iotaCenter mailing list, August 7, 1999, http://groups.yahoo.com/group/iotacenter/message/62 (accessed December 20, 2009).

more a practical way to put together similar approaches than an art genre with shared conventions. For him, visual music is

> A sort of catch-all term for a lot of things. There's I think a strict definition for it that has something to do with… I don't know with has to do with. It has to do with the function or the way that you watch essentially a movie. In the same way that different kinds of music have different kind of functions.

New media artist-scholar Jack Ox also thinks 'visual music' is now catch-all: "The term has been co-opted by way to many people – the definition has became meaningless […]." McDonnell, another new media artist-scholar, has showed that there are some explicit shared conventions to describe an audiovisual work as visual music:

> [It] uses a visual art medium in a way that is more analogous to that of music composition or performance. Visual elements (via craft, artistic intention, mechanical means or software) are composed and presented with aesthetic strategies and procedures similar to those employed in the composing or performance of music. [93]

Ox and Cindy Keefer – who I introduce later – curated a visual music exhibition in 2005. After selecting the works to be exhibited from hundreds of submissions, they suggested four possible types of visual music: (1) music translated into visual language, "With the original syntax being emulated in the new visual rendition" [94] (they call this 'intermedia'); (2) visual elements (audiovisual or just visual) constructed in time and based on musical structures; (3) direct translation of image to sound - for instance, drawing or photographing patterns on the film celluloid's soundtrack (they call this 'pure visual music'); and (4) static visual works – e.g., Kupka's *Discs of Newton* (1911).

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[93] Maura McDonnell, "Visual Music," 2007: 1, http://homepage.tinet.ie/~musima/visualmusic/visualmusic.htm#recentwritings (accessed June 8, 2009).

[94] Cindy Keefer and Jack Ox, "On Curating Recent Digital Abstract Visual Music," 2005, http://www.centerforvisualmusic.org/Ox_Keefer_VM.htm (accessed June 8, 2009).

Considering the sonic aspect, cross-media artist Steve Roden regards his abstract painting generated from a musical score the most pure object of visual music, "Because no sound was generated in its making, but it came from a musical score." Similarly, new media artist George Stadnik, who creates visual music in the tradition of color organs (more below), asserted that the silent abstract imagery is the true visual music, since it creates visual composition based on music composition.

Robert Daroll offers a telling assessment of what appeals visual music members:

> I am not interested in Film as visual literature, or trying to communicate other information that could be better expressed in words. I am interested in Film as a visual process which can evoke via physical awareness, also a metaphysical awareness. During concentrated perception, each pictorial area becomes a closed system which indicates the possibilities of seeing, experiencing, understanding the way in which things exist – to understand what is experienced, rather than merely experiencing what is already understood.[95]

So what is visual music? Which parameters did I establish to demarcate the genre and, consequently, my ethnography? As mentioned in Chapter 1, the type of visual music I focus here draws from the series of follow-ups established during fieldwork. The majority of visual music works I came across combine abstract imagery with some kind of audio-visual synchronization. After pointing out aspects of the emergence of abstract art, and asserting that visual music is about abstraction, the question persists: what then is 'abstract' art? Indeed 'abstract' comprehends a wide range of visual elements. First, it seems to me that it is not that visual abstraction doesn't represent things (that it is non-representational), but rather that, in potentially representing so many things, we assume that what we see are rather images as *presentations* – i.e., a visual composition made of

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[95] Quoted in William Moritz, "Color-Music Integral Cinema."

colors, shapes, lines, texture, etc.[96] In terms of cognition, it should be noted that the distance between visual presentation (abstraction) and representation (figuration) can be very small.

Second, seeing something as 'abstract' implies framing the visual composition, i.e. embedding the object-event (painting, video installation, sculpture, light show) as an artwork. These two points of view are present (literally) when we observe different abstract styles – Mondrian-like geometrical shapes, Kandinskean abstractions, Pollock-like dripping technique, etc. The attempt to re-frame abstraction can be seen in relation to Kandinsky's attack on abstract art that resembled ornamentation – e.g., that used pure geometrical shapes.[97] He was engaged in changing the visual frame associated abstraction from ornament,[98] a component of decorative art, to fine art, an autonomous aesthetic object-event detached from externalities. In the U.S. the major event in the legitimization and consolidation of abstract art was the creation of the Museum of Non-Objective Art (now known as Guggenheim) in 1937.

Third, visual music uses both abstract and abstraction; the former is what I described above, while the latter is the act of abstracting – manipulating something

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[96] Other reading about this would consider the spiritual premise in visual abstraction. Aligned with Schopenhauer's claim that music is able to reveal the underlying truth of all things, the visual abstraction reveals the spiritual connectedness of all things. Kazimir Malevich established abstraction through black or white squares and rectangles; Kandinsky through pyramids, cubes, and spheres; and Mondrian through primary colors and right angles. See Wassily Kandinsky, *Kandinsky: Complete Writings on Art*.

[97] For Kandinsky, geometrical abstractionism was mere decoration, "like a tie or a carpet." Wassily Kandinsky, *Kandinsky: Complete Writings on Art*, 197.

[98] "Although it is a fact that the language for, as well as the expectation of abstraction in art were already widespread in central Europe by the end of the last century, it has no doubt been overlooked because of a modern tendency to separate the study of decorative and fine art." Susan Compton, "The Spread of Information Leading to the Rise of Abstract Art in Europe," in *Towards a New Art*, 179.

towards a more abstract condition.[99] In other words, visual music deals not only with those images that (successfully) fail to represent anything because they have too many possibilities, but also with the process of abstracting visual representations. For instance, Scott Pagano's piece *Parks on Fire*[100] combines abstract images, bio-tech organisms, and abstracted images of a woman and of the sea; Semiconductor's *Black Rain*[101] abstracts satellite images of the sun; in Robert Seidel's *Futures* "you will see crushed things, completely abstracted … finding together and building up to something we all have seen before …" [102] The definitional problem regarding abstraction in visual music is that, by presenting abstract/abstraction as a process (kinetic art) instead of a product (static art), the visual composition doesn't have to be only abstract or only figurative, but can transform itself through time.

Whereas in static abstract art serves as an ideal for the creation of non-representational content, which in turn encourages both artist and audience to focus on the arrangement of visual elements (leading to numerous theories about visual composition similar to music theory), in kinetic abstract art other aspects come into play. Besides the distinction between visual abstraction and figuration, temporal abstraction is often distinguished between narrative and non-narrative forms. Although I argue that visual music is non-narrative, this quality depends on what sound is being used with the visual component, and on how the two stimuli interact – on how they synchronize.

In that sense, I talk about *types* of audio-visual synchronization rather than a fixed

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[99] This was in fact the process both Kandinsky and Mondrian followed to get into abstract art.

[100] See http://www.neither-field.com/ (accessed November 20, 2009).

[101] See http://www.semiconductorfilms.com/root/Black_Rain/Black_Rain.htm (accessed August 15, 2009).

[102] See http://vimeo.com/2669109 (accessed January 10, 2010).

one-to-one relationship between sonic and visual event. For instance, while in Pagano's *Parks on Fire* there is a feeling that the video cuts to the musical elements[103] (beat, measure, and tonal section), in James Whitney's *Lapis* there is no synchronization of visual and sonic gestures, but a parallel audio-visual unfolding. The audio-visual relationship is another major way of asserting one's own style in visual music creation, especially since these artists use media that many associate with mechanical reproduction. It is my impression that different types of audio-visual synchronization establish different types of perceiver-artwork psychological [affective] and physiological [effective] engagements. In other words, the aesthetic premises that distinguish different visual music technocultures from each other are expressed not only in terms of sonic and visual content, but also – because of its abstract quality – in terms of how one perceives the interaction between these two elements. I suggest some ideal-types of audio-visual synchronization in the last section of the chapter.

As I hope it became clear, although many collaborators are not familiar with, or interested in, the literature on visual music or in the term itself, by considering their works as visual music I'm not subscribing them to an aesthetic premise of what is good or bad visual music; I leave that to my collaborators. My premises are rather cognitive – the perceiver interacts with the visual music piece by thinking, for instance, "What I see is moving abstract images, and the sound interact with them in a non-linear fashion." In that sense, a software of music visualization that responds to sonic parameters as programmed by an artist/engineer – and hence perceived as an artistic experience – is as much visual music as any other canonized work. In what follows I talk about the field

[103] Among the film community, the moving images 'cut to the music' when they are edited according to the music (especially the beat).

from two discursive nodes: individual narratives and virtual communities.

Discursive articulators: William Moritz and John Whitney

"Visual music is Moritz's invention," one collaborator told me. The major articulator of the term 'visual music' in the context of this research is film scholar William Moritz (a.k.a Bill Moritz), especially in relation to avant-garde film animation. Moritz, who was active in the experimental film community from the 1960s to the 2000s, travelled extensively in the U.S. and Europe to screen and lecture on visual music films. He taught at UCLA, Art Center College of Design, and CalArts (discussed in the next chapter), and worked at the Creative Film Society, radio station KPFK, and as a member of the Visual Music Alliance in the '80s. According to Bill Alves, Moritz "was the only real scholar that researched this field exhaustively." To better understand the field then, it is necessary to go over a few of Moritz's ideas.

Moritz argues that visual music is nothing less than a universal yearning – an experience that has preoccupied humanity during different periods: "For centuries artists and philosophers theorized that there should be a visual art form as subtle, supple, and dynamic as auditory music—an abstract art form, since auditory music is basically an art of abstract sounds."[104] Throughout his writings on visual music, Moritz offers less of a cohesive exposition of the history of visual music than the recurring discussion and description of a certain visual music repertory. The repetitive quality of his texts appears

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[104] William Moritz, "Visual Music and Film-as-an-Art Before 1950," in *On the Edge of America: California Modernist Art, 1900-1950*, ed. Paul Karlstrom and Paul J. (Berkeley: University of California Press, 1996): 224.

to be an attempt to create a critical mass of works and arguments – after all, this is how 'canons' are created – that would justify seeing visual music as an art genre. Article after article, there is a clear narrative assemblage, as almost each paragraph is constituted of short descriptions about artists, devices, and techniques, with a few linking arguments. Moritz is less prone to theorize on media and visual music uses than to talk about those films that make up the aesthetic core of the field. Often paying from his own pocket, Moritz was responsible for the preservation of these films, helping to keep the genre in the eyes and ears of audiences worldwide until they become part of the Center for Visual Music, which preserves and screens this material regularly. Moritz was instrumental in carving out visual music as a field of research with its own history and aesthetic concerns. As he implies, the major figures in the field were filmmakers Oskar Fischinger, Jordan Belson, and James Whitney.

Seen from this angle, it seems reasonable to argue that visual music, as a specific narrative connecting specific trajectories, is to a great extent Moritz's creation. This, of course, is not to say that it is an artificial narrative; the artists analyzed by Moritz often had similar ideas about their work, and my research relies on a similar principle that there is a visual music community and perhaps an incipient art world. Visual music as a field is not is more 'constructed' than the history of film or the history of music, or the history of anything, but it tends to be perceived as constructed because it is more closely associated with one person.

In "Visual Music: Cave Painting to MTV?" Moritz mentions visual music elements from Cro Magnon paintings on cave walls, passing through Greek religious

cults, and concluding with MTV.[105] He mentions Father Louis-Bertrand Castel's ocular harpsichord, A. Wallace Rimington's color organs, Thomas Wilfred's Clavilux, as clumsy and forgotten mechanisms built to project visual-music, arguing that visual music, which includes a vast array of techniques, was marginalized because of post-World War I commercial films and its "star glamour." He then goes on to talk about how MTV's audiovisual vocabulary drew most of its aesthetics from still obscure experimental films like René Clair's *Entr'acte*, Dudley Murphy's *Ballet Mécanique*, and Luis Bunuel's *Un Chien Andalou*. Abstract films by Walter Ruttmann, Oskar Fischinger, and others, expressed the potential of synchronizing music with moving images. In the article Moritz uses the MTV video-clip phenomenon as a point of departure to construct a narrative interweaving practices and artists in the narrative about visual music.

Moritz considered the animated abstract films by Oskar Fischinger as the accomplishment of "the dream of creating a visual music comparable to auditory music."[106] He was closely related with the Fischinger family, helping Oskar's wife Elfriede to restore and preserve many of Oskar's films made during the 1920s and 1930s. Indeed, Moritz is the main scholar responsible for the canonization of Oskar Fischinger, who he describes as one of " the greatest artists of the 20th century," and about whom Moritz wrote a biography.[107] The components of Fischinger's canonization as a genius

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[105] William Moritz, "Visual Music: Cave Painting to MTV?," in *Sound & Vision*, ed. Deutsches Filmmuseum Frankfurt am Maim (Frankfurt: Deutsches Filmmuseum Frankfurt am Main, 1993), 132-145, http://www.centerforvisualmusic.org/library/WMCavePtgs.htm (accessed August 1, 2009).

[106] William Moritz, "The Dream of Color Music, and Machines That Made it Possible," *Animation World Magazine* 2, no. 1 (April 1997), http://www.awn.com/mag/issue2.1/articles/moritz2.1.html (accessed August 1, 1009).

[107] See William Moritz, *Optical Poetry: The Life and Work of Oskar Fischinger* (Bloomington: Indiana University Press, 2004).

include (1) work ethics (long periods required to patiently draw film cells); (2) aesthetic conviction, which caused Fischinger's expulsion from Nazi Germany, (3) his frustration with the Hollywood system while working as Disney Studies, (4) his love and hate relationship with Guggenheim Museum's bossy patron Hilla Rebay, and (5) pioneering technological experimentation.

In the article "Color Music – Integral Cinema," Moritz further assembles the field of visual music by talking about 'generations' of visual music artists: first Oskar Fischinger, who popularized the genre of abstract animation and, after settling in Los Angeles, inspired a second generation of filmmakers – John and James Whitney in L.A., and, later, Harry Smith Jordan Belson in San Francisco. The third generation incorporates the computer (Moritz refers to Larry Cuba and David Brody) and music video – hence the author's argument that Fischinger is the grandfather of MTV. Larry Cuba, who today directs the iotaCenter, a non-profit organization dedicated to preserving and promoting visual music works (discussed in the next chapter) follows Moritz premises that visual music is a cross-media art genre.[108] According to Cuba, "We were kind of stuck; the video artists and the film world, we were slicing it up the wrong way. We don't want to slice it by video and film, we want to slice it by abstractionist and by genre, and bring those people together. That was the concept, and I still believe in that."

Cindy Keefer, who directs the Center for Visual Music in Los Angeles and who was my main guide in navigating through the visual music literature, pointed out that for Moritz visual music was all about Fischinger. Although subscribing to most of the

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[108] "Any discussion of Visual Music […] must remain "interdisciplinary" William Moritz, "Towards an Aesthetics of Visual Music," *ASIFA Canada Bulletin* 14, no. 3, 1986, http://www.centerforvisualmusic.org/TAVM.htm (accessed May 20, 2010).

scholar's narratives, Keefer aligns with Jordan Belson's aesthetic interests by recognizing that visual music has another grandfather besides Oskar Fischinger: Thomas Wilfred, who worked in the tradition of color organs and theorized about the establishment of a new art of light (more below).

Notwithstanding the interdisciplinary premise, Moritz is prone to demarcate visual music aesthetics not only from film, but also from the visual perspective (Belson, Fischinger, and James Whitney all had background in painting). For him, Fischinger's protégé Jordan Belson[109] was the last of the great visual music masters. (Aaron Ross follows this idea by stating that "They are all dead, except for Jordan Belson.") In "Towards an Aesthetics of Visual Music," he suggests how the 'delusion of technology' and the 'delusion of rhythm' can lower the quality of visual music works, which is measured by their 're-play value.' Discussing the first delusion, Moritz argues, "Computers (and lasers and video) are hardly a panacea for most artists: […] the nature of the visual product is most often severely limited, so that one can hardly keep a five-minute stretch interesting."[110] The second delusion, an explicit attack on music video aesthetics, states that 'mathematically' cutting the visual composition to the musical beat, could only by avoided if visual music artists gradually incorporate the audiovisual vocabulary in the way the music composer learns painstakingly how to combine timbres, melodies, counterpoints, etc.

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[109] According to Moritz, "Fischinger was convinced that Belson had the elusive, in-born talent and sensibility for the composition of visual music in time and space, and he wrote Hilla Rebay […] recommending that she extend a fellowship to Belson which would keep him involved in this difficult discipline." William Moritz, "Jordan Belson, Last of Great Masters," *Animation Journal* 8, no. 1 (Spring 1999), http://www.centerforvisualmusic.org/BelsonAJ.htm (accessed on April 10, 2010).

[110] William Moritz, "Towards an Aesthetic of Visual Music."

Perhaps the most influential visual music artists and theoreticians in relation to computer graphics – at least in the West Coast, where I conducted fieldwork – is John Whitney, described by avant-garde film historian Gene Youngblood as "the man of tomorrow in the world of today."[111] As Fischinger, John Whitney was a mixture of innovative technician and experimental artist. According to Moritz, after working in the Lockheed Aircraft Factory during World War II, Whitney started to further experiment with analog computer mechanisms, which he bought as war-surplus. Whitney is important in the field because he comes from a music background. During his time in France he studied with René Leibowitz, who introduced him to Arnold Schoenberg's twelve-tone technique. Whitney employed serialism to further explore film's potential to integrate abstract images and sound. In 'Five Abstract Film Exercises,' created in 1943-44 with his brother James, the artists explored "the permutability of the simply graphic material permitted a great variety of compositional structure. We were soon engaged in elaborations upon the matrix ideas which presupposed some form of serial permutation to be juxtaposed dynamically against itself by retrogression, inversion, and mirroring."[112]

In the 1960s John founded a computer graphics company to produce visual content for picture and television title sequences and commercials, a common source of income for Los Angeles-based experimental artists. Although he was not an expert in computer programming, John migrated from analog to digital machines. In 1966 he was invited by IBM to spend three years experimenting with visual music at their computer

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[111] Gene Youngblood, *Expanded* Cinema, 208.

[112] Quoted in Robert Russett and Cecile Starr, *Experimental Animation: An Illustrated Anthology* (New York: Van Nostrand Reinhold, 1976), 173.

lab, where he produced a few works in collaboration with computer programmers. Whitney considered the computer as a new kind of piano, and he used it to "generate periodic visual action with a mind to reveal harmonic, juxtaposed against enharmonic, phenomena."[113]

In his book *Digital Harmony: On the Complementarity of Music and Visual Art*, Whitney gives a comprehensive explanation of his works and how he attempted to apply music compositional principles to create audiovisual works. Following Pythagorean premises about the universal order existent both in art and nature, Whitney attempted to present the foundation of a new art based on the hypothesis that "the attractive and repulsive forces of harmony's consonant/dissonant patterns function outside the dominions of music."[114]

Two ethnographic collaborators who worked with and were deeply influenced by John Whitney are Larry Cuba and Bill Alves. In his foreword, Whitney praises Larry Cuba's intention to combine computer language and audiovisual art. Whitney considers this expertise as the rise of a new generation of visual music artists. As Larry Cuba recalls,

> I read about John Whitney's work with computer graphics, then I just sort of clicked, 'Oh yeah, this is the most direct application using algebra and math to generate forms'. [I was also attracted by] the experimental aspect – that you explore space and you don't know what you're going to see until you look it. I started programming in fortran and generating some graphics. The film was in 35mm black and white, and there was no 35mm equipment, so I couldn't look at it. I had to go over to John Whitney's house, since he had a 35mm moviola.

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[113] Ibid., 189.

[114] John Whitney, *Digital Harmony: On the Complementarity of Music and Visual Art* (Peterborough: Byte Books, 1980), 5.

Bill Alves, who has created visual music by combining just intonation with John Whitney's ideas, told me that reading Whitney's book in the 1980s was "quite a revelation." According to him, John Whitney

> Fully expected that there would be people that would take his ideas and expand on them long after he'd have gone, in the same way that music polyphony had gradually developed over many centuries; he expected the same thing would happen with visual music. His ideas are very powerful because he is one of the few people in this area to have come up with a kind of simple and yet infinitely principle that can be used creatively.

Virtual Communities

The two only institutions devoted to visual music in the U.S. are the iotaCenter, created in 1999 and directed by Larry Cuba, and the Center for Visual Music, created in 2003 and directed by Cindy Keefer. The two institutions, which were only one initially, split in a relatively quarrelsome fashion, wakening the sense of community. This issue is further discussed in the next chapter. Here I want to focus on the virtual communities these institutions have established – a relatively small but enthusiastic group of producers and promoters and, to a lesser extent, spectators. Almost all ethnographic collaborators who took part in this research were contacted thanks to CVM's and iotaCenter's Web Sites, where a database of artists and online library with many of Moritz's articles can be accessed. Without this online point of reference my comprehension of visual music would be much more limited.

As a virtual member of both institutions, I had access to the discussion archives, which contains emails sent since the creation of both institutions. To give an idea of the level of activity of the list members, after filtering the messages that most fitted my

research interests, I still had about 1,000 pages of messages to examine. The issues debated by the community members, which would deserve a monograph in its own right, range from collaborative insights about visual music history and information about artists and upcoming events, to battles around aesthetic legitimacy and technical knowledge about technology, eventually followed by the unsubscription of annoyed members. Throughout these discussions we see John Whitney's theories on visual harmony being reformulated, supported, or attacked; praise for the institutions for promoting visual music artists and preserving their works; devoted members asking others to donate money or equipment to the institutions; art criticism; and arguments about who or what should be included or excluded from the visual music canon. Below I hive some example that illustrate these attitudes.

Definitions about visual music, including the search for color-pitch systems, are also present whenever a curious new member arrives (myself included). The reappearance of the topic gives opportunity for members either to reassert the genre's openness or to put forward some kind of all-embracing aesthetic and audiovisual premises specific to visual music. On the iotaCenter email list, Ron Pellegrino, another artist-scholar who has written on audiovisual media, suggests that in an emerging field such as visual music there is always the inclination to define and standardize the field. For him the field would grow from the mixture of perspectives which would allow the academically inclined to analyze and put together this material.[115]

In an extended debate on naming the just-established institution (which came to be the Center for Visual Music), computer animation artist Richard Baily states, "The

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[115] Ron Pellegrino, e-mail to iotaCenter mailing list, August 6, 1999, http://groups.yahoo.com/group/iotacenter/message/52 (accessed December 5, 2009).

name is extremely important. The image we project into society as a group is extremely important. Our mission is important."[116] He then points out: "[…] we have to come up with another name, for… What I'm not sure of."[117] He is then informed that the focus is on the "art of light and movement," a definition that Baily disputes by arguing that sound should be included; which in turn is questioned by Aaron Ross, who says that there are many silent visual music works. A senior experimental filmmaker suggests 'Center for Poetic Cinema,' arguing that the title 'visual music,' 'abstract' or 'non-objective' are too restrictive and excludes numerous artists and films that may also be part of the canon. Another member chimes in pointing out that, "In defining a non-profit organization, it's best to be vague and inclusive so your operations won't creep outside the definition, thus insuring legal compliance within the definition set forth in the charter."

One iotaCenter member wrote to the list,

> I want to take this opportunity to say how grateful I am to Larry [Cuba] and Bill [Moritz] for setting up this discussion list, as well as the iota Center itself. The past few weeks of discussion have been very educational for me, and I'm sure the iota community will continue to be a source of inspiration for all concerned. It's especially meaningful to me that so many "visual music" artists of the generation preceding mine are participating wholeheartedly in this list. I'm 31, and have been working in this field/medium/genre/whatever for ten years, but there is always more to learn, especially from those with decades of experience.[118]

It seems that the excitement with the establishment of an email discussion list devoted to visual music allowed the emergence of a community that wouldn't be able to

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[116] Richard Baily, e-mail to Visual Music Plus mailing list, September 18, 2003 (accessed on December 10, 2009).

[117] Ibid.

[118] Aaron Ross, e-mail to iotaCenter mailing list on August 19, 1999, http://groups.yahoo.com/group/iotacenter/message/111 (accessed on December 20, 2009).

maintain itself otherwise. More than that, it gave a sense (1) of democratic voice, as everybody, from newcomers to authoritative scholars like Bill Moritz, could share the same discursive space; and (2) of constructive voice, as the members themselves felt they were being responsible for the establishment of a new art form. Not only could they promote their own works and events, but also attempt to integrate their trajectory within what could potentially become the "History of Visual Music." The only drawback is that, currently, it takes someone interested in studying visual music from an anthropological perspective to go through the 1,000 pages of discussion and track down the main discursive threads. Not surprisingly, then, I felt that a few list members saw in my research the possibility of a long awaited assemblage of a unified narrative, making sure I was aware of their contribution to the field.

In 2008 CVM decided to make the discussion list available under paid subscription only. This raised a series of questions about limiting the access for a larger community. Some older members refused to continue on the list, and the discussions in both email lists, which was already less intense since their split, became less a medium for debating the field and strengthening the sense of community, than an effective instrument to promote events.

For a small non-profit organization like the iotaCenter and CVM, the Internet was crucial. As Larry Cuba argues, the Internet "has been a big boost to the whole thing; we have connection with the audience now. In the Web you can reach the audience – people who are really interested in that – and it really doesn't have to be mainstream." As an art form that gained momentum with its institutionalization already associated with the internet-based communication, perhaps Jack Ox is right to say that it is not possible to

geographically localize any visual music 'community.' In the next chapters I reflect on the issue of a localized visual music from the ethnographic point of view. In what follows I attempt an overview of some visual music technocultures.

Visual Music Technocultures

The term 'technoculture' has become somewhat popular since Constance Penley and Andrew Ross's compilation *Technoculture* [1991], which established the concept as an analytical node able to tackle the interactions between machines and humans in culturally specific environments. The point the collaborators in this book try to put forward is very similar to my interest here: to argue that technology has to be understood as an indispensable component in the networks social scientists investigate. In that sense, the 'techno' in technoculture seems to serve more as a critique of other notions of culture that either take technology as a given or as a product detached from social practice. Less relevant to this research is the political agenda of the book, which, following a narrative already common in Cultural and Media Studies (that media products can be 'tuned' to different ideologies), shows an almost obsessive – and perhaps understandably so – satisfaction in narrating the ways the technologies produced by the 'System' are constantly being subverted by the marginalized. I will expand on the idea of technoculture in Chapter 6, here it should suffice to explain my use of the term.

I'm calling visual music technocultures those cultural trends commonly considered as part of the history of the genre, but that differ in terms of the technique and technology used, the space to perform it, and the work-perceiver interaction. Besides constraining the possibilities of sonic and visual creative expression (and, in part, because

of that), these aspects have been crucial in the establishment of communities, hence the term technoculture. Dichotomies that have encouraged the creation of distinct technocultures include: analog vs. digital, low tech vs. high tech., real time vs. pre-composed, customized vs. 'off-the-shelf' hardware/software, linear vs. non-linear visual music, and embodiment (the body 'becomes' visual music) vs. disembodiment (the body observes visual music).The idea here is not the present the history of every visual music technoculture, but simply to point out a few ideas that have influenced visual music production among my collaborators.

Color Organs and Light Shows

Color organs and light shows have their own trajectories in the history of art-technoscience, and are put together here only for the sake of space. Both color organs and light shows are less mass mediated audiovisual products than customized devices linked to their creators and whose performance exists in the intimate man-machine relationship. I approach these two visual music technocultures from the perspective of two ethnographic collaborators: George Stadnik and Bill Ham.

The importance of the color organ tradition to the field of visual music is significant, and its narrative often starts in the 18th century with Louis Bertrand Castel's *clavecin oculaire* (ocular harpsichord). In his writings, Castel poses one of the central questions among visual music members, and one that resembles the introductory questions in Chapter 1: "What stranger enterprise could be imagined in the whole field of art than to make *sound visible*, to make available to the eyes those many pleasures which

Music affords to the ears?" [119] Other examples of this tradition include the late 19th century British artist Alexander Wallace Rimington's electric color organ, Ludwig Hirschfeld-Mack's device at the Weimar Bauhaus, Russian composer Scriabin's *Prométhée, Le Poème du Feu* [1908-10], which requires colored lights played by a light instrument, and Arnold Schoenberg's 'drama with music' *Die Glükliche Hand* [1910-1913, performed in 1924], which also requests for color-light projections.

One of the best known artists working with color organs is Thomas Wilfred, whose clavilux (literally, "light play by key") recitals would quickly become a sensation in some U.S. cities during the 1920s. Much of Wilfred's success relied not only on the uniqueness of the polymorphous imagery produced by his clavilux, but also on his avoidance of audio-visual analogies (for him, visual music should have no music to be fully appreciated), and on the theorization of what he saw as the dawn of a new art form. His argument could serve as a metaphor to understand the aesthetic appeal that visual music exerts among experimental artists: "Painting remains a static art in the sense that it can only suggest motion; but abstract and non-objective directions in painting have led us to a closed gate beyond which lies the realm of motion. Lumia is the key to this gate." [120] Later in his life, Wilfred built several preprogrammed clavilux models, one of which was commissioned by the Museum of Modern Art of New York. Some clavilux can be seen in museums of contemporary art (see photo below).

George Stadnik is one of the main followers of Wilfred's lumia aesthetic premises. As he recalls,

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[119] Frank Popper, *Origins and Development of Kinetic Art,* 156.

[120] Quoted in Judith Zilczer, "Music for the Eyes: Abstract Painting and Light Art": 81.

> I saw Wilfred's work in 1968, and that was enough to convince me that that was the art from to pursue in the 20th century. It wasn't static, it was dynamic, it was out of this world basically and nobody else was doing anything like it. In terms of an aesthetic experience it covered all the basics in terms of texture, form, color, motion, intensity, composition. And it was different from film, was different than sculpture, it was different than painting.

Stadnik has migrated from analogue to computer software to manipulation, which has allowed him to work with light in ways that are not possible in the physical world. His works have been exhibited in audiovisual festivals, and are available on DVDs.

Fig. 2. George Stadnik, *Trip the Light Fantastic* [still], 2010. (c) 2010 George Stadnik.
Source: http://www.photonlightguitars.com (accessed March 10, 2010).

Bill Ham, one of the pioneers of light show performance and whom I met in San Francisco, places his visual art as related both to abstract film and color organ traditions. In 1965 he moved from action painting to visual music "via the transparent overhead

projector and began working with light (projected imagery) and music."[121] According to Kerry Brougher, "As early as 1952, a professor from San Francisco State College, Symour Locks, taught a course called 'Light and Art' in which he demonstrated to his students the possibility of creating motion painting by swirling colored liquids in a dish and casting the 'painting' on a wall by means of an overhead projector while a jazz group improvised […]."[122] Elias Romero, a Los Angeles-based art student who has been performing light shows since 1958, taught Ham the technique in 1966 when he moved to San Francisco.

Fig. 3. Bill Ham's light show equipment. (c) 2009 Bill Ham. *Source*: http://www.billhamlights.com/bhl_history.html (accessed March 10, 2010).

When I visited Ham another filmmaker was trying to convince him to record his performances, which he was reluctant to do as his visuals would loose in terms of uniqueness and visual quality. Ham's technique is based on the direct application of materials on the lens, allowing the artists to improvise with the musical performance. The

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[121] Source http://www.billhamlights.com/bhl_introductions.html (Accessed on April 10, 2010).

[122] Kerry Brougher, "Visual Music Culture," in *Visual Music: Synaesthesia in Art from 1900*, 159.

idea was further developed with the use of various projectors to simultaneously create a texture of overlapping moving visual layers, which required a crew of projectionists. The psychedelic rock performances of the 1960s and the hippie culture that emerged in San Francisco, owe much of their ephemeral quality to the light shows performed by artists like Ham, Tony Martin, and Glenn McCkay in San Francisco, as well as Elias Romero and the group Single Wing Turquoise Bird (of which the ethnographic collaborator Michael Scroggins was part) in Los Angeles. The visual component of these live performances created a sense of communion and immersion with the projection of abstract moving images on walls, musicians, and audience. This feeling of liberty through immersive art was increased by the fact that both audio and visual elements were improvised. In that sense, the light shows are perhaps the most real time-based visual music technoculture. I will return to this real time component, along with the collaboration between audio and visual specialists, in my discussion of VJin-DJing.

Film

> Films are organic. They are like the human flesh: you cut it, it will bleed to death.
>
> - Robert Haller

If we take into account Moritz's narrative of visual music, and that both the iotaCenter and the Center for Visual Music are engaged in using their archival resources to maintain the institution (which means film preservation) it seems reasonable to assert that film is the aesthetic core of a good part of the visual music community I came to know. This community can be situated in two key moments: first, the modernist (mostly Germany-based) avant-garde community of artists who first articulated an abstract film

vocabulary from the still fresh abstract art paradigm; second, the American avant-garde film community that had considerable impact on both U.S. coasts from the 1940s to the 1970s and was established in part because of the World War II intellectual diaspora. It is from these two moments that I talk about film visual music technoculture. The pantheon of abstract animation is too vast for me to delve into, and I notify the reader that omissions will occur.

In the 1920s Europe, while a few artists would look down on film as a mere instrument for advertising and as a menace to the still institutionally fragile field of abstract art, a group of experimental artists would turn to film as an ideal medium to explore aesthetic ideas of moving image and sound.[123] For experimentalists like Moholy-Nagy, film was the natural development of painting. He interpreted abstract pioneer Kazimir Malevich's 1918 *White on White* as "symbolic of the transition from painting in terms of pigment to painting in terms of light. *The white surface can serve as a reflector for the direct projection of light, and what is more, of light in motion*" (italics on the original).[124] Malevich himself would recognize the strong utopian potential of abstract cinema. As Frank Popper argues,

> It is probable that cinema exercised a major influence on the plastic arts around the years 1910-1920. It was around 1920 that plastic artists with abstract tendencies first began to take part in cinematographic projects. In Fernand Léger's *Ballet mécanique* of 1924, the movement of the camera and the techniques of film montage were the only methods employed. From this work, there is a long line of 'kinetic' experiments of this kind leading from Henri

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[123] As Esther Leslie puts it, animation on film allowed artists to explore "abstraction, forceful outlines, geometric forms and flatness, questioning of space and time and logic – that is to say, a consciousness of space that is not geographical but graphic, and time as non-linear buy convoluted." Esther Leslie, *Hollywood Flatlands: Animation, Critical Theory and the Avant-Garde* (London: Verso, 2002), 18-19.

[124] Ibid., 35.

> Chomette, Moholy-Nagy and Len Lye to Fischinger, McLaren, Valensi and the artists of the present day.[125]

A few things about the advent of film animation must be observed. First, unlike previous audiovisual performances such as color organs, film allowed a frame-by-frame control of audio-visual events that "could be drawn so tightly that a symbiosis, a perfect rhythmic synchronization, could occur."[126] Second, animation and other handmade techniques of film manipulation are "the only form of film-making that literally fits the auteur theory, an approach that speaks of films as though they are the work of a single artist […]."[127] Third, if the abstract painters envisioned a new visual vocabulary able to establish a spiritual connection between the individual (regardless of nationality) and the universal, and if, at that same time, the modern metropolis was being investigated as the context where the individual experienced both fragmentation and liberation, then abstract cinema – a product able to be massively distributed – was indeed the point where these two currents intersected. It is not surprising that the Futurists Arnaldo Ginna and Bruno Corra, one of the first artists to conceive of painting directly onto film around 1908, entitled their first abstract film *Neurasthenia*.

In the 1920s, painters who were exploring film animation popularized a film visual music technoculture that was not meant to reproduce, but present an always-evolving reality. Walter Ruttmann's *Lichtspiele*, Viking Eggeling's *Diagonal Symphony*,

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[125] Frank Popper, *Origins and Development of Kinetic Art*, 68.

[126] Esther Leslie, *Hollywood Flatlands: Animation, Critical Theory and the Avant-Garde*, 27.

[127] Roger Horrocks, *Len Lye: A Biography* (Auckland: Auckland University Press, 2001), 134.

Hans Richter *Film is Rhythm*,[128] achieved some popularity among a growing film audience in international cinema conferences. In the 1930s, Oskar Fischinger's *Studies* with tight audio-visual synchronization made him an international success as a specialist in visual effects. Fischinger was confident that abstract film was the true expression of the medium: "The narrative film will probably remain the daily bread of the masses but the layers of people who demand the true film, the abstract film, will grow permanently." [129] Art critic Bernhard Diebold was quick to observe already in the 1920s that the audience would find it hard to accept the kind of abstract imagery created by these artists, and anticipated that "clever business people would choose the painted film as a vehicle for advertisements, for the public would appreciate the 'compromise' between art and business […]." [130]

Clearly, if we may agree with Moritz that "visual music has a history that parallels that of cinema itself," [131] we should also agree that visual music has a history that parallels that of filmic advertising; in that sense, Fischinger seems to be a paradigmatic visual music artist enmeshed in the epicenter of the tensions between fine and 'applied' arts. After working on visual effects for feature films at UFA, some of Fischinger's abstract animations were synchronized to popular music and used to advertise Electrola records. In 1936, already in Hollywood, he was commissioned by Paramount to create an animation for the opening number of the feature film *Big Broadcast of 1937*. The only

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[128] Richter and Eggeling were already experimenting with scroll paintings where the canvas was prolonged vertically or horizontally to insert the time component. See Hans Richter, "Easel-Scroll-Film," *Magazine of Art,* no. 45 (Feb., 1952): 78-86.

[129] Esther Leslie, *Hollywood Flatlands: Animation*, 188.

[130] Ibid., 47.

[131] William Moritz, "The Dream of Color Music, and Machines That Made it Possible,"

moment when Fischinger seems to have been more able to pursue his own aesthetic ideals more freely in the U.S. was when he received funds to create non-representational films from the Guggenheim Foundation.

While Fischinger was experimenting with animation in Germany, on the other side of the Atlantic, Walt Disney, who had started his career in the ads business, was already working with representational animation at his just founded Walt Disney Company. In 1939 Fischinger was hired to animate a section of Disney's *Fantasia* – the concept of the film was Fischinger's ideas transmitted to Disney via Leopold Stokowski. After months working on the project, Fischinger left Disney affirming that the film was in fact "the most inartistic product of a factory."[132]

Fischinger's abstract films had a deep impact on Norman McClaren, Len Lye,[133] Mary Ellen Bute, Jules Engel, and other filmmakers who would pursue different techniques to create abstract imagery tightly synchronized with sound. It is around these artists that a film visual music technoculture was established in the 1930s.

Based on what I said already about narratives and debates about visual music, it seems understandable that Fischinger is seen the articulator of visual music from the 1920s avant-garde in Europe to the American film avant-garde in the 1940s-1960s. In both moments and places we see a sense of counterculture engaged in defending and promoting 'true art' in film, the desire to establish an alternative community with independent venues for producing and circulating film, the fascination with abstraction in

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[132] Quoted in William Moritz, *Optical Poetry*, 85.

[133] According to Esther Leslie, Walt Disney "claimed an interest in abstract film since seeing Len Lye's *A Colour Box* (1936) in the 1930s." Esther Leslie, *Hollywood Flatlands*,187.

connection to spiritual ideas and astronomic exploration, and an infrastructure allowing some access to film material and technique.

Gene Youngblood's *Expanded Cinema*, published in 1970, became a narrative node in the film visual music technoculture, as it presented the main ideas linking the American film avant-garde that had surged in the 1940s and achieved a climactic moment in the 1960s with the counterculture movement. Youngblood's narrative about the 'synaesthetic cinema,' the 'cosmic cinema,' 'cybernetic cinema,' 'holographic cinema,' follows the premises of avant-garde discourse – already mentioned in the previous chapter – of an utopian future shaped by art. "When we say expanded cinema we actually mean expanded consciousness."[134] The book is particularly relevant for discussing visual music in that it argues that this kind of experimental audiovisual media should be investigated as a cross-media phenomenon.

The main figures of what Moritz's calls the second generation of visual music filmmakers are Harry Smith, Jordan Belson, John and James Whitney, Pat O'Neill, Stan Brakhage, Bruce Connor, and Adam Beckett. For Aaron Ross, these artists are the pinnacle of visual music production: "I look back and, of all the things I've seen in my life, the analog films and animations done in the 60s and 70s, no one's top that. No one's gone beyond the James Whitneys and the Pat O'Neills and Jordan Belsons of mid-20th century." As I continue to watch these films, I believe that what attracts people to experience them and support their preservation is the personal treatment of celluloid that each of these artists give to their visual music work; the spiritual association between

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[134] Gene Youngblood, *Expanded Cinema*, 41.

their work and their (often reclusive) life; and the nostalgic component of experiencing these films on celluloid, which confer to them a sense of organicity.

For the members of film visual music technoculture, watching a DVD at home and watching a 35mm film screened in proper conditions are completely different experiences; even more recent conversions to HD (high-definition video) "don't translate well," according to one collaborator. For instance, Cindy Keefer would often tell me how the Center for Visual Music, which preserves and represents often Oskar Fischinger's and Jordan Belons's works, had to refuse renting the prints to an institution because the room wouldn't be dark enough for the screening.

Because of the fragility of film stock, these archives, along with smaller non-institutions like the Center for Visual Music and the iotaCenter, have become the only means to access this material. CVM and the iotaCenter do not preserve their films in situ and have no space to project them. The preservation process was summarized by Larry Cuba:

> In film you do this master, and it goes to the lab, and they make you a print. You run the print on the projector; you run a hundred times and you wear it out, and you another one, you go back to the lab, and get another print; there is always the possibility of just other prints. It turns out that over the years people don't maintain the original. So labs close, or they get them back and they lose them, or they put in the attic and it melts or something, so what you have left is just the prints that are sort of worn, and you have to go to the process of using a printer, the best available material to get a new masters so you can make fresh prints that are clean and with the correct colors and the sound is fixed. Theoretically the preservation shouldn't be necessary if you hold on to your masters and put them in the lab and the vault and take care of them, but few filmmakers do that. So that's why a lot of preservation is taking the artifact is they exist and getting new prints made, and then at that point we can get good film to tape the transfers made

Both iotaCenter and the Center for Visual Music are constantly involved in getting grants to produce new prints of the film from their archives. The main financial source for this is the National Film Preservation Foundation (NFPF), created by U.S. Congress in 1997. Haller told me that a top studio for film preservation could charge as much as 300,000 U.S. dollars to restore preserving a short 3-minute film. Keefer informed me that the participation in mainstream art events like the 2004-05 exhibition *Sons & Lumières* at the *Centre Pompidou* had allowed CVM to pay for better prints. The other challenge for these institutions is not only making money by renting prints to museums, but also using these prints to create DVDs – a procedure that NFPF doesn't fund – in order to broaden the visual music audience.

"The 20th century," Robert Haller argues, "was shaped by movies, by celluloid motion pictures, and the 21st century is not going to be shaped by celluloid. Except for a few very rare places like Anthology [Film Archives] and the Museum of Modern Art, George Eastman House, and Pacific Film Archives, film has no real future." The complex procedure of preserving and restoring films, and the technological dependency on the film industry, indicates that, indeed, by detaching itself from mainstream digital film industry film visual music will become a technoculture closer to color organs, requiring specific knowhow and devices to perform it.

Music and abstractionism

The idea of abstraction as the effacement of referentiality has also been present in the sonic aspect of visual music. In a short essay describing the composition of their *Five Film Exercises*, John and James Whitney stated,

> It occurred to us that an audience could bring with it its own disunifying distractions in the form of numerous past associations and preconceptions were we to use previously composed music in relation to our own abstract image compositions. We, therefore, tried the simplest, least common, primitive music we could find. But another source for disunity became apparent. In this case, the dominant source of distraction was a contradiction between the origins (the players, instruments, time, place, etc.) of this kind of music and our animated image.[135]

The presence of an unfamiliar sound in the visual music can have many facets, but I think we can follow the Whitneys' suggestion and summarize it into two main sonic paradigms of the 'raw-as-abstract': the non-Western (as 'primitive' or as spiritually transcandent), and the machine-generated (synthesized). In his discussion of the celebration of rhythm in music, cinema, and dance in the 1920s and 1930s, Michel Chion comes to a similar argument regarding the aesthetic articulation of otherness: "Such endemic rhythm was attributed to blacks […] or to machines." [136]

Although the idea of sonic abstraction through unfamiliarity deserves further investigation, here I want to briefly consider Cornelia Fales's four categories of sonic events, from representation to abstraction.[137] The first category is the exact copy of real-world sounds ('exact copy' being of course always contextual). In the second category sound moves one step away from the 'pure' and familiar, but is still imaginable by the perceiver, because it follows the conventions of the acoustic world[138] (e.g., playing

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[135] John Whitney and James Whitney, "Audio-Visual Music," in *Art in Cinema: A Symposium on the Avantgarde Film* (San Francisco: San Francisco Museum of Art, 1947), 32.

[136] Michel Chion, *Film, a Sound Art* (New York: Columbia University Press, 2009), 41

[137] Cornelia Fales, "Short-Circuiting Perceptual Systems: Timbre in Ambient and Techno Music," in *Wired for Sound*, 156-180.

[138] In our usual acoustic environment "every sound is the result of sinusoidal waves, each of which has its own amplitude, frequency and phase." Louise Poissant, ed., "New Media Dictionary," *Leonardo* 34, no. 3 (June 2001), 262.

gamelan to someone for the first time would be within this category). The third category includes sounds that are neither familiar nor imaginable (e.g., playing a song backwards). Finally, the maximum sonic abstractedness is achieved when sounds "inhabit a sort of forsaken universe," and "exist in total autonomy from any canon of sounds we might favor." [139] In this last category I would include Curtis Roads's experiments with granular synthesis, in which sound is transformed into small temporal grains, conflating frequency and time in cognitive terms.

The aesthetic dispute surrounding post-World II electronic music (*musique concrète* vs. *Elektronische Musik*[140]) can in part be considered as disagreements regarding the creation and manipulation of sonic abstraction. Abstraction as connected to the non-Western and to the machine is easily observable in the field of experimental music. For instance, when Karlheinz Stockhausen was still exploring the possibilities of *Elektronische Musik* (electronic music based on the manipulation of machine-generated sound), he went to the *Musée de l'Homme* in Paris, where he recorded "all the different instruments of the ethnological departments […]." [141]

Pierre Schaeffer's own compositional approach to new music resembles Fales's categories of sound ranging from concrete to abstract. For him, whereas ordinary music is created from the abstract (the idea) to the concrete (the execution), *musique concrète* moves the opposite direction: the composer-scientist manipulates the materiality of registered sonic events to turn them into an abstract composition. To go back to the

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[139] Ibid.

[140] For a discussion of the debates surrounding electronic music, see Timothy Taylor, *Strange Sounds: Music, Technology & Culture*.

[141] Quoted in Timothy Taylor, *Strange Sounds*, 56-57.

bifurcated aspect of sonic abstraction (non-Western and machine): according to Timothy Taylor, "By 1953 Schaeffer was attempting to aggregate *musique concrète*, *Elektronische Musik*, tape music, and exotic music under the single label of 'experimental music.' "[142]

Video

Video visual music technoculture emerged with the manipulation of electronic signals to alter visual signals to construct visual abstraction. As with the light shows, one of the main tenets of this technoculture is the possibility of visual improvisation. The fact that the device could be cheaply obtained attracted some U.S. art schools, and video art became the predecessor of computer art, encouraging the idea of making art with mass media technology. Scott Arford has been creating visual music performances from the point of view of TV as a machine able to project notions of representation:

> I've always thought about the TV particularly, as the representational space of television; to me, part of the power of the television and visual medium is this window quality in the TV set, even though it's a piece of flat glass. Then, what happens outside that really drives a lot of my video work, because video no longer represents internal space when you're doing these abstract things (there's some layering of it, but there's no real space); then it's how that starts to transform what happens to the larger space, so that the monitor, the screen, the TV or whatever becomes this light emitter, it becomes this kind of light source, other than something that you projecting your thoughts into some character or have some vicarious experience through the main character of the film, which is the traditional film model, especially in Hollywood films. This takes the projection out of it and projects back out onto the viewer. So they are experiencing themselves, not themselves through Keanu Reeves or something.

A handful of artists-engineers in turn became attracted to the possibility of building video synthesizers, much like technicians like Robert Moog, who was building music synthesizers since the late 1960s. These video artists include Stan VanDerBeek,

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[142] Timothy Taylor, *Strange Sounds*, 55.

Scott Barlett, Steve Beck, Nam June Paik (an artist related to Fluxus), Eric Siegel, and Dan Sandin. Beck, who I met briefly at UC Berkeley, constructed his Beck Direct Video Synthesizer informed by Kandinsky's theories of visual composition, and was influenced by Jordan Belson's 'cosmic films'.

Another trend in video art is Fluxus, a network of artists active especially in the 1960s and 1970s, where sonic and visual artists collaborated across transnational clusters located in a few cosmopolitan centers. Among Fluxus artists modernist ideas were re-articulated in relation to current mass media products - the TV being perhaps the main one. From the Fluxus network the notion of intermedia is particularly important here, as it represents the desire to create art in-between disciplines. For Dick Higgins, the main articulator of the term, "A composer is a dead man unless he composes for all the media and for his world."[143] U.S. avant-garde cinema (mentioned above) also relates to the idea of using mass media to expand conventions about representation, and to create some kind of social critique.

CVM director Cindy Keefer, comes from the music video technoculture of the 1980s. After studying film at New York University, she started directing indie music videos that, according to her, were much more prominent during the first years of MTV. She also points out that film directors had more artistic freedom to experiment with the audiovisual medium, and that abstract films would be shown frequently. Another collaborator, Mike Patterson, also took part in the emergence of MTV:

> What happened there was that they took a medium that was pretty marginal, and suddenly it took this art visualization of music into mega mainstream. It took

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[143] Dick Higgins, "Statement on Intermedia," August 3, 1966, http://www.artpool.hu/Fluxus/Higgins/intermedia2.html (accessed March 18, 2010).

> experimental animation and put it right in center stage, they said, "This stuff is cool." And then people wanted to do cool stuff. No one knew what was happening, no one knew what was next, no one knew how to control it; they just said, "Hey, here's some money." There was more money then. It was very much a social thing, a cultural event – MTV was such a big thing. For me, back when I was 27, which was when I started directing, it was the shit. Everybody wanted to know what was on MTV, everybody was watching, and it was brand new.

If the idea of music video was latent in visual music films of the 1920s, MTV had a huge impact in the visual music community. However, MTV is a technoculture that has originated from the music industry, and much of its initial marketing strategy is related not to the use of audiovisual product per se, but to the expansion of profits by the music industry through television.

Computer Art

Computer art is an art universe in stunning expansion. To understand how new media operates, media theorist Lev Manovich proposes five interrelated features: 1) numerical representation – media becomes programmable and based in discrete and manipulable unites of data; 2) *modulatority* – fractal quality of media, since its components share the same modular structure while maintaining their independence; 3) *automation* – relative independence of human intentionality; 4) *variability* – possibility of infinite local alterations of media products; and 5) *cultural transcoding* – the translation of computer mode of treating, organizing, manipulating, sharing, etc. computerized material to understand other media, and even broader cultural categories and concepts (he talks about 'computer layer' vs. 'cultural layer,' which I think is a somewhat naïve understanding of culture.

For Manovich, avant-garde cinema is the prototypical new media. Techniques such as collage, painting on film, animation, title generation, and compositing, all would come to materialize as tools of computer software. "Element by element, cinema is being poured into a computer: first, one-pint linear perspective; next, the mobile camera and rectangular window; next, cinematography and editing conventions borrowed from cinema, to be followed by make-up, set design, and the narrative structures themselves."[144] In that sense, it is not surprising that Manovich elects John Whitney's 1961 visual music *Catalog* as one of the founding moments of new media paradigm, since the piece presents a succession of "databases of effects" instead of a linear visual narrative. If visual music as a computer art has been receiving attention from younger generations, this is due in part to the role that visual effects have in what Manovich calls the "logic of culture at large."[145]

New media scholar Frances Dyson has argued that sound technology, not cinema, is the prototypical new media. For her, new media is the accumulation of a series of innovations inaugurated by sound technoculture. These innovations represent "a realization of the telepresence first offered by the telephone, a computational form of the inscriptive techniques of the phonograph and tape recorder, an appropriation of the ethereal association of radio, and an embrace of film sound's spatiality."[146] Moreover, ideas about three-dimensionality, interactivity, and immersion, so dear to new media artists, can also be found in sound technology. If we pay close attention to what visual

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[144] Lev Manovich, *The Language of New Media* (Cambridge: MIT Press, 2001), 86.

[145] Ibid., 236.

[146] Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009), 3.

music artists across different technocultures have been doing since the 1920s, we may find in their works and discourses the most compelling articulation of media and new media art. Their involvement with art relies on the constant exploration and adaptation of the material towards a certain immateriality-as-otherness.

All the previous visual music technocultures are potentially represented ('digitized') in the computer. With computer art it is easier for a single person to manipulate and integrate sonic and visual material. The artist-*auteur* may conceive, compose, and perform his/her *Gesamtkunswerk* from the same device, with increasingly refined control over the final artwork. This is particularly important for audiovisual artists coming from the film art world and who lamented the emphasis on collaborative production. The computer objectifies experimental art's ethos in that it allows the individual artist to work in relative isolation. Also, modes of integrating sound and moving images, putting forward the idea of an ubiquitous binary code – Manovich's numerical representation' – as the ultimate mode of abstraction.

Second, as Manovich implies, computer as art-machine offers a wide range of techniques to deal with visual music, from algorithmic programming, which allows control of small fragments of data, to music video synthesizer, where most of the audio-visual interaction is preprogrammed. In other words, there is a whole art world within computer art, often involving the act of personalizing the machine through specific and technoaesthetic strategies. One example would be the distinction between the technician and the artist, very much alive among the ethnographic collaborators. According to this argument, while the visual music technician knows to write in a given computer language or how to program some audiovisual software, only the artist is capable of making good

use of that knowledge, Conversely, some argue that only the programmer possesses the artistic liberty necessary to create his art from scratch instead of merely revamping pre-fabricated audiovisual processes. Thus, visual music computer art offers new possibilities for artists to explore the panaesthetic facet of visual abstraction. As Larry Cuba states, "I think a very common attitude with algorithmic art is, if you're writing an algorithm that generates the image, the same algorithm could also control the sound. There's all the graphics parameters, all the sound parameters, and there's the algorithm that you're using to control everything."

Third, and in connection to the previous points, there is a common aesthetic bifurcation among visual music artists who, following the music performance model, prefer to explore computer technology that can perform in real time (possibly with the insertion of improvisation); and those visual music artists who follow the music composition model, creating a piece to be performed later, faithful to the original idea. The fact that computer internalizes both models creates a challenge for visual music artists, as it becomes difficult – more difficult than older media – to establish a media-based distinction. Also, the modulatority (see Manovich's categories above) and variability of computer art seems to fit some of the premises of visual music. Both hardware and software developers have incorporated the genre as a means to highlight computer graphics performability, and to show the device's GUI (graphical-computer-interface) interactivity.

Fourth, as computer visual music technoculture is only gradually being incorporated by educational centers and fine art institutions, most of the knowledge about this technoculture is based on self-teaching, especially when emergent software doesn't

offer much instruction in online tutorials and forums. The slow assimilation by legitimizing institutions also explains why many artists create this kind of visual music without expecting to make money with it - just 'for the sake' of it.

Fifth, if the fascination of modernist abstract artists epitomizes a general enthusiasm with the images and sounds of a world revealed by the new machines, the computer age expands that excitement by allowing the creation of the unseen from the machine itself. The computer can establish environments where the perceiver *becomes* the machine by experiencing an alternative disembodied reality. For instance, George Stadnik argues, "I can do things with those machines that nobody could ever do in the physical world. I don't have to deal with gravity; I don't have to deal with intersecting planes. I can put my camera inside machines, I can build shapes that don't exist anywhere in the universe." With those aspects in mind, let me point out a few sub-fields of computer-generated visual music.

Programming

Computer programmers with artistic inclinations are still relatively unusual since John Whitney's pioneer work. Larry Cuba, who worked as a programmer for John Whitney, argues that programming as art emerged mainly because "there were people who wanted to do what couldn't be done with off-the-shelf software; they wanted to go somewhere else." J-Walt and Scott Drave are current artists working with computer programming visual music are s. J-Walt programs his own audiovisual software and has developed a unique technique to perform it in real time. Scott Draves, who has worked in the computer industry with special effects, has decided to established himself as an

independent media artist whose abstract visuals can easily migrate from technology salons to electronic music environments, to media festivals.

Fig. 4. Scott Draves, *Dreams in High Fidelity II,* 2010. Performance at Lexus Hybrid Art, Moscow. Source: http://picasaweb.google.com/scottdraves/Presskit02#5466067156867659874 (accessed May 2, 2010).

Computer graphics

I include under 'computer graphics' those artists who create visual music from a set of pre-programed audiovisual components. This trend usually relies on linear composed pieces using software such as After Effects, Maya, and Final Cut. The aesthetic and technical premises are closer to the film, advertising, and game industries. Being connected to these industries has required these artists to work with figurative elements. For that reason, many of their visual music works weave back and forth between abstract and figurative audio and visual elements, often through the use of techniques like compositing – "combining of visual elements from separate sources into single

images."[147] For instance, Scott Pagano's *Parks on Fire* mediates diegetic figuration and abstraction by creating biotechnological objects that interact with the sound (specifically through audio-visual rhythmic and timbric synchronization). For them, the combinatoriality and adaptability of these components in one or more off-the-shelf software is enough to experiment and express their individual creativity.

Instead of encouraging a close relationship between artist and hardware (as was the case with pre-digital computer media), computer graphics artists establish close relationships with the software; the software encapsulates the canvas, the score, the microphone, the celluloid, allowing the artist to manipulate time and space. Artists often try to balance 'techno curiosity' and experimentation with familiar and already dominated techniques. When asked about his artistic toolset, Pagano explained that

> *After Effects* is my main 2D motion tool. I'm pretty interested in getting into the *Nuke*, which is a more high-end 3D compositing system, because I'm doing a lot of stuff that's pushing the limits of After Effects. I've hit a lot of weird issues lately, like i've done stuff that's too high res for it; hit the limit. On the 3D side it's mainly Maya and a lot of Houdini for more experimental stuff and channel processing. I'd like to get way better at Houdini. And then for the real-time stuff i've been a Max/MSP and Jitter user for a long time - probably more than a decade now. I've lately been really deep into this program called Touch Designer, which is for real-time 2D and 3D work. And that's just like... honestly, if could just focus on that for the next year, that's what i'd like to do, because it's incredibly powerful and there's really amazing stuff you can do

[147] Wikipedia, s.v "Compositing," http://en.wikipedia.org/wiki/Compositing (accessed April 17, 2010).

Fig 5. Scott Pagano, *Parks on Fire* [still], 2007. Pagano's Sci Fi techno-organisms navigate between abstraction and figuration. Source: http://www.neither-field.com/ (accessed January 7, 2010).

Jarrett Smith, one of the founders of software company Derivative, has been developing *TouchDesigner* in the last years. *Touch* is a software for real time performance that allows the user to cross different computer sources of audiovisual manipulation. According to him, "If you go deep enough, all there is is compositing image; things that you're controlling with the controller system. So even the user interface the you're using to program a system with, is the same thing; it's recursive." The main quality of this kind of node-based software is that it allows artists with *or* without knowledge of computer programming to engage in the creation of visual music. As a freeware (software available free of charge), *Touch* allows the user to access all the nodes of the audiovisual structure when opening a file, making the final user a potential collaborator and developer of the software itself. According to Smith, the last stage would be to allow users to turn audiovisual pieces created from *Touch* into executables, "Which means," Smith explains, "That you'll just make the full application without any need for player or anything."

Intermedia

The main aspect separating intermedia from other computer-generated visual music is that it relies consistently on the machine's point of view and on technoscientific aesthetics. Here the level of visual and sonic abstraction is usually higher than in computer graphics, and the performance takes place in immersive environments. Artists working with computer-based intermedia usually perform in museums and art festivals, which means that these are usually non-linear pieces ready to be performed in any museum installation. Intermedia artists are usually based on more legitimized media centers, where they are able to promote what Vesna calls the 'third culture,' the gray area between art, science, and technology (see Chapter 2).

One example of intermedia visual music would be Semiconductor's (formed by new media artists Ruth Jarman and Joe Gerhardt) *Black Rain*, a visual music installation created from raw scientific satellite data. In this piece, the sound was created by using the brightness of different parts of the images as samples. As Garhardt explains, sound and image are "physically attached, rather than choreographed."[148] The shared sense of 'noise' is expanded by the fact that both the visual and sonic elements surround the perceiver, creating a feeling of disembodiment through physiological disorientation.

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[148] Joe Gerhardt, Ruth Jarman, and Oliver Robert, interview by Oliver Roberts, http://flasher.com/view_profile.php?profile_id=346 (accessed April 17, 2010).

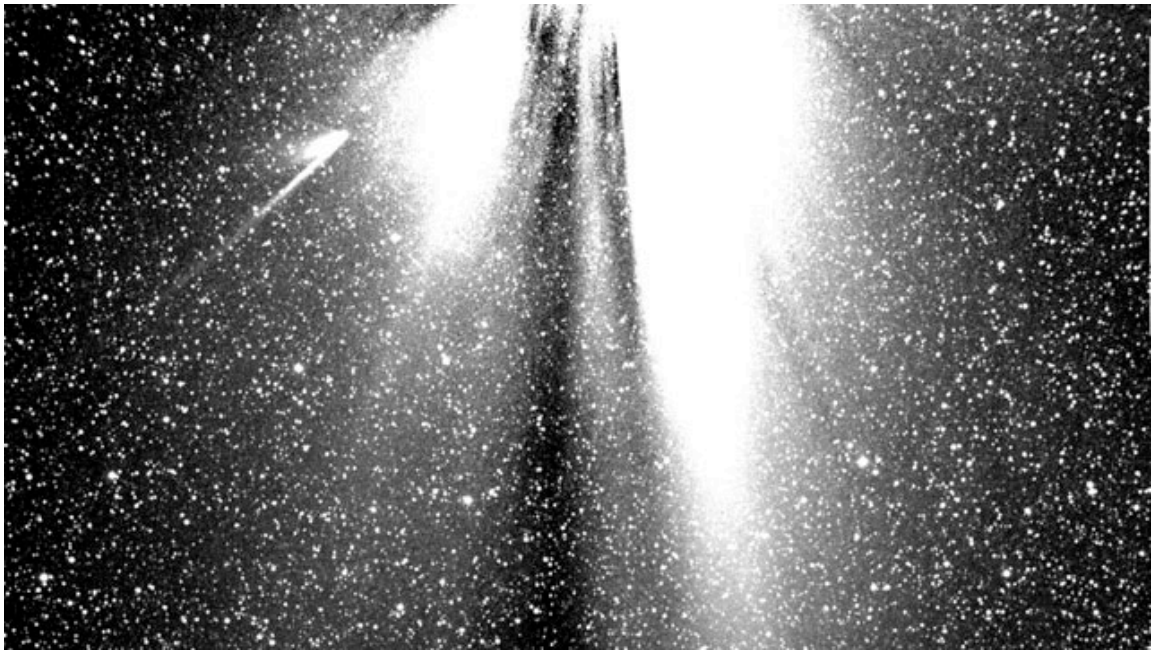

Fig. 6. Semiconductor, Black Rain [still], 2009. The name Black Rain derives from the rain of noise produced by cosmic ray. Source: http://www.semiconductorfilms.com/root/Black_Rain/Black_Rain.htm (accessed April 14, 2010).

VJing-DJing

VJ performance has migrated from VHS in the 1980s, to DVD in the 1990s, and finally to computer in the 2000s. As in MTV-related music video, this type of visual music draws mainly from the music industry, and the visuals are often considered as an accompaniment to reinforce the trancelike quality of dance music. Many visual music members feel that VJ-DJ visual music is eye candy, the mechanical incorporation of MTV's well-known visual music/pop art techniques of handheld camera, abrupt crosscut, and high-speed montage. Many consider VJ-DJing as a corrupt visual music, as the engagement with the audiovisual work tends to be more sporadic and 'superficial.' Another collaborator mentioned that in VJ-DJ technoculture the aesthetics is too narrow, the majority of the visuals being "ugly and disinteresting."

Whereas the DJ community has already established a cohesive art world (funding,

venues, fans, sub-genres, canons, etc.), Grant Davis (who reappears in Chapter 5) told me there are probably twenty VJs in the U.S. making a living as VJs. He continues, "The name of the VJ is still kind of low in the art world. I think museums want a very specific artist that has a name as a video artist with all that background. I see a lot of crap that goes into these museums, and it's all in their writing and theory and academic, and all that other stuff."

Fig. 7 Polyamorous Affair (upstage, on the left), DJ Mr. White (downstage), and VJ Mr. Cocoon (upstage, on the right), VJ-DJ performance at Avalon, Los Angeles. Photograph by Leo Cardoso.

Music visualizer

Music visualizers have been around computer technology since the first media players. Having a visual plug-in translating sound signals to visual abstraction gave a sense of 'digital' cutting edge technology when compared to the LED-based visual

stimuli of the early stereo equipments. In the 2000s a few computer programmers would start to further explore the artistic potential of a preprogrammed visual response to the music played. If many visual music members consider VJ-DJ technoculture of bad taste because of the seemingly random connection between sound and image, they are even more critical about music visualizers' 'mechanized' translation of sound data into visual data.

Stefanie Ku, who has been developing a music vizualizer based on cymatics,[149] states that "Visualizers are tabu for a lot of artists, because they are not made by artists; they just dismiss because [visualizers] are not that developed yet. I think if artists can team up with engineers, or if one person is very well versed in music as well as visual art, and know how to write the program, you can have a really great visualizer." One major surge in this technoculture was *G-Force*, a music visualizer created in 2000 by West Coast-based computer engineer/clubber Andy O'Meara. The software was made available to major computer music players (*iTunes*, *Winamp*, and *Windows Media Player*) and was responsible for the idea of visual 'coolness' in the domestic environment. For instance, in an interesting case of media migration, *SoundSpectrum* – the company that commercializes *G-Force* and other visualizers – has recently released a DVD with *G-Force* visualizations of Jazz for TV sets.

[149] Cymatics is the study of sound made visible by the use of particles, paste, or liquids that are arranged according to the sound wave vibrated, usually on a surface.

Fig. 8. SoundSpectrum, *G-Force Music in Motion DVD* [online advertising]. (c) 2010 SoundSpectrum, Inc. *Source*: http://www.soundspectrum.com/products/jazzdvd.html (accessed February 19, 2010).

	Narrativity	**Performance**	**Audio-visual source**	**Perceiver's experience**
Programming	Linear/non-linear	Pre-composed/ Real-time	Computer-generated (code-based)	Embodied/ disembodied
Computer graphics	Linear	Pre-composed	Computer-generated visuals; computer-generated/external sound	Embodied (as audience)
Intermedia	Non-linear	Pre-composed	Computer-generated/ external audio-visual material	Disembodied (as audience)
Music Visualizer	Non-Linear	Real-time	Computer-generated	Embodied
VJ-DJ	Non-linear	Real-time	Computer-generated/ digitized material	Embodied (as dancer/ audience)

Table 1: Comparison between different computer visual music technocultures, in terms of composition,

The table above is a first attempt to distinguish the different types of computer visual music technoculture I have encountered. By 'narrativity' I mean the way the piece is usually performed (based on the producer's intention), and what kind of interpretation I believe the event's structure allows. Audiovisual source is reduced here to two possibilities: things that are generated on the computer, with no or little material being produced/registered outside the computer; and things registered and digitized on the computer. The notion of embodied or disembodied visual music experience is based especially on how the relationship internal event-external event is established from the perceiver's point of view. For instance, a VJ-DJ performance tends to be experienced as embodied in that it doesn't disrupt the presence of the observer, whereas an intermedia performance tends to immerse the observer to the point that his/her own body is relatively effaced. However, the embodied experience in a VJ-DJ performance usually involves dancing (the synchronization of audiovisual rhythm with body movement), whereas the embodied experience of a computer animation event is more similar to a film screening, with seated audience and framed audiovisual presentation.

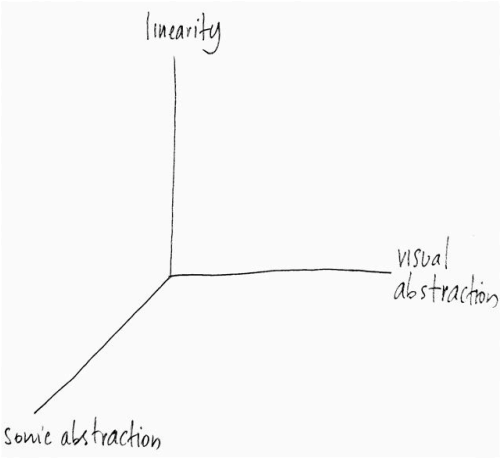

Fig 9. Three-dimensional diagram with main aspects that permeate visual music evaluation.

By observing these visual music technocultures, we can see that aesthetic principles related to sonic and visual content are based mainly in the idea of non-familiarity with three elements: visual abstraction, sonic abstraction, and structural abstraction (linearity). Thus, the second analytical attempt to understand visual music aesthetics considers visual music as the assemblage of these audiovisual aspects. Considering the three-dimensional diagram above, the more distant two pieces of visual music are in the diagram (linearity/sonic abstraction/visual abstraction), the more distant they tend to be in terms of aesthetic principles and more disagreements one can hear from the creators of the two pieces.

Audio-visual synchronization

> As most beginning film students discover, music generally has a "beat" that can be counted mathematically, and since many pieces of music share the same general rhythm, you can couple to a given film various musical selections which not only "fit" to the film but also - according to whether the music has a jolly, sensuous or ominous mood – completely dominate and control the film, giving the impression that the visual imagery has changed to express the various moods. Too much of what passes for Visual Music relies on just such false synchronization.
>
> – William Moritz

A third analytical attempt takes into account how the abstract elements considered in previous sections are put together in different types of synchronization. To go back to all the technocultures presented so far, I want to briefly present the history of audiovisual synchronization in the 20th century. I conclude by suggesting a few types of audio-visual synchronization in visual music.

The first broadly commercialized attempt of audiovisual synchronization in cinema was the Vitaphone (purchased by Warner Bros. in 1925), in which a synchronized sound was played separately on phonograph discs. In the Vitaphone system, both the phonograph and the film projection were connected through a mechanical device; the projectionist had only to make sure that the marked points on film and phonograph were aligned. Around 1930 audiovisual synchronization was made possible through optical recording technology that "translated sound waves via the microphone and photosensitive selenium cell into patterns of light that were captured photochemically as tiny graphic traces on a small strip that ran parallel to the celluloid film images."[150] Also, the Moviola equipment, which allowed image and sound to run in parallel, and the blooping process (use of diamond-shaped blobs to smooth out the noise of sound film cuts), further simplified the editing and synching processes. By the mid-1930s, "several independent tracks were used for the separate recording of dialogue, music and sound effects."[151]

If early abstract films such as Walter Ruttmann's *Lichtspiel Opus 1* (1921), Hans Richter's *Orchestration of Color* (1923), and Viking Eggeling's *Symphonie Diagonale* (1921), were either performed with live music or without musical accompaniment, films created a few years later through the optical recording allowed complete control of audiovisual synchronization. The possibilities of using visual patterns (photographed or directly drawn) as sound waves on film were explored across Europe and America: Rudolph Pfenninger, Oskar Fischinger, Rouben Mamoulian, László Moholy-Nagy, Evelyn Lambert, Norman McLaren, Jack Ellit, the Whitney brothers, Arseni Avraamov

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[150] Thomas Levin, "'Tones from out of Nowhere': Rudolph Pfenninger and the Archeology of Synthetic Sound," *Grey Room* 12 (Summer 2003): 34.

[151] Mervyn Cooke, *Film Music* (Cambridge: Cambridge University Press, 2008), 56.

and N. V. Voinov, are among the pioneers of sound animation. The advent of synchronized film sound was not assimilated without debate concerning its efficacy within the visual narrative. Not surprisingly, the idea of parallel sensorial activity and 'smooth' audio-visual discourse was strongly opposed by the Russian group of avant-garde filmmakers who had established a theory of dialectic montage. Sergei Eisenstein, Vsevolod Pudovkin, and Griori Alexandroc defended the use of audio-visual counterpoint: "The first experiments in sound must aim at a sharp discord with the visual images." [152]

During this transitional period, in which filmmakers were still establishing conventions in terms of balance between dialogue and musical accompaniment, 'synchronous' was understood mainly as diagetic sound, opposed to the use of live music or entirely musical recordings in which the diegetic sound source was not explicit. For the film critic Paul Thota, "All non-source music is an artificial aid to stimulate the emotions of the audience and not an integral and valid part of the film aesthetic." [153] Thus, beginning at the early 1930s, with visual music on sound film, we arrive at the crossroads of a series of aesthetic, technological, and commercial debates, not to mention the increasingly tense pre-II World War context. It is not hard to understand why film animators, who could create visually attractive and personalized moving images, where quickly integrated into the film advertising industry. In the 1930s, as today, advertising agencies would keep their eyes open to technological experiments that could single out their products.

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[152] Quoted in Ibid., 44.

[153] Quoted in Ibid., 56.

As Moritz states considering Fischinger's success as one of the first internationally recognized graphic designers on film, [154]

> He became involved with tight synchronization partly because of his commercial ties with record advertising and partly because he found that audiences would more easily accept abstract visual art if it were linked to known music […] they already approved of. After the international success of Fischinger's synchronized films, producers, distributors, and audiences demanded more.[155]

Michel Chion has also considered synchronization as a major event in audiovisual history: "For the first spectators of sound film, synchronism was a marvelous phenomenon. […] The synchronous union of sound and image […] incited a strong desire that might be compared to a string quartet's pursuit of perfect ensemble playing." [156] Before considering some types of visual music, I first consider synchronization as an audiovisual phenomenon.

According to Gombrich's biological premise, "An organism to survive must be equipped to solve two basic problems [:] it must be able to answer the questions 'what?' and 'where?'" [157] Rick Altman has followed this premise and challenged the accepted theory of sound as an intensifier of the visual discourse (and hence subordinated to it). From him, "The sound track is a ventriloquist who, by moving his dummy (the image) in time with the words he secretly speaks, creates the illusion that the words are produced

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[154] These filmmakers also explored the idea of *ornament* (discussed above as one of the fields that anticipated discussions on abstraction). Again, ornaments should not be understood in this context as signs of a 'commodified,' 'hollow,' or 'non-artistic' attitude, but as the search for basic patterns. For instance, in his exploration of sound ornaments, Fischinger would promote the idea that each sound has its specific pattern in nature.

[155] William Moritz, "Visual Music and Film-As-Art Before 1950": 229.

[156] Michel Chion, *Film, a Sound Art*, 37.

[157] Ernst Gombrich, *The Sense of Order*, 1.

by the dummy/image whereas in fact the dummy/image is actually created in order to disguise the source of the sound."[158] While I agree with Altman that because of its synchronization with images, film sound becomes effective by 'disguising' its own source, the argument takes for granted a dichotomy between sound and image in which the sound production always implies the search of its source. Perhaps the confusion arises because Altman equates sound track with dialogue. We could equally agree that image 'uses' the dummy/sound track to create a spatial relationship with the audience that would 'disguise' the 'artificiality' of the flat screen.

Rather, it seems that "neither track accompanies the other, neither track is redundant; […] this arrangement so suits both tracks that they studiedly perpetuate the myth of cinema's unity […]," [159] as Altman recognizes in the conclusion of the same article. Similarly, Chion has described the relation between sound and image as the 'vertical' interplay of the Kuleshov effect[160] "through the projection of one element onto another simultaneously." [161] If we tend to give special importance to the points of synchronization in film, this is because we have learned to subsume asynchrony either as noise or as irrelevant. As Semir Zeki has argued, perception is a conscious event. In film,

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[158] Rick Altman, "Moving Lips: Cinema as Ventriloquism," *Yale French Studies*, no. 60 (1980): 67.

[159] Ibid., 79.

[160] "Kuleshov edited together a short film in which a shot of the expressionless face of Tsarist matinee idol Ivan Mozzhukhin was alternated with various other shots (a plate of soup, a girl, a little girl's coffin). The film was shown to an audience who believed that the expression on Mozzhukhin's face was different each time he appeared, depending on whether he was "looking at" the plate of soup, the girl, or the coffin, showing an expression of hunger, desire or grief respectively." *Wikipedia*, s.v. "Kuleshov Effect," http://en.wikipedia.org/wiki/Kuleshov_Effect (accessed December 7, 2009).

[161] Michel Chion, *Film, a Sound* Art, 231.

"synch points are defined as particularly salient and meaningful moments."[162] Both Altman and Chion stress that in the interplay of audio and visual elements (that gain relevance in so far as they are being perceived as synchronous) the audiovisual event is perceived as a unity because it conceals any idea of disjoined sensorial stimuli embedded in its technology. Thus, "We have no way of knowing what we would actually understand and feel if we experienced these channels as separate entities."[163]

Synchronization and types of visual music

In this last section I briefly discuss audiovisual synchronization as a crucial component in the perception of visual music works. I approach these works by questioning what kind of audio-visual synchronization they establish. Synchronization of course is not sufficient to understand how one might experience visual music, but should be understood in relation to abstract imagery (including shape, movement, use of color, form) and sound (such as timbre, structure, pitch, rhythm, and sense of predictability).

The important aspect in visual music is that, whereas in linear anthropomorphic narrative film with dialogue the visual and auditory interpretation tends to rely either on verbalized discourse and familiarity with the combined symbols, here the audio-visual relationship is established in non-figurative terms. As I have shown, the premise of abstractionism is precisely to allow the individual to engage with the abstract work as a universe in itself. The reason why synchronization assumes a significant role in the relationship between abstract moving images and sound is the lack of external visual

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[162] Ibid., 268.

[163] Ibid., 217.

reference (which usually determines the hierarchical organization of what we watch), so that the points of synchronization are one of the main sources of interpreting the experience (or experiencing the interpretation). Jordan Belson expects people to approach his abstract films accordingly: "I don't want there to be *any* ideas connected to my images, and if there *are* any there, if anybody sees any, those are entirely in the eyes of the beholder… Actually, the films are not meant to be explained, analyzed, or understood. They are more experiential, more like listening to music." [164]

Another interesting aspect when dealing with the visual music discussed here is that images in movement generate different physiological responses to other components, such as color and shape. Vision *itself* is not a synchronous faculty: "[…] Recent experiments that have measured the *relative* times that it takes to perceive color, form and motion show that these three attributes are not perceived at the same time, that color is perceived before form which is perceived before motion […]." [165] Listening is not different: while sounds interpreted as speech are processed in the left hemisphere, instrumental music is perceived elsewhere. According to Annabel Cohen, the human brain confers "a left-ear (right hemisphere) advantage for musical information and a right-ear (left hemisphere) advantage for verbal information." [166] Both sound film and the brain that experiences it operate by *synchronizing* auditory and visual events; the difference is that the brain further breaks these events down into certain parameters. As

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[164] Quoted in Kerry Brougher, "Visual-Music Culture," in *Visual Music: Synaesthesia in Art and Music Since 1900*, 148.

[165] Semir Zeki, *Inner Vision: An Exploration of Art and the Brain* (Oxford: Oxford University Press, 1999), 66.

[166] Annabel Cohen, "Perspectives from Cognitive Psychology," in *Music and Cinema*, ed. James Buhler et al (Hanover: University Press of New England, 2000), 369.

Zeki argues, abstract artists were already probing into these parameters before they were scientific objects of inquiry. With that in mind, we can observe certain types of visual music according to their audio-visual synchronization. I have organized these types in chronological order, as they have represented certain tendencies in the field.

Choreographic visual music

This type of visual music includes works by Oskar Fischinger, Len Lye, Norman McClaren, and Barbel Neubauer. While there is a sense of direct interaction between sonic and visual events, the sound source is recognized as external to the images, thus creating the effect that the abstract visuals are 'dancing' to the image, a kind of audiovisual interpretation that is further encouraged when the music is already familiar. As was discussed above, film animation was established under this mode of synchronization.

In Oskar Fischinger's *Allegretto* [1936-43], for instance, the tonal structure of the jazz music informs the phrasal units of the abstract animation. There is an almost one-to-one relationship between sonic and rhythmic events. The visual composition, like the music, was skillfully orchestrated by Fischinger with "a background pattern of two overlapping concentric radiating circles, comet-like figures, sparkling and stretching diamonds, a row of teeth-like triangles gliding down one side of the frame like a liberated soundtrack […]." [167]

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[167] William Moritz, *Optical Poetry*, 229. In another worth-mentioning passage on synchronization, Moritz states that "Fischinger's tight synchronization to jazz in a film like *Allegretto* demonstrates that music demands more than just a thump-thump-thump rhythmic beat -- rather a complex, layered "symphony" of integrated parts, with rhythmic background, harmonic supports, melodic bravura solos -- and some overall integrity of color and form to suggest the structural dynamics of key signatures and development/resolution patterns in the music. William Moritz, "Visual Music: Cave Painting to MTV?": 132.

While artists like Fischinger became obsessed with the emulation of depth in his films, others followed McLaren's and Len Lye's bi-dimensional plasticity and experimentation with popular and 'ethnic' music.

Synergetic visual music

Here there is not a sense of which channel (to use Chion's terminology) is informing the other, but rather a direct (explicit) audio-visual synchronization. This happens because, unlike the choreographic visual music, both the sonic and the visual (especially sonic) elements are considerably 'abstract,' leaving the auditor-spectator with little external sense of reference. John and James Whitney's groundbreaking 1939 *Five Film Exercises* were based on the exploration of the interplay synthetic sound and abstract images.

Synergetic visual music has received special attention by digital visual artists and electronic music composers because of its potential to create a unified audio-visual experience in installations, where sound and video become further spatialized (audiovisual immersive art); and also because computer software and hardware have encouraged the conception of pieces with shared audio-visual inputs (e.g., algorithms). Curtis Roads and Brian O'Reilly's *Fluxon* [2003] and Scott Aford's works are insightful examples synergetic visual music in their use of fast-paced imagery without any sense of (expected) audio-visual rupture. Semiconductor's works are also a compelling example of synergetic visual music.

Disjoined visual music

During the 1950s and 1960s abstract visual artists would expand towards new forms of interaction with sound. The 1950s Vortex Concerts at the Planetarium, the projections along with jazz bands, light shows in rock'n roll performances, and the increasing activity of the American avant-garde film, would combine astronomy and space exploration, mysticism, drug use, and Eastern philosophy to create unique visual music experiences. The disjunction between sonic and visual stimuli is often related to the search for a trance-like experience.

In *Expanded Cinema*, Gene Youngblood has insightfully grasped the aesthetic tendency of the late 1960s experimental film scene: "Art, science, and metaphysics, separated for so long in the specialized world of Western man, are reconverging; the interface reveals a broader and deeper reality awaiting our investigation."[168] I find James Whitney's *Lapis* [1963-1966] one of the an interesting example disjoined visual music pieces.

Non-Narrative music video

Ever since MTV came on air, the field of visual music production would by perceived differently. Music videos, assimilating ideas from earlier visual music types, along with other avant-garde art elements (surrealism and pop art in special), forged a visual music experience that explored video editing and digital media.

Scott Pagano's *Parks on Fire* [2008], with its mixture of abstract and figurative, Sci-fi imagery and blurring between the machine and the organic, use of electronic beat,

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[168] Gene Youngblood, *Expanded Cinema*, 45.

diversified layers of synchronization (editing cuts, audio-visual distortion), bring us back to a notion of choreography. But here, it is less visual objects that dance to the soundtrack, but rather the non-narrative visual experience itself that propels the visual music.

In this chapter I moved across different media, visual, musical, and audiovisual trajectories in art. As I tried to show, the visual music technocultures I have presented can all be considered as visual music technocultures. Although one may argue that each practice is autonomous from the other, each of these affect how the other is perceived, especially by someone who is not familiar with the multiple technocultural nodes I have presented here.

Chapter 6 reopens some of the implications that these internal distinctions may have for the establishment of visual music as an art world. Whereas it seems safe to say that not every single technoculture may be articulated as an art world, I think the very discursively fragmented quality of visual music may offer interesting insights not only to think about experimental art, but also about fieldwork, urban ethnography, and social sciences. Moving towards that broader interpretation, in the next chapter I discuss the geocultural activity in Los Angeles, where I conducted fieldwork and collected most of the data used in my research.

Chapter 4: Mapping Los Angeles

map |map|
verb
• [trans.] associate (a group of elements or qualities) with an equivalent group, according to a particular formula or model
• [intrans.] be associated or linked to something

Fig. 10. Automotive-rhizome, August 2009. Los Angeles as seen from the dirty window of the author's car. Photograph by Leo Cardoso.

> I would follow the landscape associating it to the music; not to a specific music, but to music in general. It's something that happens: by not *hearing* what was around me but *seeing* the landscape stream through the window while *listening* to music, I would read the rhythms in the small valleys, in the changes of light […]. I discovered a way of 'reading' music in space […]. Indeed, I made my own screen [italics and translation mine].[169]

[169] Antoine Hennion, "Reflexividades: a atividade do amador," (paper presented at the lecture on the Pragmatics of Taste, Porto Alegre, RS, Brazil, October 20, 2006).

The musicalization of the visual stimulus suggested by Ahmed refers to his audiovisual experience on the train. It gives a compelling expression of the urban environment and the subjective projection of *audiovisual-scapes*, these mental 'music videos' constructed from the synchronization of sounds and moving images.[170] Slightly more pessimistic than Achmed's music videos, Michel de Certeau suggests in his short essay "Railway Navigation and Incarceration" not the musicalization of the visual stimuli outside the train-machine, but the dreamlike quality of the silence and distance projected inside the train: "[…] it is the silence of these things put at distance, behind the windowpane, which, from a great distance, makes our memories speaks or draws out of the shadows the dreams of our secrets." [171]

A place changes completely depending on how you access and navigate through it. The argument is not particularly new: de Certeau has talked about the practice of navigating in the city as acts of spatial appropriation and re-inscription. Similarly, Jonathan Raban observes the city from two angles, 'hard' and 'soft.'[172] While the former sees nothing but those pieces of stone, metal, glass, and wood that surround and contain us the urbanites, the latter represents the individual interpretation of that space. For Raban, the city is a space that "awaits the imprint of an identity. For better of worse, it invites you to remake it, to conciliate it into a shape you can live in. You, too, decide who

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[170] In the same vein, Shuhei Hosokawa talks about the walkman and the creation of 'secret theaters': "Through the walkman […] the body is opened; it is put into the process of the aestheticization, the theatricalization of the urban – but in secret." Shuhei Hosokawa, "The Walkman Effect," *Popular Music* 4 (1984): 176-77.

[171] Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984), 112.

[172] Jonathan Raban, *Soft City* (New York: E. P. Dutton, 1974).

you are, and the city will again assume a fixed form around you. Decide what it is, and your own identity will be revealed." [173] For a newcomer in Los Angeles like me it was just a matter of time for the city to 'go soft.'

During my short stay in Los Angeles I came to associate moving in space with becoming part of an automotive-rhizome through which I could go from one event to another. I have always disliked being inside a car, not much because I'm afraid of hitting or being hit, but because my body refuses to adapt to the car's anatomy, because I have an awful sense of direction, and because I miss opportunities of interacting with people and things on a more detailed level – especially if I drive alone, is it was the case.[174] In no period of my life have I driven more than during my fieldwork, and indeed the picture above illustrates a representative landscape of my fieldwork.

While going to a meeting, a screening, or other events, I started to develop a way of reasoning directly related to driving. As Reyner Banham would argue more than 30 years ago in his influential book about Los Angeles, "The freeway system in its totality is now a single comprehensible place, a coherent state of mind, a complete way of life." [175] I felt the sense of distance and silence/music mentioned by Achmed and de Certeau. Long periods of driving often led me to unmapped psychological zones, where I played with time and space by imagining the final destination in all its details, including conversations

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[173] Quoted in Michael Dear and Steven Flusty, "Postmodern Urbanism," *Annal of the Association of American Geographers* 88, no. 1 (March 1998): 53.

[174] For an interesting discussion about minorities and public transportation in Los Angeles, see George Lipsitz, "Learning from Los Angeles: Another One Rides the Bus," *American Quarterly* 56, no. 3, (2004): 511-529.

[175] Reyner Banham, *Los Angeles: The Architecture of Four Ecologies* (Harmondsworth: Penguin Books, 1973), 213.

with collaborators. Everything had to be planned to minimize the risks of delay and U-turns. My car became the point from which I observed and conducted fieldwork, a machine mediating the points of view I constructed about the many cities discovered inside Los Angeles. And it all passed so fast.

This chapter is going to map Los Angeles from multiple points of view. It starts with more panoramic ideas about life in the urban environment, and then further localizes L.A. in relation to visual music production on the institutional level. I argue that, although costs for creating digital art have lowered in the past 20 years, Los Angeles as a media city offers unique possibilities for accessing specialized knowledge about high technology art. Although the city's hegemonic entertainment business has mostly either neglected experimental artists or used their artistic ideas as components of cultural products (e.g., special effects), Los Angeles is a central node for visual music members. By presenting some individual trajectories in the city and examining how they establish geocultural distinctions with other metropolises, I link urban theory with ethnographic material – the city as a process with the city as I found it.

Urban Theory and Los Angeles, Urban Theory in Los Angeles

The metropolis is the ultimate node of an increasingly branched and condensed circulation of things. In "Walking in the City," De Certeau considers the urbanist discourse as threefold: as the production of a *espace propre* (its own space), as the presence of a no-when (the flattening out of data in a projected plane) in lieu of resistant traditions spontaneously articulated, and as the creation of an anonymous and universal subject – the city itself. However, this panoptical project is not flawless, and de Certeau

advances some notions about strategies and tactics surrounding urban semantic battles in the practice of everyday life. Accordingly, capitalism, bureaucratization, and sensorial hyper-stimulation do not happen in a vacuum, but rather within the urban environment, which is 'urban' precisely because of the combination of these practices. For Weber, Simmel, Benjamin, and Baudrillard, among others, machinery exists both in and as the metropolis. This is the frame in which I propose to discuss visual music and its related technocultures.

Perhaps the most influential text about the urban space as modernity, coming from the (somewhat loose) association of German urban theorists at the beginning of the 20th century, is Georg Simmel's 1903 essay "The Metropolis and Mental Life." In this article Simmel argues that the hyper-stimulation experienced in the metropolis – "The rapid crowding of changing images, the sharp discontinuity in the grasp of a single glance, and the unexpectedness of onrushing impressions" [176] – has transformed our psychic life in a rather drastic way. Instead of seeing the production of this new individuality in the city necessarily as a denigration of our psychic condition, Simmel considers this mental life as a space to more freely construct and express our subjectivities. As our organs have changed to cope with the urban rhythm and its money economy,[177] the city life allows us to expand our psyche beyond the visible, to an introspective, rewarding, and

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[176] Georg Simmel, "The Metropolis and Mental Life," in *Classic Essays on The Culture of Cities*, ed. Richard Sennett (New York: Appleton-Century-Crofts, 1969), 48.

[177] This idea clearly resonates with Weber's arguments on the emergence of rationalization and the spirit of capitalism.

differentiated state of mind.[178] The city is the place in which we choose to become somebody - where identities are forged by our own will.

The ethnographic approach of Simmel, along with those of Benjamin and Kracauer, can connected to the emergence of the Chicago School, a sociological approach to the city life established in the 1920s and 1930s. One of its leading figures, Robert Park, attended Simmel's lectures during his doctoral studies in Germany. But whereas Simmel considered the city as a self-enclosed object with specific physiological, psychological, and economic features, scholars from the Chicago School rather "asked questions about the internal character of the city, about how the different parts of the city functioned in relation to each other, about the different kinds of experience to be had within the same city at the same point in time."[179]

Like Simmel, Park considers the city as a unique space to exercise freedom-as-individuality. However, if for Simmel the mental life in the city is internal and contemplative, for Park the city is a space for innovation, where people (in de Certeau's formulation) are apt to inscribe multiple individual tactics.[180] The metropolis for Park is centered mainly on professional and vocational associations; it is a nodal point where individuals can find "the moral climate in which [their] peculiar nature obtains the stimulations that bring [their] innate dispositions to full and free expressions."[181] Already

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[178] As Simmel puts it, "That we follow the laws of our own nature – and this after all is freedom – becomes obvious and convincing only if the expressions of this nature differ from the expressions of other." Georg Simmel, "The Metropolis and Mental Life," 56-57.

[179] Richard Sennett, "An Introduction," in *Classic Essays on the Culture of Cities*, 12.

[180] "The freedom Park envisioned was *behavioral*, and involved the capacity of men to express themselves through acts unlike, and unrestrained by, the community as a whole." Ibid., 16.

[181] Robert Park, "The City: Suggestions for the Investigation of Human Behavior," in *Classic Essays on the Culture of Cities*, 126.

in 1916 Park urged anthropologists to conduct urban ethnographies,[182] and suggested that the press would increasingly become the main mediator of public opinion in urban life – an argument Benedict Anderson would also make some 70 years later.[183]

E.W. Burgess, another exponent of the Chicago School, proposed the now famous ecological interpretation of the city. The approach was based "on assumptions that included a uniform land surface, universal access to a single-centered city, free competition for space, and the notion that development would take place outward from a central core" [184] By analyzing the spatial disposition of certain communities, and by observing the process of urbanization in Chicago, Burgess proposed the concentric zone model. He used concepts of *invasion, succession,* and *segregation* to explain how and why urban zones tended to move outwards from a central point. If the idea seems to fit Chicago's processes of urbanization, segregation, and gentrification, its generalization seems more problematic. Things have worked differently in other metropolises, and Los Angeles is perhaps the best counterexample.

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[182] "We need such studies, if for no other reason than to enable us to read the newspapers intelligently. The reason that the daily chronicle of the newspaper is so shocking, and at the same time so fascinating, to the average reader is because the average reader knows so little about the life of which the newspaper is the record." Ibid., 93.

[183] Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 1983).

[184] Dear and Flusty, "Postmodern Urbanism," 51.

Los Angeles,[185] the second largest city of the United States, the media city that in the last 150 years has mushroomed through impressive demographic surges,[186] is the place where I conducted my presentational fieldwork. In what follows I consider Los Angeles from the city's cultural geography, as it has been examined by urban theorists. I also continue to give space to my collaborators' voices, following their trajectories in the city and how they situate Los Angeles as a place for visual music production. I conclude by addressing the main institutions related to visual music.

The fact that California has become a powerful site of economic activity[187] was already noticed by Marx some 130 years ago.[188] Numerous social theorists have come into closer contact with California and experienced the power of its culture/entertainment industries. These industries have quickly become the central discursive node in the region, to the point that, as David James argues, they have "extended to the spheres of politics, sport, religion, and other distinct areas of public life, reconstructing them within its own values and priorities, commodifying what once were popular activities and turning them, too, into entertainment." [189] One of these theorists was Theodor Adorno, the

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[185] By Los Angeles I mean Greater Los Angeles, which comprises all the five counties (Los Angeles County, Orange County, San Bernardino County, Riverside County and Ventura County).

[186] Edward Soja and Allen Scott consider five main periods of Los Angeles's fast demographic expansion: the 1880s, the 1900s (during the Progressive Era), the 1920s, the two decades following the end of World War II, and the 1980s. See Allen Scott and Edward Soja, "Introduction to Los Angeles: City and Region," in *The City: Los Angeles and Urban Theory at the End of The Twentieth Century* (Berkeley: University of California Press, 1996), 1-21.

[187] If it were a country, the region would be among the 10 richest.

[188] "Nowhere else has the upheaval most shamelessly caused by capitalist centralization taken place with such speed." Quoted in Edward Soja, Rebecca Morales, and Goetz Wolff, "Urban Structuring and Spatial Change in Los Angeles," *Economic Geography* 59, no. 2 (April 1983): 195.

[189] David E. James, "Introduction: The Sons and Daughters of Los," in *The Sons and Daughters of Los*, ed. David E. James (Philadelphia: Temple University Press, 2003), 6.

co-originator of the term 'culture industry' as it is most often used.[190] During his period in Los Angeles, Adorno became surrounded by the very industries he so vigorously attacked. In view of the hegemonic presence of Los Angeles-based cultural products, Adorno stated, "It is scarcely an exaggeration to say that any contemporary consciousness that has not appropriated the American experience, even if in opposition, has something reactionary about it."[191]

Jean Baudrillard took Los Angeles-based Disneyland both as a metonym for American culture and as the perfect example of a hyperreality that converted its surroundings to mere reality – as the imaginary space that not only opposes, but produces reality. For Baudrillard, Disneyland and similar "imaginary stations" made Los Angeles a city without dimension, a network made of "childhood signals and faked phantasms."[192] As the argument goes, by integrating the cultural industries' modus operandi, Los Angeles has become a desert crowded with signs that always point to something that is not there. This non-dimensionality of space resonates with the idea of immobility within Los Angeles's public sphere. For instance, in the last 20 years Los Angeles scholar Mike Davis has been investigating "the control of media, seizure of land, busting of unions,

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[190] Although I take the term as part of the common sense, a quote from Adorno and Max Horkheimer should be enough to situate the reader: "The ruthless unity in the culture industry is evidence of what will happen in politics. Marked differentiations such as those of A and B films, or of stories in magazines in different price ranges, depend not so much on subject matter as on classifying, organizing, and labeling consumers. Something is provided for all so that none may scape; the distinctions are emphasized and extended. The public is catered for with a hierarchical range of mass-produced products of varying quality, thus advancing the rule of complete quantification. Everybody must behave (as if spontaneously) in accordance with his previously determined and indexed level, and choose the category of mass product turned out for this type." Theodor Adorno and Max Horkheimer, *Dialectic of Enlightenment* (New York: The Seabury Press, 1972), 122-23.

[191] Quoted in Nico Israel, "Damage Control: Adorno, Los Angeles, and the Dislocation of Culture," *The Yale Journal of Criticism* 10, no. 1, (1997): 86.

[192] Jean Baudrillard, *Simulacra and Simulation* (Ann Arbor: University of Michigan Press, 1994), 13.

rigging of water rights, and exclusion of minorities from political participation, all of which has resulted in the destruction of public space."[193]

Los Angeles has a reputation in other fields besides Hollywood. Since the early 20th century the region is famous for headquartering astronomy research and aircraft manufacturing, activities that have attracted huge amounts of private and public investments. At Mount Wilson, an astronomic observatory was built in 1904. Thanks to its steadier air, Mount Wilson was considered the best place in the country for astronomical interferometry; using the now famous Hooker telescope, Edwin Hubble showed from the Mount Wilson Observatory that the universe is in fact expanding.

A few miles southwest from Mount Wilson, in Pasadena, a businessman created the California Institute of Technology (Caltech) in 1891. CalTech scientists have helped to develop the instruments for space probing and for military machinery (the two practices usually go hand in hand). For instance, in the 1930s Fritz Zwicky proposed revolutionary theories on dark matter and supernovae; a few years later, Richard Chace Tolman, another faculty member and one of Albert Einstein's friends, served as scientific advisor on the Manhattan Project. Today the institution relies on impressive yearly endowments of US $1,5 billion. With the creation of the Jet Propulsion Laboratory (JPL) in1936,[194] CalTech has also been prominent in rocket science.[195] At JPL scientists

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[193] Setha M. Low, "The Anthropology of Cities: Imagining and Theorizing the City," *Annual Review of Anthropology* 25 (1996): 397.

[194] *Leonardo*'s founder Frank Malina worked for several years at JPL.

[195] A digression: I have come across the relationship between science and spiritualism in CalTech's history. John Parsons, the rocket pioneer who worked at CalTech and founded JPL, was also member of a brotherhood of magicians in California. In one of the meetings of the Science Fiction Society, Parsons met L. Ron Hubbard (a former marine), who would later incorporate) Parson's lessons and found Scientology in 1953. See Mike Davis, *City of Quartz: Excavating the Future in Los Angeles* (London: Verso, 2006), 58-60.

develop most of NASA's probes and war technology like the JATO rockets, MGM-5 Corporeal, and the Loki anti-aircraft missile system.

Also at JPL, Larry Cuba, at the time a CalArts student, had the rare opportunity to access computers to create of digital art:

> There was some professor at CalArts who made some connection with the Jet Propulsion Lab in Pasadena, and it was for computer poetry or some other thing that worked more into verbal and narrative forms. They had established the connection, and I followed up on that. What we had was a system that we could program in FORTRAN, which is a really arcane language [laughs], but that was at the state of the art at the time; and any access was better than nothing.

Already before the end of the Cold war, in the late 1980s, much of the aircraft production and high tech jobs in greater Los Angeles started to dim. Similar to other moments of economic crises, Los Angeles re-orchestrated its myriad of techno-economic-scapes and invested heavier in those that appeared be more profitable. As Soja et al argue,

> Since the 1960s, Los Angeles has shifted from being a highly specialized industrial center focussed on aircraft production to a more diversified and decentralized industrial/financial metropolis. This shift has been the product of a combination and complex linking together of several different patterns of restructuring which exist individually in other major regions but appear as an integrated ensemble in Los Angeles to a degree that is perhaps unmatched anywhere else in the U.S.[196]

The notion of Los Angeles as a 'fragmented metropolis' is already a common sense among geographers, urban theorists, and architects. Unlike most modern cities, which were organized according to vertical and centralized material distribution and circulation, Los Angeles developed "as an agglomeration of separate communities dispersed across the desert plains between the San Gabriel Mountains and the Pacific

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[196] Edward Soja et al., "Urban Structuring and Spatial Change in Los Angeles": 211.

Ocean." [197] The city has become the emblem of 'postmodern' city especially in relation to its multifaceted spaces and its distinct demographic cultural pockets. As David James argues, "In Los Angeles, culture and geography are reciprocal: the social tensions of cultural marginality are isomorphic with the city's spatiality." [198]

Contrary to many urbanists who have discredited Los Angeles as a cultural desert, a place where everything is quickly sucked into the city's cultural machines, Reyner Banham offered in the 1970s what is seen as "a turning-point in the valuation of the city by the international intelligentsia." [199] In *Los Angeles: The Architecture of Four Ecologies*, he suggests not one, but four different cultural spaces in the city: 'surfurbia' (the beach cities), 'the foothills,' (Hollywood and everything the term implies), 'the plains of Id' (the central flatlands), and 'autopia' (the freeway system). In his view, Los Angeles was "the city of movement, not monument." [200]

It doesn't take much long to realize that L.A. defies the Chicago School approach of concentric circles, in takes urbanization as a process that spreads outwards from a single center. As Dear and Flusty assert, in Los Angeles it is the periphery that organizes the center. One of the members of the Los Angeles School, Edward Soja proposes the concept *Thirdspace*, which establishes the "awareness of the simultaneity and interwoven complexity of the social, the historical, and the spatial, their inseparability and

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[197] David James, *The Sons and Daughters of Los*, 4.

[198] Ibid., 6.

[199] Mike Davis, *The City of Quartz*, 74.

[200] For an interesting historical and ethnographic view of Los Angeles, see Benham's documentary *Reyner Benham Loves Los Angeles*, http://video.google.com/videoplay?docid=1524953392810656786# (accessed March 15, 2010).

interdependence." [201] Somewhat in line with Debord, *thirdspace* attempts to re-articulate and transcend postmodern ideas about real and imagined spaces; and, somewhat in line with Baudrillard, Soja defines Los Angeles as the 'exopolis,' as the "city without."

Federic Jameson also talks about Los Angeles as a space in which postmodern spaces have been constructed. In "Postmodernism, or The Logical of Late Capitalism," Jameson examines Bonaventure Hotel (situated in Downtown Los Angeles) and argues that the evolution of space into hyperspace has yet to forge a new subject – as most urban theorists, he is following Simmel's premises about the psychological/physiological implications of the change in the urban environment. Unlike buildings from high modernism, which have attempted to create Utopian spaces by distinguishing themselves from the rest of the cityscape, spaces like the Bonaventure Hotel "seek to speak [the cityscape's] very language." [202] Jameson's description of the Bonaventure Hotel further articulates the idea of fragmentation of the city space, in that the building itself "aspires to being a total space, a complete world, a kind of miniature city." [203] He continues: "To this new total space corresponds a new collective practice, a new mode in which individuals move and congregate, something like the practice of a new and historically original kind of hyper-crowd." [204]

Los Angeles-based film, music, and television industries are massive nodes of cultural production and circulation articulated through numerous organisms of promotion

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[201] Edward Soja, *Thirdspace* (Cambridge: Blackwell, 1996), 3.

[202] Fredric Jameson, *Postmodernism, or, The Cultural Logic of Late Capitalism* (Durham: Duke University Press, 1991), 39.

[203] Ibid., 40.

[204] Ibid. 40.

and representation.[205] There is no question that these cultural industries are pervasive in that they have helped to maintain a wide range of professional activities in the city. As David James asserts,

> It's a perennial situation for artists in Los Angeles, in fact for any kind of cultural workers. They are surrounded by Hollywood, and everybody has to negotiate some kind of resolution of that kind of tension. I'm sitting here, I'm an expert on avant-garde film, I'm a Marxist or a communist, and I'm sitting here in this office, which was paid for by Star Wars. This entire building was given to us by George Lucas; he gave 170 million dollars for this. So my entire life is being supported by George Lucas! Star Wars, which I totally despise! Everybody in LA is in some version of that situation.

Although it is undeniable that the corporative quality of Los Angeles's cultural industries is more evident now than in the past,[206] Allen Scott has argued that the cultural production of Los Angeles is also becoming increasingly fragmented. Following Piore and Sable's concept of 'flexible specialization,'[207] Scott has shown that the city has new more decentralized markets producing innovative ideas and products for specific cultural niches, including music for video game, software development, special effects studios, etc. The so-called vertical disintegration of entertainment industry is expected from its

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[205] These include the Academy of Motion Picture Arts and Sciences, the National Academy of Recording Arts and Sciences, the National Academy of Television Arts and Sciences, the Writer's Guild of America, the Screen Actors' Guild, the Director's Guild, the American Federation of Musicians, the American Federation of Television and Radio Artists, the International Alliance of Theatrical and Stage Employees, the School of Arts and Architecture, the School of Theatre, Film, and Television at UCLA, the School of Cinema-Television at the University of Southern California, the Otis College of Art and Design, the California Institute of the Arts, and the Los Angeles County High School for the Arts.

[206] See David James, *Sons and Daughters of Los*, 8.

[207] An example of this flexible specialization is the rap performance in Los Angeles. According to James, "It used to be that Hollywood never went into the ghetto into South Central, and if you lived in South Central in the fifties or the sixties, you were insulated from Hollywood. But now with the rap industry, the whole of South Central is a movie set. And everybody is thinking that they can escape the horrible squalor that they live in by becoming rap artists or entertainers in this sort of thing." David James, interview by author.

increasingly differentiated market. The map of audio-visual production below shows the flexible specialization in Los Angeles. The vertical disintegration varies according to the investment required to place competitive products in the market. Not surprisingly the number of cultural events in Los Angeles are directly related to what is produced locally, as Figures 11 and 12 show.

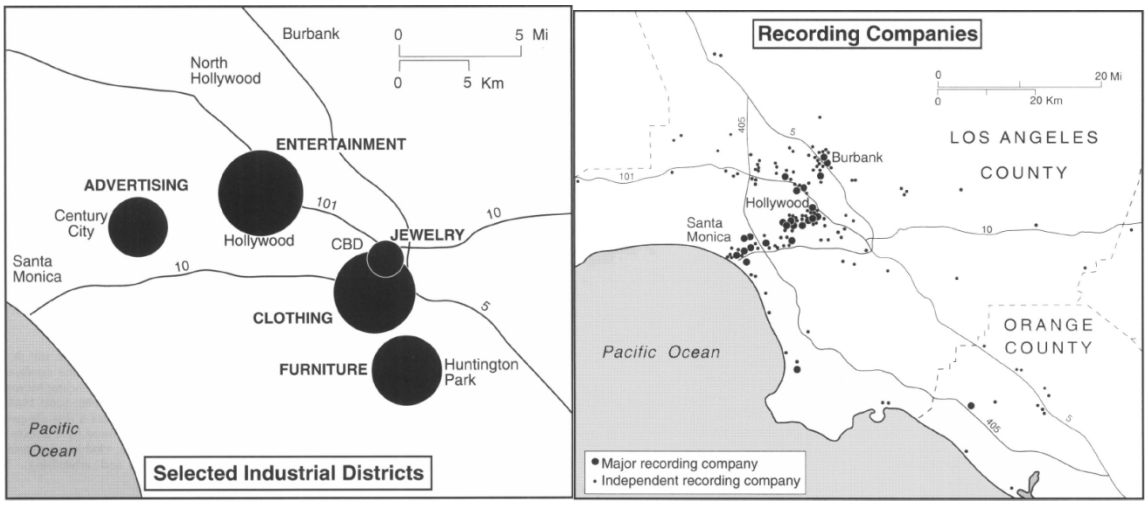

Fig. 11. Geography of cultural production in Los Angeles (early 1990s): spatial comparison between audiovisual and other taste-related industries, and recording companies. *Source*: Data from Scott 1996, figures 1 and 2.[208]

[208] Allen J. Scott, "The Craft, Fashion, and Cultural-Products Industries of Los Angeles: Competitive Dynamics and Policy Dilemmas in a Multisectoral Image-Producing Complex, *Annal of the Association of American Geographers* 86, no. 2 (Jun., 1996): 312-313.

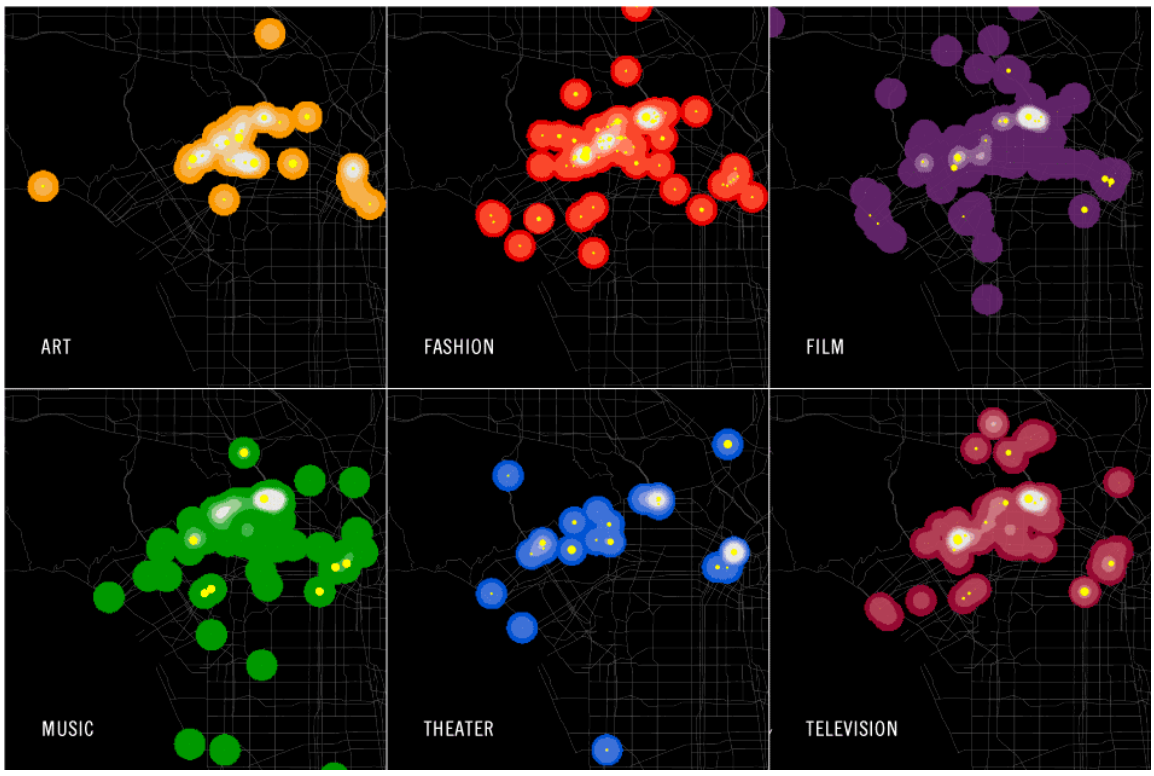

Fig. 12. Geography of cultural events in Los Angeles, 2006-2009. *Source*: Data from William and Currid "The Geography of Buzz," http://www.nytimes.com/2009/04/07/arts/design/07buzz.html (accessed March 13, 2010). As the maps illustrate, music and film lead the way of cultural activity. The area in the map covers Downtown L.A., Santa Monica, Culver City, Beverly Hills, and West Hollywood. Source: .

Most of my collaborators circulate or have circulated in these spaces of mainstream audiovisual production and performance, including film animation, special effects, photographic processing, sound recording, television programming, video production, film editing, and video game. Following Soja's suggestion that "increasingly unconventional modes of exploring Los Angeles are needed to make practical and theoretical sense of contemporary urban realities – and hyperrealities,"[209] I want to suggest some associations related to my fieldwork. I also want to question the belief that our computer age has made obsolete the 'actual location' in the field of high tech art. While accessibility to computers has indeed facilitated the creation of visual music

[209] Edward Soja, *Thirdspace*, 17.

almost anywhere, the use of high tech equipment and the development of skills to manipulate it and hence to create 'innovative' work still tend to exist near to the equipment's physical location. As Scott argues,

> Individuals positioned within such networks are especially well situated to take advantage of the available opportunities because they are more likely than others to have the requisite knowledge and ability to act. This kind of knowledge is often uncodified, existing as an "atmosphere" of agglomeration-specific information and accumulated experience.[210]

To illustrate the "atmosphere" of visual music production in L.A., I would like to follow my collaborators' activities. First, I look closer at the specificity of cultural production in the city by taking into account some of my collaborators' trajectories. Second, I assemble a few geocultural dichotomies in relation to the art production (more specifically visual music production) in Los Angeles and in the United States.

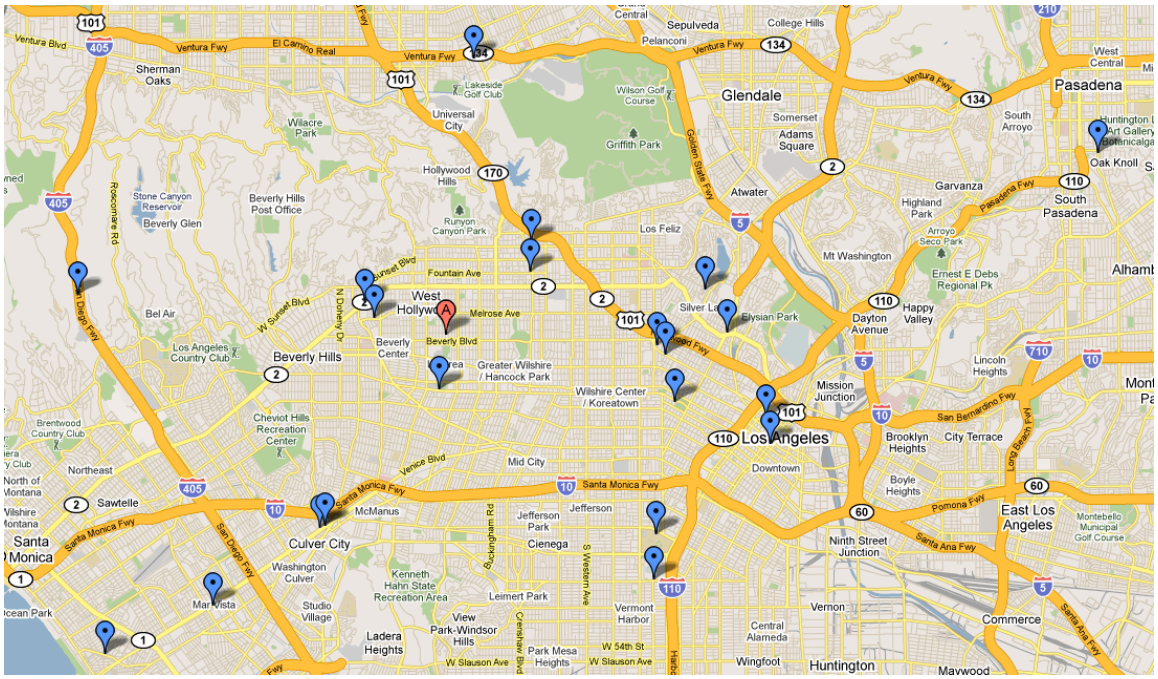

Fig. 13. Geographic fieldwork-rhizome, including West Hollywood, Pasadena, Culver City, Downtown L.A., and Santa Monica. The blue tacks mark places where I met people (either at their homes or some

[210] Allen J. Scott, "The Craft, Fashion, and Cultural-Products Industries of Los Angeles": 308.

Coffeehouse) and attended events; the red tack is where I lived (on North Curson Avenue, between West Hollywood and Los Angeles).

I – Personal Trajectories: creating visual music in Los Angeles

Michael Scroggins: bringing computer to the art school

> *In 1978 I was asked to take a part time position teaching the Basic Videographics course at* CalArts. *There I had access to videotape recorders and could occasionally take one home to my studio. I made a few recordings there but most of the work that I find most interesting from that period was done in the studios at* CalArts. *It was there that I began working with the old Cohu Electronics video switcher in the Video Studio to layer images in multiple wipes and keys. I had been very impressed with the work of James and John Whitney. I had also been impressed by the collaborations of Stan Vanderbeek and Ken Knowlton at* Bell Labs. *I was very interested in the analog computer work that Ed Emshwiller, Ron Hays, and others had been doing with Lee Harrison's Scanimate systems. Ed [Emshwiller] arranged for* CalArts *to purchase a Cubicomp and have it installed in a PC in the* CalArts *Library computer lab (which consisted of about 3 IBM's at that point).*

Larry Cuba: breaking through institutional boundaries

> *In high school I got interested in dramaturgy, and the connection between algebra and form. When I got to college I went to architecture. So my undergraduate was on architecture, it seemed like a logical combination of mathematical and technical skills and form generation. Then I got exposed to the films of Norman McLaren, Jordan Belson, and people like that, and I read about John Whitney's work with computer graphics, then I just sort of clicked, 'Oh yeah, this is the most direct application using algebra and math to generate forms; and the idea of experimental aspect, that you explore space and you don't know what you're going to see until you look it. Then I went to CalArts for my graduate work in film animation, and kind of delved into it. It was a little hard; this was the time*

where if you didn't have an institution that would sponsor you by giving computer access to the mainframe, there was no other way to doing it. John Whitney had made a couple of films already in the 60s, one through IBM *and UCLA, and then was at CalTech, and then he was at this place called* AAA *– they were a commercial company that manufactured computer equipment for both graphics and writing on to film, so they had the display and film recorded, that was their business. John had made some connection with the founder, a professor at CalTech, he was able to interest the guy in John's theories, digital harmony and all that.*

J-Walt: the emergence of a computer animation infrastructure

Computer animation really started to get big in the early '90s. But at this point ['80s] it was just a boutique kind of thing. There would be a company of maybe 20 people working on effects, and it was just effects, not the whole movie. But it was exciting at that time because in the whole field of computer animation there's a real excitement about the future, and about how the technology was going to progress – everybody knew it was going to, but people were excited about what the future would bring. People that were in animation were in because they loved it. And the same goes for experimental animation and character animation departments. So people that were there just loved it, and they didn't really care if there was much about carrier outside of it. They knew they wanted to do it and either express themselves in some way or get a job at Disney. The departments were small but the people were very interesting and very enthusiastic; there were a lot of different styles. It was a fun environment to be in, and I learned a lot more from all the students than the teachers really. But there I also started use computer for animation, and it was very limited the kinds of things you could do, so I taught myself programming.

Jennifer Steinkamp: dropping out of university and learning from the studios

In 1984 I took a course at CalTech *from a guy named Gene Youngblood, who wrote* Expanded Cinema. *I figured out that that was a direction I was interested in, and I joined this group called 'Visual Music Alliance.' We would have meetings like once a month or something.I was in my twenties, trying to figure out how people did it, so it was a way of learning. It took quite a few years before I did anything, because I was working making commercials and things. You learn a lot working in the studios. They get to create techniques that other people don't even know yet.* [Leo: Do you think 'mainstream' artists tend to lose control over their creation?]*You can lose control at any level; the intention of the art – you lose control of that. Sometimes is hard to know.*

I went to CalArts, dropped out; I went to Art Center, dropped out. And then I started teaching computer graphics and went back to school. Back then it was difficult, schools didn't really have computers, and people barely knew how to teach it anyways; and if you look at all the computer animation… Like, I went to a screening from back then; I couldn't believe how bad it was! It's a good think I was really young so I could look at it and not be critical about it. If I started now at that point, and looking at the crap they were creating…

Jeffers Egan: from Los Angeles show biz studios to Berlin computer art and back

Here the typical thing is you just go work in Hollywood to support yourself. You can make a lot of money doing that; and then in your free time you would do this other stuff. When I lived here I animated for a horrible television show, but I only would work a couple hours a day and I made a lot of money, you know. So I had a lot of free time, but I just decided in the end that I didn't want to do that anymore. It's a personal thing for me; I can't work in the industry. [Leo: Since Fischinger it seems to be like that…] *Yes, he gave up too; it drove him nuts. I've tried to do for as much as I could; I mean, I'm kind of stupid for giving up such a simple job that paid my so much, but it just wasn't satisfying. I stayed in*

Germany for a year and I came back to the States and started to work more intensively in this motion painting – it's how I call it. I felt I've done enough with music for the time being and I wanted to just to do something on my own – no collaboration. I've always had this idea of using the flat panels and canvas.

Last time I had a show in LA I was 21 or 22, and I hadn't have one since. I was in a group show, in a fine art context, and it's the same thing I do now and people wrote about it and loved it. But that's when I was in this art school trajectory, so people had to talk about me. Once I've made the decision to get outside and pursue this other experimental European scene that I personally found more interesting, I haven't been able to get back in to the scene.

Tyler Adams: creating sound and light art in Los Angeles

I did my undergraduate degree at CalArts; it is a program called 'Music Technology,' which is a small program inside the music school. That program had maybe under 20 students, it's kind of like media arts but more focused on music; it's computer music. It was pretty varied: some people were into 'academic' computer music, and some people were into popular, like electronic music. And you had the freedom to work with whatever you wanted. There wasn't much focus on visual music there at the time or even working with visuals. Like we would study Max/MSP *a bit, but spend no time with* Jitter *as far as I remember. I became more interested in music concrete too, which became more my style I guess.*

I like L.A., I think it's beautiful. I like the light, the weather… I think weather has a profound effect in artistic creation. It's just very beautiful in here; you can't help to be interested in. For instance, the light and space movement of the 1960s and 1970s: I don't think it could have happened anywhere else but here. What they were responding to is something that I respond to in terms of the quality of light, the atmosphere if being here as opposed to being East coast. There is a little bit more openness to things… the system here is not as rigid, or at least the thinking is not as rigid; there's not much history, what history is here it is forgotten.

Scott Pagano: navigating the industry

I do a lot of design work for broadcast, and film… It has been less that in the past, it's inconsistent; the economy here has definitely changed things. I've also made a commitment not to take a stable job doing that, because I need time to do all these different things. I've also put myself in a situation where it's just not the most stable work in the world. In 5 years I won't be doing that kind of work anymore.I'm more interested in being in a situation where I develop my own content, not where I'm essentially a service organization that creates imagery for other people's concept. Let's say that it's developing cinematic and gaming properties where I can be more on the idea and concept designs phase of things, and get outside funding to develop those projects, but where you actually own the core ideas. That's way more valuable, and that's where there's real potential.

Obviously there's a big entertainment industry here, which still fills some of my revenue stream. It's a good place to be an artist, although i don't really do anything related to my art here - i rarely do live shows here; i'm not represented by a gallery here, nor do i pursue that. I was in San Francisco for a couple of years before coming here, and that was great. I love San Francisco, I wanted to pursue design work in an area where maybe there's more of it, which is why I came down here - in order to try some other stuff out. Right now LA works, i don't see it as a permanent thing, but it works.

Jarrett Smith: into computer art business

I went to the University for Business, and in the last year of my bachelor's degree I took a Canadian film class. For whatever reason, the focus of the class was on (for the lack of a better word) visual music, or abstract animation, like Norman McLaren. So we studied a lot of that stuff, and I was fascinated by it; I was already playing with computer graphics.

When I graduated I decided to go to Sheridan for multimedia, which is a school in Toronto, pretty well known school for computer animation. I was fairly quickly disenchanted with it, and I ended up getting g a job inside the computer lab there, working on SGI computers, helping students, stuff like that. I met a

student there and he put me up with this company that needed help during SIGRAPH to cover the system administration of all the SGI systems, licensing software, and they gave me a job at Side Effects; that was in 96 or 97. Within a few months I had met Greg, who was the CEO, the owner of Side Effects, and he was working on lots of live performance visuals for electronic music events and stuff like that.

I came down here to support visual effects for film effects, and in parallel we were always dragging huge SGI systems with huge monitors to clubs and video mixing for live performance. L.A. is where Disney is. I deal mostly with film companies, theme park attractions, and all the hardware that you see here is for that stuff.

As we see, Los Angeles-based visual music members have followed two main professional paths: the 'industry' and the fine art world. These individuals are not necessarily enclosed within one field only, as the two fields are not always insulated from each other. Visual music offers a good angle to observe this gray area: for instance, often the instrument of visual music production and of special effects production are exactly the same, or often one becomes the other.

From these biographical snapshots it is possible to observe that (1) the so-called entertainment industry has several different threads ranging from 'commercial craft' to 'art' (this can also be observed within the Hollywood and record industry products, which range from 'bubblegum' to 'cult art'); (2) there are many ways to navigate through entertainment corporations, which doesn't mean that art world members will not stigmatize such engagements; (3) these visual music artists are not waiting for their art to be 'discovered,' but rather associating themselves with different fields and orchestrating different techniques. They are trying to forge a space to occupy (perhaps transcending

many cultural conventions of art evaluation) instead of accepting the marginality of their practice.

The concentration of hardware and software companies related to entertainment in Los Angeles implies faster circulation and higher amount of money invested in experimental technology, which implies a higher amount of ideas and concepts able to sell in such a competitive market. As Jeffers Egan puts it, "I think people in L.A. are very savvy because they're also very well informed from their jobs. A lot of them are very well connected with the technology, because that drives so much of the industry here. You might be able to go to your work and make something in film resolution just because they have a render farm." The circulation of innovative ideas necessitates the educational institutions on which entertainment companies can rely to perform technically creative and technologically innovative jobs.

Some collaborators also mention the relationship between Los Angeles's landscape and their artistic production, and this idea will be reinforced as we observe some geocultural dichotomies. Below I present the ways in which the geocultural specificity of Los Angeles was articulated: in comparison to San Francisco, to New York, and to Europe. As I am not dealing with biographical trajectories as much as with geocultural comparisons, I will make the quotes shorter to suggest more of a 'discursive polyphony.'

II – Geocultural dichotomies

Los Angeles vs. San Francisco

Stefanie Ku: *San Francisco has a longer history of intermedia arts and experimental things. It's overall a more creative city than L.A., and people are just more individual here, so there's a lot of free expression. San Francisco has a good mixture. There are experimental venues, and there are a lot of art galleries that are doing very good shows. There is a community here for abstract audiovisual works; it's tied into the much older and more established noise scene. There's also the technical community, like Silicon Valley is right down there.*

Scott Arford: *They are different in terms of the people, the physical morphology of the city – this is a really compact, dense city, L.A. is huge. What is interesting is that, for its size there's still a strong community of experimental and noise music there. If you're going to meet someone in L.A. you still got to drive an hour or so; here you can sort of bump into someone, go to a show. There, if you're going to the show, you're going to the show, and that's what you're doing. L.A. has a strong art scene, which San Francisco does not have; it's got one, but it's a very different from the L.A. or New York art world, it is more structured or something. Here I've got to go see music every weekend, and it's all experimental techno, underground warehouse shows, because the big venues don't put that kind of stuff very much. I think the community is too anti-establishment to want to be at those places in way, there's a certain amount of that, and a certain amount of poverty like "Oh, ten bucks! Forget that!"*

Los Angeles vs. New York

Scott Pagano*: In terms of gallery New York is kind of the center of it in this country. There's not awesome shit out here [L.A.].*

Aaron Ross: *In the States, if you want to be an independent artist and actually make a living of it from your art, you got New York and L.A., and that's about it. In the West coast, L.A. is much better if you want to be an artist. There are so many more opportunities for artists. There's just more money in L.A., it's a bigger market, there are more donors, more corporations that are willing to donate; because it all has to come from private money, because the public funding for the arts died, or was killed off from the NEA scandals. There's much more money flying around in Southern California, so there's much more going on in terms of the art scene; much better museums, much better everything. It's a trade off, because [in San Francisco] you get to live in a beautiful place, with Victorian architecture, nice weather most of the time, and opportunities are pretty slim here because the competition is very stiff for everything – for housing, for jobs, for exhibitions. Everybody here thinks they are artists and they are all bad mostly. There's no art scene to speak of in the Bay Area; there's a few little galleries but they're all scattered around. There's a few small theaters and lofts where people (people with their own independent source of income) have taken upon themselves to set up in a sort of safe zone for these sorts of things.*

Robert Haller: *The West Coast is much more sensual than the East Coast.They have different aesthetics. Hollis Frampton made his films in the East Coast but they were popular on the West Coast. Bruce Baily's films were made on the West Coast and were popular on the East Coast. But they are very different! Baily is sensuous, camera movements, color, subject matter; Frampton's are intellectual, delightful to look at, but they are not the same. That could be said about a lot of East Coast directors, not all, but a lot. But in general the East Coast filmmakers are cerebral and the West Coast are more gut-centered. [Michelangelo] Antonioni says that movies, more than anything else, are an emotional experience. And you can see that very clearly in the West Coast films, and you don't see that so clearly in the East Coast films.*

United States vs. Europe

Aaron Ross: *Europeans are just more appreciative of art in general; it's an atmosphere that encourages the creation of art. Americans are actually directly antithetical to art. The average American, if you went to ask them what's the use of art, they would say, "It's a waste of my tax payer money," or "It's something to put on your wall to prevent it from being blank."*

Scott Pagano: *I think in Europe digital media has less of a stigma, it's been more assimilated, and so what's considered valuable as artwork. In the States there are still some barriers to break down.*

Jeffers Egan: *I'm trying to develop a European-style AV festival here in L.A. There are people there just doing the stuff and no one really knows about them. I'd like people to see what they do, and also to bring the European culture to the US. I've talked to all the major museums in town and I get somewhere, but there's always a wall at some point, I don't understand. I have the statistics in front of me, there's 25,000 coming to this event in Europe, and it can pay for itself. I think it's an American thing. We sure made experimental films in the past, but we just keep showing them over and over again and don't bother to update them or understand that there's also a scene going on. In Europe, it's gotten to the point where an artist can go to the mayor and say, "Hey, I want to do this." And the mayor gives him money and say, "Yeah, this is great." I think they are institutionally far ahead of us. And here I struggle even to put on one show, to start one festival. We in America completely missed the boat.*

Roger Malina: *They have different systems. I think one thing that's impressive in the United States is the number of universities that have good new media programs, Berkeley, Stanford, UCLA, University of Chicago, and so on. And that's been a little bit more difficult in Europe; in England there's number of good programs, in France there*

are 2 or 3. One of the problems, certainly in France, is that historically the art schools and the music schools have not been inside the university, so if you want to do a program where a music student can work with a physiologist in a university, it's just a lot more difficult than here. The other thing is that there's so much more State sponsored culture in Europe than there is in this country, so it's just a different model. To some extent it's a little bit easier for artists to show their work in Europe, because there are indeed quite a lot of venues; even here in the San Francisco area the only festival right now is the 01 festival in San Jose, which only started a few years ago, while Ars Electronica has been going for 25 years or something. There's no real equivalent in the U.S. People see a lot more of the American work as a bit more commercially motivated, or closer to the industry interest.

After reading these statements, Baudrillard's ideas about commodification of American leisure sound less as postmodern provocation than as a pervasive narrative about cultural production in Los Angeles and in the United States. Combining these comments with the issues from the previous section on urban theory, I would like to suggest how the fragmented quality of Los Angeles and of the visual music world might be related. I consider this relationship on four levels: (1) the spatial relationship between people and events, (2) the amnesic quality of the city, (3) the relation between art worlds and the city's corporative landscape, and (4) the institutional tensions.

In Europe, new media art worlds can not only rely more easily on governmental funding to create events, but artists are able to circulate within a broader art infrastructure, which remains 'uncontaminated' by entertainment industries and is maintained in part by the competitiveness of European cultural metropolises. On the other hand, the educational system in the United States seems to be more fit for the articulation of creative collaborations between artists and scientists. American

universities are social nodes where both practices coexist and are encouraged to share forms of knowledge and technology (hence to assemble technocultures). Thanks to more recent technology (Internet in special), these technocultural experimental networks are able to interact faster with outside communities; the rapid migration mentioned by Roger Malina is due in part to the history of collaboration between science, technology, and entertainment among American universities. As Malina rightly suggests, nothing shows this better than the video game technoculture.

In dense cities like San Francisco and New York, the possibility for artists to attend art events and to share experiences on a day-to-day basis is higher than in Los Angeles, which means that in those cities underground communities can more easily expand and project an identity related to the urban experience. It also means that it is easier for such communities to achieve certain goals (for instance, finding space to perform visual music) by establishing collaborations among themselves. On the other hand, the 'spread out' quality of Los Angeles is also considered an advantage in relation to other cities. For visual music artist Steve Roden, this spatial configuration makes it possible for the artists to "totally disappear; and you can participate [in the art scene] when you want to. If you don't go to any openings for 3 months, it's not a big deal. Your social life isn't necessarily determined by the social culture, which I think it's quite interesting. I get a lot more time in the studio here." For Roden, then, L.A. allows the artists to invest more time in actual production than in marketing.

Nonetheless, the circulation of people becomes crucial in visual music and similar fields of audiovisual experimental art because they posit aesthetic experience *as* embodied experience – as many collaborators argued, it is all about *being* there. In L.A.

the entertainment industries have established themselves by forging technologies that point into the opposite direction; by suppressing the actual space of their performance, these technologies allow the reproduction of audiovisual material wherever there is a television, a film projector, a CD player, etc. While this has led to the global circulation of audiovisual products from Los Angeles, visual music artists have encountered an infrastructure that lacked venues to circulate and promote their art, which, while it uses high technology, it does so from the art world perspective of being there.

Tyler Adams mentions the creative freedom that Los Angeles offers as a place where history is easily forgotten. Similarly, Bill Moggridge, head of the Californian design firm IDEO, argues that in Los Angeles, "The apparent culturelessness of the place, the endless process of willfully sweeping aside what has gone before, whether in technology, history, or the arts, *is* the culture."[211] The sense of not being strongly attached to the past relates to the consistent incorporation of Oriental ideas that question the Occidental sense of aesthetic evaluation based on linear history – ideas promulgated, for instance, by Los Angeles artist John Cage. Additionally, the city's amnesic quality relates to the cultural industries' strategy of inserting 'fresh' products into cultural markets. The sense of innovation is always at risk when the past is easily accessible.

This is why some visual music members have an uneasy relationship with the city. They have seen how Los Angeles-based artists like Oskar Fischinger are forgotten for decades until some mainstream event rediscover and celebrate their work. More than that, after the event is over they are once more put aside to leave room for someone else's art revival. In that way, art genres are transformed into temporary and localized shows. If

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[211] Quoted in Harvey Molotch, "L.A. as Design Product: How Art Works in a Regional Economy," in *The City: Los Angeles and Urban Theory at the End of the Twentieth Century*, 158.

these ephemeral occurrences leave only fragmented memories among Los Angelenos, they are nevertheless embraced and celebrated by the regular art world members – it is in this sense that I argue that, if visual music artists are relatively 'underground,' they are not anti-establishment.

At least since the 1960s, the Los Angeles art scene seems to have been enmeshed in corporate endeavors to give the city a specific face when compared to other metropolises. Perhaps in view of the city's common association with 'shallow' entertainment, these patrons have invested in conventional art forms (mainly painting and sculpture), which makes it even more difficult for visual music artists to receive funding outside the universities. As Mike Davis argues,

> The large-scale developers and their financial allies, together with a few oil magnates and entertainment moguls, have been the driving force behind the public-private coalition to build a cultural superstructure for Los Angeles's emergence as a 'world city.' They patronize the art market, endow the museums, subsidize the regional institutes and planning schools award the architecture competitions, dominate the arts and urban design task forces, and influence the flow of public art monies. They have become so integrally involved in the organization of high culture, not because of old-fashioned philanthropy, but because 'culture' has become an important component of the land development process, as well as a crucial moment in the competition between different elites and regional centers. Old fashioned material interest, in other words, drives the mega-developers to support the general cultural revalorization of Los Angeles, and, more specifically, to endorse the concentration of cultural assets in nodes of maximum development.[212]

The art scene seems to have changed little. Visual music artist Jeffers Egan, who has been trying to establish a new media audiovisual festival in L.A., found little response among museums and art patrons: "I've talked to all the major museums in town and I get somewhere, but there's always a wall at some point, I don't understand."

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[212] Mike Davis, *The City of Quartz*, 71.

As Fig. 12 illustrates, my collaborators are spread out in the city. Suppose they know about the existence of each other, and one of their visual music pieces is part of an event, they would need to invest a large portion of their time just to get through highway traffic to participate in the visual music network. It follows that either these moments demand higher levels of predictability (which implies infrequency, formality, and higher budgets), or they happen within a small group, remaining extremely 'localized' and with less chances to expand.

There are, however, a few institutional nodes directly related to visual music that have changed this lack of communication between local groups of audiovisual artists. Ironically, the two more important institutions in the country geared towards the promotion and circulation of visual music also have fragmented trajectories, only not for geographic reasons. In what followes I take a look at one of the most important institutional nodes of visual music production.

CalArts

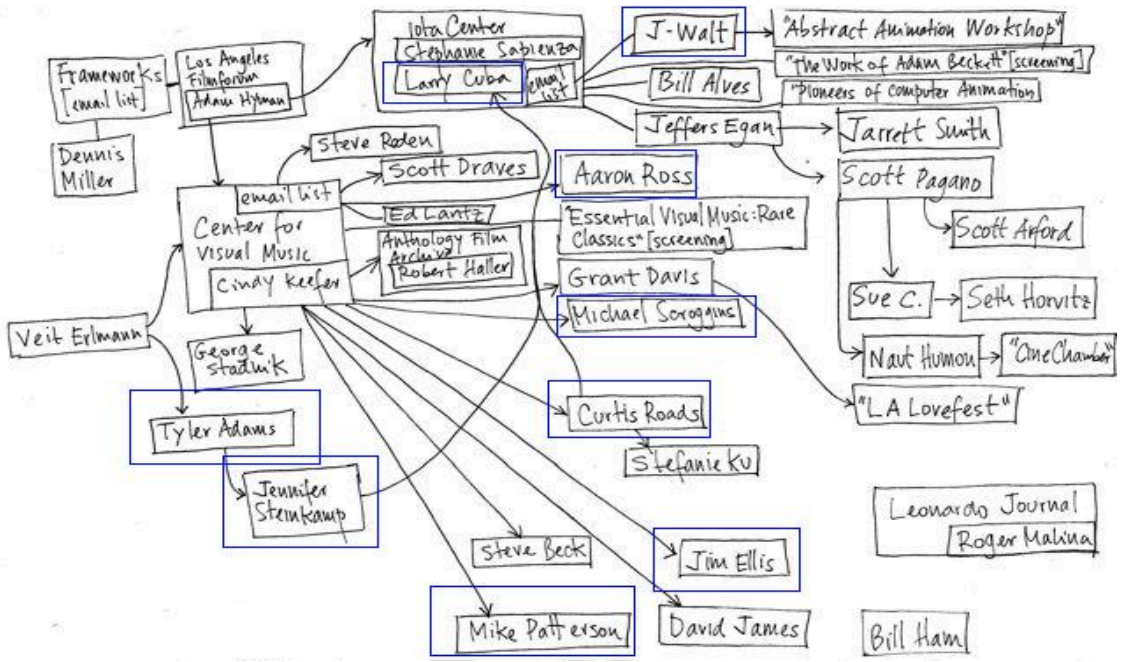

Fig. 14. Institutional fieldwork-rhizome: names in the blue boxes indicate collaborators who have studied through CalArts.

> The first time I met Bill Moritz,
> It was 1993
> I was 26 years old,
> I had never pursued any form of higher education.
> Out of desperation to have time to create work
> I applied to one place and only one place ... CalArts.
>
> – Jim Ellis

Instead of giving a panoramic perspective of CalArts only, I want to include my collaborators' 'on the ground' trajectories. I'm more interested in taking into account Jim Ellis's narrative about his encounter with Bill Moritz at CalArts than in reproducing historical information easily accessibly elsewhere. However, to establish a relationship between these narratives, and to have a better sense of how CalArts became so central for many visual music artists, some archaeological work is necessary.

The California Institute of the Arts, the "CalTech of the arts," was created by Walt and Roy Disney in 1961 to foster production and transmission of knowledge related to different artistic expressions – animation, film, writing, music, theater, and dance.

CalArts was established from the merger of two former institutions, the Los Angeles Conservatory of Music and the Chouinard Art Institute. Nelbert Murphy Chouinard, a painter who had studied in New York and Germany, and who believed art schools should encourage students to develop their own way of expression, founded the Chouinard Art Institute in 1921. After a few years the institution was listed among the top five art schools in the United States until its closure. The Institute influenced Disney's plan of establishing a school within his own company.

Simply put, CalArts is the combination of Walt Disney's ambition of building an institution devoted to the Wagnerian idea of *Gesamtkunstwerk*, and a convenient creative critical mass for the company's film production.[213] For Aaron Ross, "The whole reason that CalArts even exists is because of Disney, who wanted to create an academy where they would breed new animators in all levels of the production hierarchy. Tim Burton, Henry Selick, John Lasseter; these people went to CalArts." Many visual music collaborators consider CalArts and similar institutions as a stepping stone to Hollywood: "Most college students want to work at Pixar and are quite content spending two weeks on the perfect and fluid motion of an elbow."[214] Similar to Walt Disney's trajectory and creations, CalArts is often placed in a blurred area that includes high art, pop art, and mainstream entertainment.

The institution established itself as one of the West Coast meccas for high tech audiovisual creation, as a place where professors and students have artistic freedom to

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[213] As Walt Disney stated about the creation of CalArts, "It was costly, but I had to have the men ready for things we would eventually do." Jim Korkis, "The Birth of Animation Training," September 2004, http://www.awn.com/articles/production/birth-animation-training/page/2%2C1 (accessed on March 19, 2010).

[214] Dennis Miller, personal communication.

experiment with cutting-edge technological infrastructure. Aaron Ross defines the institution during his time there as a "small little art academy of a thousand something students surrounded on all sides by this American consumer culture of pre-fabricated houses and malls." Similar to Bauhaus artistic experimentalism, professors and students collaborate in workshops and are encouraged to move across different disciplinary fields in art, technology, and science. To have a sense of the parallels between CalArts's the Bauhaus's ideas about the need for an interdisciplinary approach to art creation, compare Gropius statement with the one made by Walt Disney some 45 years later:

> What we must have, then, is a completely new approach to training in the arts – an entirely new educational concept which will properly prepare artists and give them the vital tools so necessary for working in, and drawing from, every field of creativity and performance. There is an urgent need for a professional school which will not only give its students thorough training in a specific field, but will also allow the widest possible range of artistic growth and expression.[215]

Visual music artists have been attracted to CalArts not only because of its infrastructure, but also because the institution has consistently hired experimental and avant-garde artists. The 'day job' income has allowed these artists/professors to carry on visual music production research on the side while providing their creativity and knowledge to a 'mainstream' institution. As David James explains, "When they're in that situation, most of their students are looking to the industry. So you've got this situation in which I might be making these very experimental, wonderfully intricate films, and I'm teaching kids who next year will be making a million dollars doing special effects for Batman or something like that." This relationship with the mainstream cultural industries

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[215] Jim Korkis, "The Birth of Animation Training."

is further examined in Chapter 6 in relation to Bourdieu's idea of flow and translation of different types of capital.

Two main figures who credit the establishment of a visual music community in Los Angeles from an institutional perspective[216] taught at CalArts up until the early 2000s. Based on data collected during fieldwork, it seems safe to say that Jules Engel and Bill Moritz where crucial in spreading the premises of the genre to many generations of students willing to integrate sound and moving images. They are the embodiment of the genre itself, in the sense that they have invested their position as artists and scholars to connect previously insulated genres (such as light shows, film, and video art), into the premises of a unifying practice called visual music.

Jules Engel is perhaps the ideal CalArts prototype,[217] an interdisciplinary artist who worked in wide range of projects and promoted, along with his friend and short-term colleague at Disney Studios Oskar Fischinger, the idea that abstract moving images was a valid and powerful art form. J-Walt remembers how Jules Engel was crucial in taking what was up to then marginalized practices as a legitimate art form: "He would say, 'we don't have to take a backseat to music; we don't have to take a backseat to photography or other kind of filmmaking or painting or anything like that.' That's the idea he tried to instill in his students. That was really great: to be in that thing."

Engel studied at the Chouinard Art Institute and there he met animators from the Walt Disney Studios, where he would work on *Fantasia* (1940) and *Bambi* (1942). After the Disney animator's strike in 1941, Engel detached himself from Disney Studios and

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[216] If we consider independent artists, then the credit would be shared with Oskar Fischinger and the Whitney brothers, who are in fact two of the main point of aesthetic reference in the field.

[217] In 2001 Engel received the highest honor awarded to a CalArts faculty.

got a job drawing maps and instructions for new weapons during World War II. In 1968 he started teaching at CalArts, and in 1970 he founded the Experimental Animation Program, which he directed until 2001. Not only did Engel instill a sense of self-esteem among animators and other visual music members by promoting their practice as not necessarily distant from fine art world premises, but he also questioned 'high art' and 'commercial art' dichotomies – a perspective shared by many Los Angeles-based visual music artists. Mike Patterson, another of Engel's students, has vivid memories of his experience at CalArts and the aesthetic position encouraged by his teacher:

> He was quite a character, a really great abstractionist, but also very commercial, so it was really cool for me. He thought that abstract animation and animation art in general should be in the museum, like a painting. One of my films, actually a handset of my films is in the Museum of Modern Art now; unfortunately Jules didn't live to see that, which would have been great. He really embraced applying the aesthetics of what we were doing to professional and working in the industry, which is cool because I think that, in a lot of ways, [it questions] this sacred cow of experimental film that has to be pure and can't crossover. I love entertainment, and I think that visual music can be incredibly vivacious, entertaining, and engaging. People didn't really use the word visual music. I think the spirit of CalArts was that you just had this passion to do this thing and you did it. Jules already had worked at Whitney, Guggenheim, MoMa, he already had done that; he was friends with Man Ray and Duchamp, and all these people; he was really in the Fine Art.

The other Los Angeles figure who was central for the circulation of visual music works and the articulation of a cohesive narrative around the genre was William Moritz. For Aaron Ross, "There was only one Bill Moritz, and he was there [at CalArts]. I sat through countless film screenings of films that you never get to see anywhere, because they don't exist – Bill had the only copy of this James Whitney film." Moritz started teaching at CalArts in 1987, and there he was able to expand the visual music audience and creators by showing works and integrating the genre within a broader frame of experimental art.

Along with Steinkamp and Scroggins, among others, Moritz was a member of the Visual Music Alliance, a group of artists that met regularly to share ideas about the genre. It seems that it was through those meetings and Mortiz's subsequent research that the term visual music came to be associated to different artists and periods. He took part in the foundation of the two institutions dedicated to preserve and circulate visual music material: the iotaCenter and the Center for Visual Music.

In this Chapter I have mapped Los Angeles from multiple angles: from the dirty window of my car as I drove to downtown L.A.; from urban theorists; from personal trajectories of visual music members, and from their relationship with the city; and from the institutions that have been responsible for producing, promoting, and circulating of visual music. In the next chapter I continue discussing institutions, but from an ethnographic perspective.

Chapter 5: Visual Music in/from Los Angeles

After a somewhat extensive discussion about the urban life and the geocultural distinctions surrounding Los Angeles, this Chapter assumes a less panoramic perspective and describes visual music from my own experience in Los Angeles, and from specific events that happened before, during, or after my fieldwork. Whereas in previous chapters I talked about a transnational visual music narrative (e.g., virtual communities), or about geocultural activity in Los Angeles from my collaborators' point of view, in this chapter I approach visual music from a different angle; I step out of my car and interact with people and spaces. I start by addressing the history of the iotaCenter and the Center for Visual Music, two major spaces for the assemblage of a visual music community in Los Angeles. In the second part consider a few events, some of which I have attended during fieldwork, to give the reader an idea of the multi-layered and intermittent quality of visual music performances.

Institutions: the iotaCenter and the Center for Visual Music

In the late 1990s, as interest in visual music performances increased, and students coming from CalArts and other institutions felt the need for venues to present their work, a few Los Angeles-based visual music members created a non-profit organization devoted to preserve works and to bring together visual music artists. The iotaCenter was founded in 1999 by Larry Cuba – a former CalArts student – with support of Jules Engel, William Moritz, Jordan Belson, and others. According to Cuba, "The idea of iota was to base more on genre and intent, a goal that we shared regardless of the technology used -

because [visual music] crosses the board from low tech to high tech. That's why we formed: to have a support group for people working on it, and also get access to the older works that weren't seen."

To a great extent, the iotaCenter represents the institutionalization of Moritz's ideas (see Chapter 3) and was devoted to preserve and screen material from his private collection, as well as from The Fischinger Archive. Cuba explains that the activities at iotaCenter facilitate knowledge transmission and promotion:

> We are here to support artists in their work, so there's this educational component, where we have all the material together. And we have the background material for people to come here and look at it. And then we have the store where we sell people's work on consignment, and we promote their work on the Web Site. If someone sends us their work, […] we announce it on the Web Site, so it becomes recognized and they become part of the whole body of work - they become part of the community. I think anyone who works in any field needs to be able to connect with others in the same field. You just can't work in isolation.

In fact, for Bill Alves, who teaches the only undergraduate course on visual music in the U.S. I'm aware of at the Harvey Mudd College in Southern California, the creation of the iotaCenter facilitated access to material from which he could put a course together. As he says, "The first time I had to teach it I had to really scrounge around to try to find videos. It was really difficult. But I gradually built up a collection of videos, Bill Moritz helped a lot." Alves's visual music works can be purchased on the iotaCenter Web Site.

Stephanie Sapienza, iotaCenter's managing director since 2008, told me the institution is currently trying to increase access to their material. This involves cataloguing the material and knowing what the institution has legal rights to commercialized, preserve, and exhibit. According to her, the concern with making the

material available is more typical to librarians. Archivists, who are more prominent in audiovisual art institutions, tend to operate by centralizing their knowledge. As she states,

> The problem is that archivists came out of a museum context. MOMA was one of the first major archives in the U.S., and they came out of a museum. A museum curator approaches things very differently from a librarian. The librarian is putting the material online, and going 'what do you need?', 'I'm a reference person,' 'Come to me, what do you need to see? I'll show it to you.' That's what a librarian does.

Around 2003 some iotaCenter members (including Jordan Belson, Bill Moritz, Barbara Fischinger, and Richard Baily) left the iotaCenter to start a new institution, the Center for Visual Music, founded by Bill Moritz and Jules Engel and directed by former iotaCenter director Cindy Keefer. As my interest here is less to encourage personal frictions than to offer an ethnographic analysis of visual music in Los Angeles, I have chosen to leave anonymous some statements about the reasons for the institutional split. However, as this ethnography is also not about smoothing out tensions I have encountered during fieldwork and that might help me understand visual music as an art world, I want to consider a few points of view regarding 'The Split,' as some collaborators have called the quarrel.

According to a member of the iotaCenter, the tensions occurred when a few members tried to "take position of the organization forcibly." Another person told me that quarrel was related mainly to Moritz's collection: while some argue that the tensions arouse when iotaCenter refused to give back the material Moritz had previously given to the institution, others say that Moritz was in fact unable to access the material he had only temporarily entrusted to the iotaCenter. I also heard that the dissent was caused because iotaCenter's founder was not positive about the organization and proposed to

shut it down. Other board members reacted to that by choosing to carry on with the activities, just to find out that the founder had changed his mind and wanted to continue. The disagreement was followed by lawsuits that are still running. Legal permission to deal with Oskar Fischinger's and Bill Moritz's collections (the core material at iotaCenter in terms of preservation and screenings) was transferred to the Center for Visual Music.

This institutional fissure would have a lasting impact on the visual music community in general, and in Los Angeles (its epicenter) in special. As one collaborator asserted, "It's kind of like when parents divorce, it puts one in an awkward position, and you have some affection and understand the point of view of both sides." In one message sent to CVM's discussion list, one member erupts: "I have TWO lists of Visual Music chit-chat now, and the same names are turning up in both. This is ridiculous! Can't we all just get along?"

There is a clear sense that the institutional bifurcation weakened the sense of cohesion in the community and of the field in general. For instance, a community member observed that

> I think that maybe the saddest thing about it was that our purpose was to bring people together, who had this common interest, to form a community; and this just split the community wide open and distanced people. They didn't want to get involved at all. They didn't want to take sides… it was a mess. I think that the most damaging result of the split was that people that would otherwise get involved in the community just didn't.

Another member wrote on the email list:

> The schismatic collapse of this community does not provide much impetus for me to create anything. My artistic aspirations were already seemingly breathing their final breaths. Antagonism between these two organizations is driving the final nails in the coffin of my artistic consciousness. That's to say nothing of legal action. To put it bluntly, it makes me sick. I whole-heartedly support the efforts of individuals in this group, but my confidence in the respective

organizations is shattered, probably permanently.

The split also put me in a difficult position as an ethnographer, as I was asked by the organization A not to visit both A and B at the same time. When I mentioned that I would spend a week visiting the institution B, an annoyed member of institution A said: "Why are you spending so much time there? They will give you wrong information and show you visual music in poor quality video tapes." Clearly some members suspected I would circulate confidential information, which affected the ways I conducted the institutional fieldwork as a whole - including being required to sign an agreement stating the every published material should be proofread by the institution. As an ethnographer, it was hard for me to figure out whether I was making the hostilities reappear or not. In any case, I don't think those directly involved with the split will get along anytime soon. In the fragmented Los Angeles art world, an important part of the fieldwork-rhizome I was establishing with ethnographic collaborators showed to be no less fragmented. The presence of a visual music community in Los Angeles, spurred by Fischinger's arrival in 1936 and propagated from Los Angeles thanks especially to Bill Moritz's narratives, found its institutional momentum in the late 1990s and early 2000s, and suffered a relative fragmentation caused by the split.

The directors from both institutions were very open to meet me and talk about the organizations, but my initial idea of institutional fieldwork had to be adjusted to what these collaborators had to offer. When I first emailed them about doing institutional fieldwork in their institutions, both Stephanie Sapienza from iotaCenter and Cindy Keefer told me it wouldn't be possible to observe the every day activities of their organization simply because they wouldn't be there everyday. Both directors explained to me that in

small non-profit organizations with minimal staff, they conducted most of their work at home via Internet.

As the fieldwork-rhizome shows, CVM and its director Cindy Keefer were crucial ethnographic nodes. As I mentioned before, Keefer studied at New York University Film School and began shooting and directing indie music videos. She then founded a production company in East Village and made some music videos aired on MTV. She also VJ-ed at a New York club, and would often frequent Danceteria, a four-floor nightclub active from 1980 to 1986. An agent convinced Keefer to move to Los Angeles, arguing she would be able to find more work as a video producer being closer to major recording companies and TV/film studios. In L.A. she met some experimental artists, including Bill Moritz. Having experience with running an audiovisual-related institution, Keefer was brought in to direct the iotaCenter. Along with Moritz, Barbara Fischinger (Oskar's daughter), she was instrumental in getting funding for film preservation and printing, and hence in making the institution financially viable.

Although she counts with a board of advisees, Keefer runs most of CVM's everyday activities by herself. These include submitting proposals to fund preservation, cataloguing material, uploading information on CVM's Web Site, attracting new members, and negotiating film rentals with museums and other institutions, and lecturing in festivals and museum/university exhibitions. Robert Haller, part of the avant-garde film community for more than 40 years, said that, except for Keefer and CVM, little attention has been given to film visual music technoculture. One of the major challenges for CVM has been to inform an increasing new audience that the collections formerly held at iotaCenter were redirected to CVM.

When I first got at CVM, located in downtown L.A., Keefer and I talked about what my institutional fieldwork would entangle, and what kind of information I was expecting to get. As usual in archives, I was not able to bring any material except pencil and notebook. I came to scheduled visits and spent whole mornings or afternoons at CVM. Keefer scheduled individual visits, and, with few exceptions,[218] I didn't interact with other people at CVM besides her. I was able to access CVM's library and watch visual music pieces not available elsewhere, as they were part of specific exhibition sponsored by CVM. During my fieldwork at the institution I would usually stay in the guest room - which had a TV set and a DVD player - used to meet visitors and to show archival material. Keefer would work at her office in the next room; a third room was used to store materials, including Moritz's archives and the library. As I was watching or reading about visual music, Cindy would pop up in my room to indicate more visual music pieces, people to meet, books to read, and events to attend. In exchange, I agreed with Cindy to work for CVM while I was there, mailing DVDs and helping Cindy to carry and organize books and other material.

Events

For visual music to exist as an art world, works have to be performed regularly. Unlike static abstract art, which can be seen in museums whenever one wants to see them, and more like cinema and music, most of the visual music pieces are only collectively experienced in specific screenings, exhibitions, installations, etc. In what

[218] I met a graduate student from UCLA who was researching John Cage's music. He was interested in Fischinger's sketches for *An Optical Poem* (1937) which was made with Cage's assistance.

follows I mention a few of the visual music-related events (especially in L.A.), some of which I had the opportunity to attend.

Kinetica [1999-2003]

As I have mentioned, several artists were able to share information and visual music works through the iotaCenter. Jeffers Egan told me that in the early 2000s he would spend "a lot of time at the iotaCenter just rambling around and watching stuff. They had a nice *Kinetica* series that played in town when I was here, so I went to all those." Egan and many other collaborators were present at the *Kinetica* shows sponsored by the iotaCenter from 1999 to 2003. If up to that point visual music was often associated with Bill Moritz, the *Kinetica* traveling events would become the first transnational attempt to sponsor visual music as an institutionalized concept. The *Kinetica* events, along with the Artists' Salons (see below) represent the moment when it is most possible to talk about a visual music community in Los Angeles; these events (along with the email lists) connected many artists who were working insulated from each other, and established a local audience.

The screenings, which happened before the institutional split, were organized mainly by Bill Moritz and Cindy Keefer. In total there were four *Kinetica* shows: *Kinetica 1* (1999) – 'Selections from the iotaCenter Media Collection'; *Kinetica 2* (2000-2002): 'A Centennial Tribute to Oskar Fischinger'; *Kinetica 3* (2001-2003) – 'Hy Hirsh and the 50s: Jazz and Abstraction in Beat Era Film'; and *Kinetica 4* (2002-2003, also with two programs) – Program 1: 'The Sixties: Spirituality and Psychedelia,' Program 2: 'The Contemporary Program of Abstraction.' The events were responsible for

associations between canonized visual music works and contemporary visual music artists. CVM currently screens events based on the Kinetica programs

Salons

The name 'salon' has been used since the 18th century as a place where intellectuals (artists, politicians, and scientists) would gather to refine their taste and knowledge in conversations and art performances. A major event during the Enlightenment period, which promoted a move towards reason and individualism, the salons became a sign of local intelligentsia. The choice of the name 'salon' seems to reflect the idea of an avant-garde community whose art evolves from an open dialogue between artists and audience.

The Artists' Salons were organized through the iotaCenter network, and were responsible, along with the Kinetica screenings, for establishing a Los Angeles-based visual music community. As Cuba states, "We have this world wide community that we reach through the discussion list and the Village[219] online, but we don't have local L.A. face to face community that the salons created as much." Starting in October 2001, the Salons were organized by J-Walt (with the help of invited moderators) at the Museum of Jurassic Technology. The main ideas was to "exchange ideas and receive inspiration from other artists." Thus the idea was for artists to have space to show their work and to discuss their aesthetic ideas with other visual music members. After a hiatus of a few years after the institutional split, the iotaCenter resumed the Salons in October 2009 at UCLA.

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[219] In the late 2000s Cuba created a virtual network called Visual Music Village, where visual music artists can share videos and information about upcoming events. See http://visualmusic.ning.com (accessed September 2, 2009).

Abstract Animation Workshops

While in the Salons usually final pieces are shown (and hence broader audiences reached), the Abstract Animation Workshops highlight works in progress. As Cuba puts it, "The people are involved in the evolution of the work, and that's great." J-Walt was the founder of this event too, which happens monthly at the Museum of Jurassic Technology in Culver City. The event is open to the public and the entrance is free. When I attended the workshop there were about eight people in a room with about 16 seats. As I came to know, most of the attendees had some association with the entertainment business in L.A. As with the Salons, the Workshops have been a venue for local artists - who work either in relative spatial isolation or in places where discussions about experimental art are rare - to stay connected to what other members in the community are doing.

During the Workshop J-Walt showed us a new piece he was planning to perform in the planetarium (as he had done with his previous pieces). Other artists present also showed their works explaining how they had achieved the visuals (software, technique, etc.), how they conceived the piece in general, and getting feedback from other members. The whole thing reminded me of my classes of music composition in Brazil, where the student was required to explain the compositional principles that should be evaluated along with the piece itself.

Fig. 15. Visual music performance at the Abstract Animation Workshop. Photograph by Leo Cardoso

'The Love Festival Los Angeles' [August, 2009]

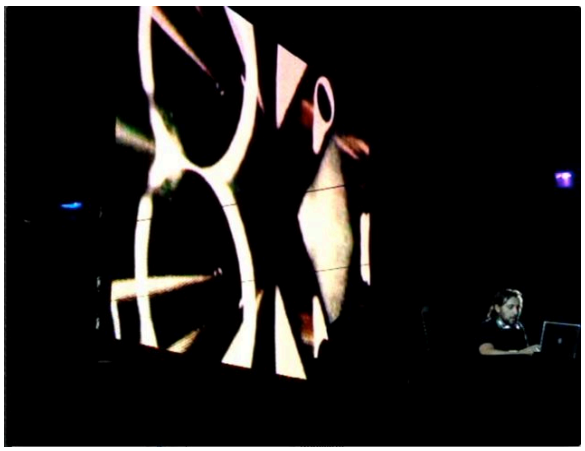
After meeting Grant Davis (a.k.a. VJ Culture), he invited me to attend the Love Festival, which would happen at the Sports Arena & Grounds in L.A. He was going to perform with the Iranian-American DJ Sharam Tayebi (well known for his electronic music ensemble Deep Dish). Davis showed me the visual content he had created for Sharam, and explained that the DJ had an idea for the visuals that differed from his. For the performance, Davis told me he would "just make tightly synchronized DVDs. [Sharam] would play the DVDs; some tracks he didn't have a DVD for it so I would just VJ."

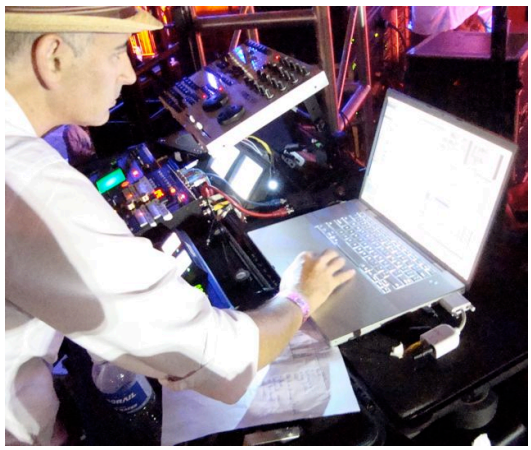
Davis rarely performs in Los Angeles. “I think what happen here in L.A. is a number of VJs have come in saying they would do it for free, they would do it so cheap that they killed the market. There’s some really top nice VJs in LA, but they really don’t do that much really here in LA.” The reason for these VJs to live in L.A. is, not surprisingly, the proximity to the music industry, where they can find sporadically well-paid gigs, which allow them to maintain themselves while they are not on tour and to acquire cutting-edge audiovisual technology.

During the performance I stayed backstage helping Davis moving wires and making sure the visual signal were working properly, whereas Sharam performed on stage in company with go-go dancers, whose presence has become standard in mainstream electronic dance music events. During the performance, the visuals wove in and out from abstract non-linear visuals to figurative narrative videos. Davis told me his work was “somewhere in between music video, motion graphic experiments and straight up VJ.” Davis was part of Sharam’s hired staff for the tour, and the stage distribution shows the creative and marketing division in this VJ-DJ collaboration. Of course, not all performances are like that; VJs and DJs have shared the same space in the performance, although this seems to be relatively infrequent in mainstream events. Davis explained that he performs mostly in festivals and corporative events. According to him, nightclubs just don’t pay very well, “And the crowd is only somewhat appreciative; they there for the music or they’re there to get laid.” Nightclubs often have the same person doing the lighting and VJing, and the visual content is mostly looped downloaded clips.

Visual Music: Synaesthesia in art since 1900 [February – May, 2005]

It seems clear that museum exhibitions have a unique capacity to canonize works of art and to integrate different aesthetic ideas in connection to fine art paradigms. For instance, in the 1936 *Cubism and Abstract* exhibition, works of art were distributed according to a chronological chart that "presented a genealogy of modern artistic styles."[220] Similarly, the 2005 exhibition *Visual Music: Synaesthesia in Art since 1900*, sponsored by the Los Angeles Museum of Contemporary Art and the Smithsonian





Figures 16 and 17. On stage [left]: DJ Sharam performing with Davis's visuals on the background. Backstage: Grant Davis and his VJ machinery. Photograph by Leo Cardoso.

Institution, was promoted as bringing "for the first time in the United States a chronological exhibition of the relationship between abstraction, color, and music forms [...]."[221] The event was the closest the field of visual music ever was of being comprehensively situated as a genre with its own history by U.S. mainstream art institutions.

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[220] Susan Noyes Platt, "Modernism, Formalism, and Politics: The 'Cubism and Abstract Art' Exhibition of 1936 at the Museum of Modern Art," *Art Journal* 47, no. 4 (Winter 1988): 284.

[221] Press material, available at http://www.moca.org/museum/exhibitiondetail.php?id=350 (accessed on April 20, 2010).

The exhibition was divided into three sections: paintings and photographs, installations, and films, videos, color organs, and light projections (CVM provided most of the films). Works by Larry Cuba, Jennifer Steinkamp, and Steven Beck, were performed together with those by Fischinger, Belson, and the Whitneys. Keefer observed that some of the ideas included in the catalogue were problematic, in part because some curators wrote from a fine art perspective, linking visual music as to the synaesthetic pitch-color correspondences common among abstract painters and musicians in the early 20th century.

For some members the exhibition did not to help to bring a correct understanding of the field (especially as we read in the catalogue that Disney's films, so criticized by Fischinger, were considered one of the pinnacle moments of visual music production). Other members thought the exhibition overemphasized historical visual music. Jeffers Egan, who, as we saw, has been trying to put together a new media festival in Los Angeles, argued that the organizers "just played it safe. But there was big dollars at stake; I understand the reasoning. I'm just always curious as to how curators can not know, how can they not be informed about recent stuff." For other collaborators, the exhibition was the climatic moment for the visual music field in the U.S., as the emails sent to CVM discussion list confirm.

Lichtspiel [November, 2009]

One of the major visual music shows in 2009 happened in Los Angeles at the REDCAT (Roy and Edna Disney/CalArts Theater). Again, CVM was a major collaborator, and Keefer was heavily involved in the curatorial process - aspects of which

I was able to observe during my institutional fieldwork. I think the choice of the name *Lichtspiel* (a somewhat outdated word in German today) represents Keefer's attempt to dissociate the event from previous iotaCenter shows, and also to associate it with the absolute film scene in Germany in the 1920s and 1930s,[222] and hence with Oskar Fischinger, CVM's paramount artist.[223] By pointing to and bringing in a different place (Europe) to Los Angeles, one where 'pure' art is still celebrated, Keefer thus seems to be following what has become a convention in the city's art scene. Unlike most of the screenings CVM has curated, *Lichtspiel* performed contemporary works only. While the majority of the 16 works came from the U.S. (56.25%, against 31.25% from Europe), the centerpiece of the program was *#37*, a visual music piece by Dutch new media artist Joost Rekveld.

The *CineChamber* [August, 2009]

I got into the *CineChamber* by following Scott Pagano's suggestion to meet Naut Humon, a San Francisco-based new media curator and entrepreneur. Humon is the founder of Recombinant Media Labs, an interdisciplinary company of experimental artists and engineers that explores "production processes that expand the aesthetic and technological boundaries of panoramic installation, surround cinema, and multichannel a/

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[222] For instance, Walter Ruttmann called his 1921 abstract film Lichtspiel Opus 1, and László Moholy-Nagy called his kinetic light sculpture Lichtspiel: Schwartz, Weiss, Grau.

[223] The association is made explicit in the program notes about the event: "This ravishing 'play of light' explores rhythmic abstractions in the cinematic tradition of Oskar Fischinger and visual music animation." Program notes available at http://www.redcat.org/event/lichtspiel?utm_source=REDCAT+List&utm_campaign=5ca9c721ec-09_08_09_Right_Now_at_REDCAT&utm_medium=email&mc_cid=5ca9c721ec&mc_eid=6694559c8d (accessed on March 21, 2010).

v performance."[224] Naut, who has been working with immersive environments for the last 30 years, invited me to take a look at *CineChamber*, a nomadic installation described as "a large but intimate rectangular surround screening apparatus."[225] When we talked on the phone, Naut told me, "It's too hard to describe it to you, you have to come and see it!"

The chamber was being showcased in the newly constructed acoustic room at the University of California, San Diego. In some of the works Humon showed me, Francis Dyson's argument about sound technology as a foundational point of departure for conceiving new media art (see Chapter 3) seems to be on the mark. In more than one piece Humon, who was operating the surround sound outside the chamber, would tell me to use foam earplugs. These pieces hady extremely loud sound, which was employed not only to *envelope* the perceiver, but also to pass *through* him/her, as low frequencies resonated in the perceiver's body.

Events I haven't included here but that were considered important by some collaborators are the *Visual Music Marathon* and *SIGGRAPH*. The Visual Music Marathon, which was put together by Dennis Miller, happened in 2007 at Northwestern University in Boston and later toured to others states in the U.S., as well as Korea and England. The event was repeated in 2009 and received over 300 submissions from 33 countries. The 64 works selected comprised 6 hours of show, to which 6 more hours of works by invited artists were added. The 12 hour-show was divided into 12 one-hour segments with no break. The Special Interest Group on Graphics (SIGGRAPH), which organizes conferences every year since 1974, has been an important site for computer

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[224] Recombinant Media Labs, "About," http://recombinantmedialabs.org/about/ (accessed April 22, 2010).

[225] Recombinant Media Labs, "CineChamber," http://recombinantmedialabs.org/cinechamber/ (accessed April 22, 2010).

programming visual music artists (including Larry Cuba, J-Walt, Scott Draves, and Michael Scroggins). As en event that connects computer art performance with academic papers, the core of the event is technological innovation and the creation of new techniques. It has been an important think tank for computer animation ideas - which are is then assimilated by the growing animation film/game industry centered in Los Angeles.

In this Chapter I have briefly considered visual music from a more on the ground perspective. I started discussing institutional trajectories, including the impact that the creation - and later relative fragmentation - of the iotaCenter, the first institution fully

Fig. 18. *CineChamber* at the University of California, San Diego.

dedicated to visual music in the country, had for those directly involved in the community. I also approached visual music from a personal point of view, focusing on the events I have attended, or that were important for presenting the idea of visual music (often a controversial one, as we saw already) for a larger audience in the U.S. I have tried to include events associated with Los Angeles, and with different visual music

technocultures described in Chapter 3. In that sense, this chapter was an overlapping of the previous 2 chapters, further connecting the city with the genre through specific spaces and events. In the next chapter I try to condense the broad range of material presented so far by looking at it from the social sciences perspective. For this, I explore three main ideas: art world, social capital, and actor-network-theory.

Chapter 6: Actor-Network, Art World, and the Field of Cultural Production

Throughout my narrative I have constantly refereed to 'art world,' 'symbolic and economic capitals,' and other equally nebulous terms that were only succinctly presented in Chapter 1. In this Chapter I further elaborate those ideas. I start by situating the ethnography I undertook in relation to certain methodological premises. As I have mentioned, one of the major analytical tools taken into account before, during, and after fieldwork, was Actor-Network-Theory. Here I point out the ways in which this research was informed by this theory, especially as articulated by Bruno Latour. I then consider two well-established analytical angles to understand art production. Howard Becker's notion of 'art world' and Pierre Bourdieu's thoughts on the field of cultural production.

Actor-Network-Theory

The first analytical toolkit I would like to discuss is Actor-Network-Theory (ANT). If throughout the text we have been dealing with compound words like audio-visual and human-machine, here we have once again a concept in which observing the hyphen is the main challenge. The idea of an actor-network-theory was initially articulated by social scientists probing into spaces of science production, looking closely at the everyday practice in laboratories, and investigating the construction of facts.

In *Science and Action*, for instance, Latour argues that, for things to be considered facts (the 'already there') instead of 'mere' artifacts (the constructed object), they must rely on a set of collaborative practices. Artifacts are able to become facts only through the slow process that goes from the statement about something by a specific individual or

group of individuals, to the gradual incorporation and neutralization of that statement, until it becomes tacit knowledge. Following the production of scientific facts from their speculation towards stabilization allows us to understand how discourses about nature, truth, and knowledge, in fact spread from a few privileged places: "When we disbelieve the scientific literature, we are led from the many libraries around to the *very few* places where this literature is produced" (emphasis on the original).[226]

More recently, Latour has attempted to summarize ANT's premises in *Reassembling the Social*. It is from this introductory book that I'm going to consider some connections between ANT and my research on visual music. First, the author opposes two kinds of social theories. The first, which has become the norm in sociology (and, to a lesser extent, in anthropology), asserts that social sciences have a specific and well-defined object of interest - the 'social.' Following this approach, after analyzing a given group of human agents acting in a specific context for an extended period of time, the social scientist is then able to make visible a social world unreachable and invisible by his/her informants. This is due, in part, to the fact that these informants are excessively 'embedded' in the reality grasped by the social scientist, and in part because they lack the proper analytical tools to understand their own actions. The second approach deals not with a pre-established and pre-objectified society, but with a set of associations. After this epistemological distinction - the social as fact vs. the social as assembled and performed - Latour proposes five major uncertainties that compose ANT. Here I mention the first three, as they relate to my fieldwork, leaving the last two for the conclusion, since they relate to the broader implications of ANT.

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[226] Bruno Latour, *Science in Action* (Milton Keynes: Open University Press, 1987), 70.

The *first source of uncertainty* relates to the nature of groups, and states that there is no incontrovertible starting point from where to approach and demarcate a group, In fact, there is no group, only group formation: for groups to exist a set of ties must be constantly performed. For the social scientist to grasp aggregates it is necessary to observe the controversies surrounding these aggregates, and the best way to do that is by employing an *infra-language*, allowing the concepts used by the actors to be stronger than those used by the analyst. The premise here is that it is not up to the social theorist to stabilize the social by asserting some kind of heuristic knowledge about how those s/he investigates 'really' act. As Latour observes, "groups formations leave many more traces in their wake than already established connection which, by definition, might remain mute and invisible." [227]

During my fieldwork in Los Angeles I attempted to follow individuals and let them frame their position within the network of visual music production. This led me to consider the visual music network as (per)formed by different technocultures. As I showed in previous chapters, instead of a dealing with a well-delimitated community producing art in well-established conventions, what I found in Los Angeles was a series of fragmented associations. The idea of group formation is sensitive to the fact that both collaboration and fragmentation must be performed to become stabilized. Often individuals or institutions felt the need to dissociate themselves from other practices (e.g., VJing) or events (e.g., "I don't attend new media festivals because there's too much crap"). As it has become clear here, visual music is a field where it is not possible, or not

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[227] Bruno Latour, *Reassembling the Social*, 31.

analytically honest, to take a single group as the sole representative of visual music production.

The *second source of uncertainty* is about the nature of actions. If in the first uncertainty Latour suggests the use of an *infra-language*, here he talks about the *under-determination of action*. Action is a node in which a conglomerate of agencies operate; it has to be unpacked "from the uncertainties and controversies about who and what is acting when 'we' act." [228] In that sense, actors have to be accounted for what is considered to *act* by the network members themselves. Instead of 'illusion,' the author frames agency in terms of 'figuration' - the practice of giving "a figure, a form, a cloth, a flesh to an agency forbidding me or forcing me to do things." [229]

My attempt in that sense was to closely follow discourses and trajectories as a means to observe how specific actors add or withdraw entities to legitimate their own action. For instance, some collaborators brought the machine as an active participant in the artistic expression (as an object that acts and interferes with the outcome of the work of art), whereas others mentioned it as a tool that merely performs what was already conceived inside their heads. Instead of selecting the information that fit my own idea of action, I considered agency as translation,[230] which expanded tremendously the number of traces to be observed.

As an extension of the second source of uncertainty, the *third source of uncertainty* argues that objects too have agency. As Latour observes about ANT

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[228] Ibid., 45.

[229] Ibid., 54.

[230] The author defines translation "a relation that does not transport causality but induces two mediators into coexisting." Ibid., 108

approach, "What is new is that objects are suddenly highlighted not only as being full-blown actors, but also as what explains the contrasted landscape we started with, the overarching powers of society, the huge asymmetries, the crushing exercise of power." [231] By taking into account objects as actors, social scientists can trace the multiple agencies that act on a given object-event. Contrary to critics that claim ANT concedes equal power of agency to human and non-human, Latour suggests that this symmetry is always a premise for approaching a given association, not a constraint from which to analyze it.

The whole reason for me to call visual music practices *techno*cultures is that I believe there is an explicit association between the artist and the machine s/he uses. Not only that, but often the machine and its uses become important markers regarding how these artists associate themselves with other artists and machines. As I suggested in Chapter 4, by considering high tech production in Los Angeles in relation to a (loose) visual music network in the city, I have tried to understand how material resources are associated with/by my ethnographic collaborators. The very spatial distribution of the city and its resources is somehow related to the ways art is produced, distributed, and consumed there. In that sense, as Latour suggests, one of the best ways of tracing human-machine interactions is to study innovations, especially in the field of experimental art where machinery becomes a way (and hence an actor) through which alternative and utopic 'realities' can be performed. Moreover, to think about human-machine associations includes the fact that this research owes immensely to the devices for recording and replaying (i.e. *reassembling*) sounds and images collected in the field.

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[231] Ibid., 72.

Visual Music as an Art World

A second look at the data presented here considers visual music as an *art world*. In his seminal book, Howard Becker defines art world as "an established network of cooperative links among participants."[232] With this straightforward definition, Becker stresses the collaborative quality of art production, where every component, from the ink producer to the art school and to the connoisseur, is part of a world. Here we are tackling associations in similar ways that Latour proposes; however, as we shall see, Becker puts forward some elements that are idiosyncratic to art production. If Latour's ANT suggests a method for approaching, conducting, and analyzing ethnographic data, Becker's analytical toolkit helps us to consider why certain practices tend be stabilized and establish art worlds.

Becker suggests that audiences tend to be constructed as a gradual expansion and transmission of localized knowledge. The innermost circle is usually formed by art students and ex-students who know the technical problems and challenges to create an art work able to aesthetically affect the perceiver and to have some impact in the field. This relatively small and self-enclosed community is "the most understanding and forgiving audience, on whom the riskiest experiments may be attempted."[233] Moreover, this level serves as filters to a wider audience, as the specialized audience has strong potential for encouraging or discouraging ideas in their experimental stage, offering a more immediate space for the artist to get some feedback and make adjustments.

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[232] Howard Becker, *Art Worlds*, 34.

[233] Ibid., 54.

We could easily consider the Artists' Salons organized by the iotaCenter and the Abstract Animation Workshop as events maintained by a visual music audience of practitioners who know the aesthetic conventions and the ways in which specific artists interact with these conventions. In fact, the formation of this audience is crucial for the expansion of an art world, as it stabilizes in terms of discourse, performance, and evaluation, what was before an isolated experiment, and establishes (if only incipiently), the practice of consecrating, rewarding, and associating works of art *as* a field. In that sense, the visual music virtual communities, which gained momentum in the early 2000s, represented an instrumental space in which creators, pieces, and narratives about the both could circulate. The fact that so many visual music artists chose to take part in the virtual community may be explained by the fact that the sense of association was not based on a virtual exchange of ideas, but formalized and institutionalized as a legitimate node.

Of the four types of artists considered by Becker, one is particularly worth mentioning. 'Mavericks' are artists who are able to pursue innovation and create art almost with no support personnel. Unlike the integrated professionals (a type of artist who operates according to the well-established conventions of material employed, distribution, taste, etc.), mavericks become a problem for other art world members not only because they may disrupt the flow of resources, but because their art puts into question the whole set of aesthetic premises on which conventions were drawn (Bourdieu has a similar point, as I show below). The fact that mavericks incorporate these premises and often create in relation to them, makes it easier for the art world to assimilate their art, as it may be "useful in producing the variation required to rescue art from ritual." [234]

[234] Ibid., 244.

In that sense, the majority of my ethnographic collaborators are operating in a space between the maverick and the integrated professional.

Becker also mentions art worlds as the necessary mobilization of resources, which he divides into material resources and personnel. The first kind relates to how the material is made available for the artist to create, and how s/he comes to depend on it to materialize his/her ideas. As we saw in the previous section, one of the main challenges and attractions for visual music artists is how to use technology to create moving abstract visuals. This often involves exploring for extended periods the potential of a piece of hardware or software. How customized this instrument of technology is often serves as an indication of how the artist and his/her work will be received by other artists - especially as we are often dealing with a specialized audience able to distinguish the off-the-shelf from the 'assembled from scratch.' Also, as I have argued in Chapter 4, because Los Angeles-based ethnographic collaborators usually weave in and out from high tech arsenals (sometime quite literally) not available elsewhere, this puts them in a privileged position since they are closer to where hardware and software are being assembled and tested.

The second resource, personnel, includes all those involved in making the works of art circulate. Whereas the artist is considered as the central node in the art world, personnel are relatively interchangeable, which comes to be extremely important for the expansion of an art world. In visual music, the relationship personnel-artist tends to get complicated in two important ways. First, the field as a cohesive discourse was, to a great extend, forged (labelled, defined, canonized, and narrated) by William Moritz during his lifetime. This may explain why visual music is still seen more as an 'artifact' (a personal

invention) than as a 'fact' (a consolidated art form); in this case, the support personnel seems to be equally important. Second, most of my collaborators oscillate between incorporating the artist and the support personnel roles, since their skills are used both to create art and 'artifact' (e.g., visual effects in a music video).

Distribution is another important aspect for the establishment of art worlds. As Becker puts it, "Fully developed art worlds [...] provide distribution systems which integrate artists into their society's economy, bringing art works to public which appreciate them and will pay enough so that the work can proceed."[235] Whereas resources takes into account the venues that made possible the creation of art works, distribution pertains to the output network though which these works circulate, often giving the creator some remuneration. According to Becker, "Art works always bear the marks of the system which distributes them, but vary in how that happens."[236]

From whatever angle we may look at visual music technoculture, distribution has always been a difficult issue. First, there is the physical aspect: the media format, the video resolution required, the proper condition of performance, all these aspects make distribution a challenge. Second, often these artists operate with a different financial logic, sustaining themselves from other sources, which makes commercial gain through distribution a less urgent matter. "When artists support themselves from non-art sources, the distribution system has minimal influence".[237] Third, there is the major issue of how to commercialize audiovisual works that many consider as something they can easily

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[235] Ibid., 93.

[236] Ibid., 94.

[237] Ibid., 94.

access for free on the Internet. Fourth, the complex relationship between distribution and reputation: "What is not distributed is not known and thus cannot be well thought of or have historical importance. The process is circular: what does not have a good reputation will not be distributed."[238] The question then, becomes not how to make money with the art work as a means to survive, but how to become part of an art network with a well-established distribution system. The balance between what the system requires for the work to be distributed and the possibility to experiment precisely because one is outside this system is also important. "Artists may not want the audiences that can be reached through the conventional system, because those audiences use that system precisely because it brings them the work they prefer and know how to appreciate."[239]

As we get to more powerful nodes of control over distribution in the art world, we may understand the struggles that the ethnographic collaborators who *do* want to live by their art face. Patronage is an important element in this field both in terms of person-to-person and institutional relationships. Often the visual music artists depend on individual patrons who are willing to invest in experiments and events well-established art institutions have no interest in financing. As with most patronage relationships, the artist must always negotiate his/her own aesthetic inclination and his/her patron's taste and expectations - abstract filmmaker Oskar Fischinger's relationship with Guggenheim's director Hilla Rebay, which lies somewhat between the personal and the institutional, is a case in point.

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[238] Ibid., 95.

[239] Ibid., 99.

Another central figure in terms of art distribution is the dealer, who, in no matter which area of contemporary art (and especially experimental art), must be someone willing to take certain risks. Once the artist reaches a certain reputation (something that happened with only a few of my collaborators), then it is interesting to have a dealer promoting the work transnationally. As Steinkamp explained, dealers usually try to sell to collectors,

> Because that's where they make their money. Museums don't pay that much for art. Museums always get a big discount - although if a museum owns your work than that makes it more valuable, so it's stupid not to sell to them. It's harder to sell to a museum as well; it's a lot more work because museums have limited funds. So they have like a group that will judge the work, so you have to submit and then the work is tied up for six months getting decided upon.

Sarah Thornton, who wrote an ethnographic account of the art world, has shown that investment in art has become a safer investment. As one of her informants noted,

> The high price is right for the number of users who will ultimately appreciate it. The logic is that the people coming into my private mausoleum/museum are going to be thrilled by this painting. There are ten million people on the face of the planet that are willing to pay ten pounds to see it, so it is worth a hundred million pounds. In the long run, economic and cultural values correlate. In the short term, you get fictional markets.[240]

However, as the same informant notes, "Collectors get confused and concerned about things that plug in. The shy away from art that looks complicated to install."[241] For new media artists, though, the problem is not that there *aren't* ten million people willing to pay then pounds to see their work, but that these people are simply not aware of new media art, let alone visual music. Performance-based new media art becomes a problem

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[240] Sarah Thornton, *Seven Days in the Art World* (New York: W.W. Norton, 2008), 24.

[241] Ibid.

for museums because it requires teaching staff how to handle it; because they think it's harder to evaluate and to commercialize it, and because it requires constant maintenance. All of this means that the whole exhibition business requires a lot more work for less performance time, as these museums (except for New York-MOMA, which preserves its material in a bunker) don't hold sufficient material and must rent prints, making the project more expansive than conventional media (static visual arts). This not to mention, of course, the problem, faced by any institution, of having limited physical space to exhibit artworks.

There is, however, an increasing interest among museums to create a different kind of relationship with its audience, and this usually involves marketing the events in the way audiovisual media has been conventionally marketed. As David James argues, "When LACMA [Los Angeles County Museum of Art] puts on a big show, say of the French Impressionists, or last year they had this big show of Salvador Dali, they sell restricted tickets to it for 15, 20 dollars, in exactly the same way that movie theaters sell tickets, and these shows become popular attractions."

The other major institutional node, which I have considered in Chapter 4, is the educational system. The same logic applies here: the bigger the budget, the riskier art departments can get, the more they can invest in experimental art and the more efficiently they can present this art to a broader audience and justify its insertion as an art world. Of course, the riskier the investment, the more it fluctuates with the economic ups and downs, and when I did my fieldwork, things were down. Mike Patterson, an ethnographic collaborator who teaches a course on visual music to graduate students at the University of Southern California, told me how the idea of teaching the class started:

> The chair said, "We would like you to teach a music video class." And I said, "Well, music videos really aren't the main thing anymore. The real deal is the broader palette of art making with that form." All these different things that you can do with it now, like artistic VJs, installation art, interactive installations, music video still, abstract films, non-abstract visual music, poetic animation to music; with the whole premise that I don't just slap the music on the end, you integrate it all the way through, so the composer actually participates rather then coming in after the fact. It's a difficult road, just like painter: there are no guaranties.

Becker includes in his analysis the field of aestheticians and critics. This is one of the main reasons I'm saying that visual music (at least in the way I have defined it here) is more a constellation of technocultures than a cohesive art form. As we saw, the term visual music was established in the last decades to connecting works of art using different media based on aesthetic premises that differed from established art worlds, and into which artists - whose aesthetic ideas could only be seen as marginal in these conventional art worlds - would become central discursive formations. Indeed, the sense of aesthetic coherence articulated through texts is an important factor used by art world members to distinguish what is and what is not art. In relation to that, another dichotomization should be mentioned - that between art and craft. As we saw, visual music artists oscillate between the ability to perform in a useful way and the ability to create an autonomous and self-enclosed piece of art, to be experienced in legitimized spaces. In the first case, the object is made to "serve someone's need for a useful object,"[242] and the creator is seen more as a technician with highly specialized skills to create these objects. Similar to the integrated professional-maverick relationship, the criteria for what is seen as craft and what is seen as art are constantly changing; as groups of technicians start to promote their work by associating it with aesthetic principles, hybrid forms start to emerge - Becker

[242] Ibid., 274.

calls them 'artist-craftsmen.' From the fine art perspective, artists often approach crafts to explore current expressive problems, as they "see a way to do something that will interest the art world to which they are oriented and to which they respond."[243] For Becker, commercial art represents a processes in which art became craft. It uses more or less the same skills and materials as fine arts, "But deliberately put them to uses no one regards as artistic,"[244] since "workers and consumers judge the product by its utility as that is defined by some world other than the art world, in relation to some other form of collective action than that defined by the art world."[245] As it became clear throughout this Report, this is the central node with which my ethnographic collaborators have to struggle, especially because they are in a city in which art worlds are enmeshed with craft and commercial art. I will discuss this issue by considering some of Bourdieu's ideas about art.

Visual Music and the play of Classifications

> I always think of someone like these young mid-20-year old big executives in all these internet companies (let's think about the top 10 people at somewhere like Facebook), who in the next 10, 20 years are going to be awash in money; those guys aren't going to think twice about buying a real-time piece of video art based on a gaming engine.
> - Scott Pagano

A third and final look at the field of visual music production in Los Angeles can be considered by stressing visual music works and discourses as part of an intricate field of position-takings. If, following Becker, we have approached visual music as a network

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[243] Ibid., 278.

[244] Ibid., 296.

[245] Ibid.

where agencies other then those of artists themselves were able to affect the field, with Bourdieu we move towards a narrower set of elements considered in connection to art production.

Bourdieu draws a social map permeated with different types of capital, which is established by the social theorist through the close analysis of how actors place themselves in order to gain more of a given capital. In terms of cultural production, it is the distribution of capital that orients distinctions between art and non-art by a given community, and between 'good' and 'bad' art. This field also establishes a *space of possibles*,[246] and is always changing as producers and consumers encounter and develop new sets of options to move within this space. In observing the artists' attempt to move upwards by establishing their own position as *distinct* from that occupied by other agents, Bourdieu considers the field of art production (or any other social field) as a constant struggle for classifications.

The two main zones of position-takings are related to economic capital and cultural capital. In the artistic field, two opposing hierarchies are structured: members taking positions at the economic pole are willing to make concessions to external demands in order to receive immediate financial return with their work; members taking positions at the cultural pole, on the other hand, operate by inverting the economic logic, exchanging immediate profit for artistic integrity. "The more completely [the artistic field] fulfills its own logic as a field, the more it tends to suspend or reverse the dominant

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[246] "The field, as a field of possible forces, presents itself to each agent as a *space of possibles* which is defined in the relationship between the structure of average chances of access to the different positions (measured by the 'difficulty' of attaining them and, more precisely, by the relationship between the number of positions and the number of competitors) and the dispositions of each agent, the subjective basis of the perception and appreciation of the objective chances." Pierre Bourdieu, *The Field of Cultural Production*, 64.

principle of hierarchization [...]."[247] In the most perfectly autonomous sector of cultural production, Bourdieu argues, all the economic premises are suspended: no business is performed (as there is no pursuit of profit), no power is exerted (as honors and greatness are condemned), and no institutionalized authority is accepted (as no academic consecration is seen as a virtue).

Negotiations between the two capitals can be observed within the institutional sphere, as institutions are the most effective way of creating a node where the translation of capitals can be kept away from a broader audience. I came across a few insightful institutional ethnographies that focus on the process of stabilization of a given artistic practice.[248] In *Rationalizing Culture: IRCAM, Boulez, and the Institutionalization of the Musical Avant-Garde*, Georgina Born follows the everyday practice at the institute of electronic music founded in 1977 by the avant-garde composer Pierre Boulez. Born observes how academy became an important legitimizing node through which experimental artists had to go in order to gain access to public or private funding. (The journal *Leonardo* is an interesting cultural marker to understand how experimental artists have been framing their practices within the institutionalized premise that budgets are competed and hence must be justified). She then localizes the discourses about experimental art production as enmeshed in tensions between modernist and postmodernist paradigms. Following Bourdieu's ideas of capital transmission, Born

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[247] Pierre Bourdieu, *The Field of Cultural Production,* 39.

[248] See Sarah Thornton, *Club Cultures: Music, Media, and Subcultural Capital* (Hanover: University Press of New England, 1996); Louise Meintjes, *Sound of Africa!: Making Music Zulu in a South African Studio* (Durham: Duke University Press, 2003); Thomas Porcello, "Music Mediated as Live in Austin: Sound, Technology, and Recording Practice," in *Wired for Sound*, 103-117; and Jeremy Wallach, *Modern Noise, Fluid Genres: Popular Music in Indonesia, 1997-2001* (Madison: University of Wisconsin Press, 2008).

examines how the notion of the artist as a charismatic leader is passed on to key mediators, and how the idea of cultural capital becomes important as a sign of distinction among art consumers, as it rewards those able to 'decipher' the work of art. By associating aesthetic premises, technology, knowledge transmission, and the political climate in France in the 1980s, Born offers an interesting account of how ideology is maintained in IRCAM from the everyday practice perspective.

Taking into account CVM's activities, we may observe how the institution (as any archive) tries to capitalize on its own resources by carefully selecting the types of associations worth engaging. This is implied, for instance, when I asked a CVM member about the curatorial process and how they knew which projects should be included; the person just told me, "We have standards." Add to that the fact that, as a chief auctioneer at Christie's (a well-known fine art auction house) stated recently, "We are running out of earlier material, so our market is being pushed closer to the present day."[249]

Different visual music technocultures, or groups and individuals within a given technoculture, tend to establish their own strategies of dealing with autonomy (and the lack of autonomy) in their production. Artists who have been enmeshed in commercial art are often pressed to establish a strong aesthetic conviction when they invest in 'pure art.' To do this, they must constantly express their disdain for the 'day job' in order the gain some legitimacy in the art field. Others in fact try to bridge economic and cultural capitals by creating art often based on the balance between the artistically legitimate and the economically profitable, something that can be hard to do in visual music and other new media art. Artists' strategies for circulating between economic and cultural hierarchies

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[249] Quoted in Sarah Thornton, *Seven Days in the Art World*, 6.

include a clear demarcation of the artistic practice (e.g., visual music may be seen a good or bad term), and working under artistic names under which it is possible to aggregate different projects (from the 'commercial' to the 'artistic') - it is easier to drop these artistic names in favor of a personal name when these artists decide (or have the opportunity) to fully invest in legitimizing their art within the cultural field only. Position-takings can be observed in this comment made by a collaborator:

> It's interesting that we are having this conversation right now, because I'm spending a lot of time to accessing where is the best place to put my energy. Not that I want to change what I do to fit someone else's needs or desires, especially because I do a lot of different stuff, I just want to make sure that I'm focusing on the stuff that has the most interesting future, both from a creative and from a supporting-yourself kind of way.

Whereas the economic capital is measured by level of success (short-term profit making), cultural capital is measured by consecration. Different generalizations tend to be exerted by competing fields; for instance, whole art genres tend to be distributed and hierarchized within the continuum economic- and cultural-driven production - this is particularly revealing as we observe the slow incorporation among collectors and museums of a few visual music technocultures. Because it is an incipient artistic field (at least the new media visual music), where conventions about profit, evaluation, distribution, consecration vs. success, etc. are being gradually established, it is often more difficult for some visual music artists to be seen as detached from financial concerns.

Bourdieu highlights a second axis of struggle for classifications in artistic production: that between the consecrated avant-garde and the new avant-gardes. First, as newcomers step into the artistic field, "They necessarily push back into the past the

consecrated producers with whom they are compared [...]."[250] Within the field of experimental art production, there is a generational tension in which a consecrated avant-garde attempt to maintain their position, whereas newcomers try to carve a space by creating some kind of rupture with the old. These differences are situated between the 'new,' "Which is provisionally devoid of 'economic' value, and the 'old,' definitively devaluated, and the [...] 'classical,' endowed with a constant of constantly growing 'economic' value."[251] An example from the material presented here would be Egan's view of the MOCA visual music exhibition as an event that "played safe" by "keeping things historical."

As Bourdieu observes, the propensity to move to more risky positions, "And above all, the capacity to persist in them (a condition for all avant-garde undertakings which precede the demands of the market), even when they secure no short-term economic profit, seem to depend to a large extent on possession of substantial economic and social capital."[252] As many of my ethnographic collaborators know, "Economic capital provides the conditions for freedom from economic necessity, a private income being one of the best substitutes for sales [...]."[253] To put it simply, as much as cultural and economic capitals are part of opposed strategies and rely on different *habitus* (a set of incorporated practices that allow agents to navigate in specific fields and to establish distinctions), there is in fact a stable translation of capitals, as those with economic capital are more prone to sustain their non-commercial art and invest in long-term

[250] Pierre Bourdieu, *The Field of Cultural Production*, 107.

[251] Ibid., 149.

[252] Ibid., 67.

[253] Ibid., 68.

processes of consecration. The interesting point in visual music is that many collaborators are experimenting with these kinds of capital translations (as Pagano's comment illustrates). Many times I heard my collaborators state that their visual music production was not about profit; by maintaining a well-demarcated body of work (the *oeuvre)* relatively untouched by short-term gain, and by dissociating this work from other commercially driven production, these artists are operating with a set of internalized structural premises (purity, total creative control, limited-edition/principle of rarity, etc.) that they need to reshape to attract specific legitimizing agents. To take the same example from our consideration of art worlds, the Artists' Salons is not only an important site where new audiences are reached, but a site where visual music works are presented from the fine art perspective, where aesthetic and other non-commercial (or not directly commercial) views are shared.

Perhaps Bourdieu summarizes the visual music artistic field I've been trying to tackle, when he asserts the possibility of a single field to aggregate ambiguous and controversial position-takings. Visual music works occupy

> the entire range of intermediaries between works produced with reference to the restricted market on the one hand, and works determined by an intuitive representation of the expectations of the widest possible public on the other. The range might include avant-garde works reserved for a few initiates within the peer-group, avant-garde works on the road to consecration. works of 'bourgeois art' aimed at the non-intellectual fraction of the dominant class and often already consecrated by the most official of legitimizing institutions (the academies), works of middle-brow art aimed at various 'target publics' and involving, besides brand-name culture [...], imitation culture aimed at the rising petite bourgeoisie [...] and mass culture, that is, the ensemble of socially neutralized works.[254]

[254] Ibid., 127.

I started the chapter with ANT and moved to consider visual music in Los Angeles from the art world perspective, and then ended with Bourdieu's (or my reading of Bourdieu's) analytical lenses. There is, I believe, a moving of scope in inquiry and in the premises to understand society, and form society to art production. The intention in this Chapter was to present how my narrative was assembled, and to suggest a few anthropological interpretations about this assemblage. The principle of following the actors helped me to narrow the kind of data to include here, but it also showed to be a body of information that can be quite challenging to connect. In what follows, I conclude with some thoughts about the implications of this approach.

Conclusion

Based on just three months of fieldwork and on roughly one year of immersed research (including countless hours of e-ethnography), I have attempted to understand a constellation of practices related to abstraction and sound, further situating this practice in Los Angeles. For that, I started by laying down the analytical premises which were further elaborated in Chapter 6. I then considered a more extended network of practices and actors historically associated with the intersections between art and technology, and later, thanks in part to the systematic institutionalization of these practices, between art and technoscience. Because the network is huge, and because I was not concerned with all existing art-technoscience interactions, I mentioned only a few nodes related to what theorists have been saying about the increasing agency of the machine in all kinds of associations.

I then offered an extended discussion of visual music, which was tackled by considering other definitions and, above all, the shared attributes of the works by the people I met in Los Angeles. Because I chose to follow such an inclusive approach, I was able to observe how groups establish distinctions and collaborations, and how these group formations were associated with different levels of abstraction and with the technology used, which led me to consider these groups as technocultures. These technocultures were not considered in a vacuum, but in a specific place with specific resources, and I considered visual music as a typical urban activity. The urban space allows artists to deploy resources and to produce art based on their associations with

machines. I became interested in a specific site of visual music production: Los Angeles. L.A. was a relatively affordable site for me to conduct fieldwork, and an interesting one. I knew I would be able to grasp interesting agencies in a city overwhelmed by media production. In that sense, I want to offer some closing remarks by mentioning the last two sources of uncertainty of actor-network-theory (ANT).

In the *fourth source of uncertainty*, Latour suggests some interesting ideas about the production of social theory (sociology and anthropology in special). To start with, he claims that no social explanation is necessary. The problem, as it should be visible in my brief discussion on ANT, is that social theorists have considered actors' actions as representing some social force these actors unaware of. For Latour, there are instead strings of mediators which are observed not as causality, but as coexistence. He calls 'matters of concern' *everything* (and he goes further to erode the well-established 'social' vs. 'natural' dichotomy) that becomes the disputed topic of a virtual assembly.

Finally, the *fifth source of uncertainty* is about the very process of writing from an ANT perspective. If the idea is to show fact as constructs and objects as mediators, than the same should be said about the written account. In reassembling the traces, it is very possible that this account can fail. What I like in this reasoning is that there is not a distinction between agent and structure, but rather "actors *as* networks of mediations - hence the hyphen 'actor-network.'"[255] As anthropologists have been arguing about ethnographic authority for decades, the translation of research into written account is also responsible for turning cultural artifacts ("so and so said that about this ritual") into

[255] Latour, *Reassembling the Social,* 136.

cultural facts ("the ritual operates this way").[256] Instead of thinking in terms of 'global' and 'local,' ANT argues that there are specific centers of calculation connected through specific channels, and that specific places are always assembled by drawing resources and agencies from elsewhere. This is the main reason I attempted to undertake a parallel ethnography in a specific locale (Los Angeles) and in a zone of apparent non-locality or trans-locality (the Internet); I wanted to see how visual music works and discourses were being constantly localized and redistributed.

According to Latour, there is in the ANT approach a gradual moving from documenting the ways the social is reassembled, to settling the controversies about the social, and, finally, to offering some ideas for political action. Following this idea, I believe it is only by deploying the controversies and including the multiple agencies that social sciences can show the full length of its political potential. As Latour puts it, "Of course, appealing to 'social domination' might be useful as shorthand, but then it is much too tempting to *use* power instead of *explaining* it and that is exactly the problem with most 'social-explainers': in their search for *powerful explanations*, is it not *their* lust for power that shines through?" [257]

However, Latour and other ANT theorists seems to be less inclined to realize the fact that there are some social theorists who will have the ability to move more freely among mediators and to enter into certain spaces than others. Would Latour be able to access the data and undertake fieldwork inside laboratories the same way were he not

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[256] See James Clifford, *The Predicament of Culture* (Cambridge: Harvard University Press, 1988).

[257] Latour, *Reassembling the Social*, 85.

white, male, and from France? If we agree with latour that "arguing is costly,"[258] than we may be able to forge a ANT more sensitive to what anthropologists, feminists, and other social theorists have been claiming, that it is not possible to make things politically relevant *after* reassembling the social, since ethnography is a political practice through and through. There is always the risk of reinforcing an epistemological asymmetry (those who have the resource to theorize about the others), and ANT should be a tool both to let the actors defend themselves in their position-takings and to to reflect on how the ethnographer is allowed to trace those actions because (and not despite) of his/her ethnicity, race, gender, nationality, class, cultural background, taste, etc.

How about my ethnographic collaborators? Are they race-less, gender-less, and class-less? Obviously not. The fact that I found more white upper class males in the field of visual music production, and relatively more females as part of support personnel should tell us something about the field. The reason for me not to frame and analyze art production from this perspective is simply that I don't think I know enough about this field to make these kind of assertions and to compromise - in the eyes of my collaborators - the ways they are portrayed here. Whether we are dealing with a white cosmopolitan elite playing with fancy toys, with experimental art world members making their living from their specific skills, or with visionaries of a new era, this should be considered based on a much broader and extensive research. Here, I simply did what most ANT theorists have been doing, and avoided saying more than the ethnographic data allowed me. It is my impression that, first, funding visual music events and artists is one of many ways a metropolis or institution has of distinguishing itself from the others, of claiming a certain

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[258] Latour, *Science in Action*, 69.

kind of cultural capital. In terms of institutional prestige this can be of course a risky investment, and it is not surprising that we find these events and artists in places where technoculture or fine art (preferably both) are able to receive enough money to become stabilized. Also, while not all of my collaborators use high tech equipment, it seems clear that, to be part of this community, and become visible in it, the volume of economic investment must be considerably high.

In relation to my own field, ethnomusicology, it seems that there are very few people interested in talking about technology, fewer interested in talking about technology in the Western context, and even fewer in talking about experimental art (not to say audio-visual art!). As I never considered ethnomusicology an non-expandable field, I believe a close listening to still marginal narratives such as visual music - in or outside the Western narrative - should allow us to practice some sort of experimental ethnomusicology, in which sonic elements may allow us to access mediations and mediators that are equally marginalized in other disciplines. I believe I learned something about this listening practice from my research on visual music.

Appendix A: About the Ethnographic Collaborators

Adams, Tyler: Tyler Adams is an artist investigating the relationships between sound, light, and space. His work aims to reveal greater sensorial and perceptual understanding through installations, recordings, video, sculpture and other media. He holds an MFA from UCLA and a BFA from California Institute of the Arts. He is currently studying Architectural Acoustics at Rensselaer Polytechnic Institute in Troy, New York. *Source*: http://www.t-adams.com/ (accessed April 22, 2010).

Alves, Bill: Bill Alves is a composer, writer, and video artist based in Southern California. He has written extensively for conventional acoustic instruments, non-Western instruments (especially Indonesian gamelan) and electronic media, often integrated with abstract animation. CDs of his audio works include *The Terrain of Possibilities* (EMF) and *Imbal-Imbalan* (Spectral Harmonies), and his video works are distributed by the IotaCenter. He is the author of the book *Music of the Peoples of the World*, the second edition of which was released by Cengage/Schirmer in Fall 2008. Other writings have appeared in *Perspectives of New Music*, *Computer Music Journal*, *SEAMUS Journal*, *1/1*, and elsewhere. In 1993-94 he was a Fulbright Senior Scholar Fellow in Indonesia, where he studied the gamelan orchestra music of Java and Bali. He currently directs the HMC American Gamelan, an ensemble of specially tuned Javanese instruments dedicated to the performance of new, non-traditional music. He is one of the organizers of MicroFest, the annual Southern California festival of new music in alternate tunings. He teaches at Harvey Mudd College of the Claremont Colleges in Southern California. *Source*: http://www.billalves.com/bio.html (accessed April 22, 2010).

Arford, Scott: Scott Arford is one of the leading figures of new media arts in the San Francisco Bay Area. He has produced numerous works for sound and video including multichannel installations, live performances, CD and DVD projects. He was awarded an Honorable Mention in the 2005 Prix Ars Electronica. Arford has shown his in numerous venues including the San Francisco Museum of Modern Art; Dissonanze 7 in Rome, Italy; LUFF Festival in Lausanne, Switzerland; Observatori Festival in Valencia, Spain; the Sounding Festivals in Guangzhou, China and Taipei, Taiwan; the LEM festival in Barcelona, Spain; Liquid Architecture in Melbourne, Australia; the Festival de Video/Arte/Eolectronica in Lima, Peru; Sonic Light in Amsterdam; and the Center for Contemporary Arts in Kitakyushu, Japan. *Source*: http://www.7hz.org/bio/bio.html (accessed April 22, 2010).

Beck, Steve: Electronic "polymediast" Stephen Beck has been sculpting video and multimedia works with electrons since the pre-digital era in 1967. His video performances, compositions, and sculptures have been acquired by both private collectors as well as museums worldwide. The artist holds degrees in electronic engineering and computer science from the University of California, Berkeley, and also studied electronic music and composition with composer John Cage at the University of Illinois, Urbana. He was a founding member of the Chicago chapter of EAT (Experiments in Art and Technology) in 1968. Mr. Beck is currently serving on the faculty of the University of California, Berkeley. *Source*: http://www.stevebeck.tv/about.htm (accessed April 22, 2010).

Constabile, Sue: Sue C is a video artist and photographer working mainly in live improvisational settings. Her set up usually includes a small camera, a light pad and various drawings, watercolors, photos and found objects which she animates using her hands and a computer program called Jitter. She is currently collaborating mainly with Antye Greie, a musician from Berlin who performs as AGF, but have also performed with Joshua Kit Clayton, Wobbly, Sutekh, Luc Ferrari, Morton Subotnick, Vladislav Delay, Naut Humon and many other nice people. *Source*: http://www.sue-c.net/text.html (accessed April 22, 2010).

Cuba, Larry: Larry Cuba is widely recognized as a pioneer in the use of computers in animation art. Producing his first computer animation in 1974, Cuba was at the forefront of the computer-animation artists considered the "second generation" --- those who directly followed the visionaries of the sixties: John Whitney, Sr., Stan Vanderbeek and Lillian Schwartz. *Source*: http://www.well.com/user/cuba/Biography.html (accessed April 22, 2010).

Davis, Grant: Grant Davis gave up his collegiate ideals of working with deaf children 12 years ago when he first experienced a live VJ environment in Black Rock City. As a Communications Disorder Specialist, he found visuals to be a unique way to interpret music for the deaf. Since then, under the name VJ Culture, Grant has provided sight and sound for audiences around the world. Not only a visual artist, Grant also organizes large scale VJ related events across the US: Video Riot, VJ Battles and VJ Festivals. He is founder of Video Salon which has been an important non-profit organization providing audio-visual education free of charge for over 7 years. Grant and his partner Xarene produced and released, 'vE-"jA: Art and Technology of Live Audio Video, a book and DVD covering the global VJ scene. Grant is also featured in two other books on VJs and in numerous magazines. *Source*: http://www.vjculture.com/ (accessed April 22, 2010).

Draves, Scott: Scott Draves a.k.a. Spot is a visual and software artist living in New York City. Draves is best known as the creator of the Electric Sheep, a continually evolving abstract animation with over 60,000 daily participants. He created the original Flame algorithm in 1991, the Bomb visual-musical instrument in 1995, and the Electric Sheep in 1999. Draves' software artworks are released as open source and have been used for two decades by many other artists and designers in their own work. Most recently, Draves created Generation 243, a commissioned piece for the Gates Center for Computer Science at Carnegie Mellon University. Other works in clude Clade 1, a rare true high-definition video artwork that runs a 26-minute loop. Dreams in High Fidelity, a moving painting that runs infinitely, is installed in the lobby of Google's headquarters, and has been acquired by corporate and residential collections nationally. *Source*: http://scottdraves.com/about.html (accessed April 22, 2010).

Egan, Jeffers: Jeffers Egan's work defines a new digital aesthetic for Video and Fine Art. Developed entirely with handcrafted, computer based algorithmic processes, Egan's abstract animations explore the concepts of digital as organism, and software as ecosystem. His motion paintings, Live AV performances, and videos have been showcased worldwide at festivals, galleries and museums including Transmediale, Netmage, Dissonanze, Plateaux, Cimatics, Interieur Biennale, Walker Art Museum, Guggenheim Bilbao, and the New York Video Festival. Egan's work has acheived international critical acclaim, nominated for media art awards at the D-Motion, Popkomm and Backup festivals, and hailed as "astounding"(Groove), "beautiful"(New York Times), "fascinating"(Musicwoche), "an extremely provocative multi-media performance with an absolutely unique aesthetic"(KEYS), "a mesmerizing and meditative experience (ArtWeek)" and "the most advanced trip imaginable in the current field of video art." *Source*: http://www.jeffersegan.com/bio.html (accessed April 22, 2010).

Ellis, Jim: Jim Ellis studied at CalArts and has created music-related animation, including real-time concert animation for the rock band Rush. His current work involves creating effects sequences based on the subject of synesthesia, as well as developing a feature of his own music and animation. *Source*: http://iotacenter.org/databasetry?name=EllisJim (accessed April 23, 2010).

Haller, Robert: Robert Haller has written extensively on avant-garde cinema. He is the Director of Collections and Special Projects at the Anthology Film Archives. See http://www.anthologyfilmarchives.org/ (accessed April 23, 2010).

Ham, Bill: Bill Ham was born in Greenville, Mississippi in 1932. He graduated from the University of Houston in 1954 with a Bachelor of Fine Arts Degree. Following two years of military service and a sojourn in commercial "art", he moved to San Francisco in 1959 and began a period of experimentation and studio work. Working in his studio with live and recorded sound, Ham developed a technique of spontaneous projection painting (electric action painting) involving simultaneous composition - execution - and presentation. Electric action painting, true to nature itself, ceased to be a "frozen" moment or "finished" object, and became a series of uninterrupted projected imagery existing only during the time of projection. The "act" of painting and "the " painting , now existed simultaneously. This unusual quality of momentariness and impermanence required a new painter - viewer relationship. Viewer "participation" for such a "present tense" art, suggested attendance not only for occasional public presentations, but during studio "sessions" as well. *Source*: http://www.billhamlights.com/bhl_history.html (accessed April 22, 2010).

Humon, Naut: Naut Humon serves on the Digital Musics jury of the Ars Electronica festival in Linz, Austria every year. He is the founder of Recombinant Media Labs and was head of A&R for Asphodel Records, both based in San Francisco. For over 20 years, STC creator, curator and conductor Naut Humon has been staging underground events which have inverted and blurred the roles of audience and participant. He was the primary catalyst, producer, arranger and performer of Rhythm and Noise. Naut later founded Sound Traffic Control in 1991 with two intentions: first, to replace Rhythm and Noise's group form by a more flexible collective; and second, to focus on using an orchestral setting to explore three-dimensional space. Throughout the years, along with his own electroacoustic excursions and products Naut has collaborated with many artists and musicians of numerous influences, disciplines and styles. *Source*: http://en.wikipedia.org/wiki/Naut_Humon (accessed April 22, 2010).

J-Walt: John Adamczyk, known as J.Walt, is an interactive designer, filmmaker, graphic artist, and composer. He has created a number of films, videos, interactive attractions and performances. He has been at the forefront of interactive art, expanding the uses of interactive graphics into uncharted territories. He is an award-winning pioneer of computer-generated puppetry, having created digital puppets since 1987. He grew up in Evanston, Illinois, and graduated from the California Institute of the Arts in 1988. Since then has created a number of interactive attractions for Disney, Sony, and others. He organizes the Los Angeles Abstract Film and Video Workshop, a monthly gathering of artists. J.Walt's work has been exhibited at Ars Electronica, Siggraph, Sinking Creek Film Festival, New York Animation Festival, and others. He lives with his wife and three children in Altadena, California. *Source*: http://iotacenter.org/databasetry?name=AdamczykJohn (accessed April 22, 2010).

James, David: David E. James is on the faculty of the School of Cinematic Arts at the University of Southern California. He received his B.A. and M.A. degrees in English Literature from Cambridge University and an M.A. and Ph.D., also in English, from the University of Pennsylvania. He has held academic positions at the University of California, Occidental College, New York University, Korea University, Shanghai University of Science and Technology, the Beijing Film Academy, National Taiwan University, and Viet Nam National University, Hanoi. He is the author of Written Within and Without: A Study of Blake's Milton (Frankfurt: Peter Lang, 1977), Allegories of Cinema: American Film in the Sixties (Princeton University Press, 1989), Power Misses: Essays Across (Un)Popular Culture (London: Verso Books, 1996), and The Most Typical Avant-Garde: History and Geography of Minor Cinemas in Los Angeles (University of California Press, 2006), and over 100 articles and reviews. Source: http://college.usc.edu/cf/faculty-and-staff/faculty.cfm?pid=1008564&CFID=12609575&CFTOKEN=35972897).

Keefer, Cindy: Cindy Keefer is the current director of the Center for Visual Music. See http://www.centerforvisualmusic.org/ (accessed April 22, 2010).

Lantz, Ed: Ed Lantz is a media and entertainment engineer, scientist, executive manager and entrepreneur. He is internationally recognized as a pioneer and leading authority in large-format digital cinema and immersive experiences for mass audiences. Other areas of interest include virtual reality, interactive place-based entertainment, real-time video/music performance, independent films with socially conscious themes, fine art visual music, neuroaesthetics, and wellness applications exploiting the psychophysical effects of interactive digital media. Mr. Lantz is founder and Chair of Harmony Channel, a broadband television network delivering mood-elevating digital media that has been described as "MTV for the Soul." He also operates Visual Bandwidth, Inc., an immersive cinema and fulldome video advisory network. *Source*: http://www.vorteximmersion.com/management.php (accessed April 22, 2010).

Malina, Roger: Roger Malina is an astrophysicist at the Laboratoire d'Astrophysique de Marseille CNRS in France were he is a member of the Observational Cosmology Research Group involved in the study of dark matter and dark energy in the Universe. He currently serves as Interim Director of the Observatoire Astronomique de Marseille Provence and is a former Executive Director of the Center for EUV Astrophysics at UC Berkeley. He is Executive Editor of the Leonardo publications at by MIT Press including the Leonardo Book Series and Journals.Malina also serves as Chairman Emeritus of the Board of Leonardo, The International Society for the Arts, Sciences and Technology in San Francisco, and President of the Observatoire Leonardo des Arts et Technosciences in Paris. He is a member of the International Academy of Astronautics and a founding member of their Commission VI on Space Activities and Society. *Source*: http://www.leonardo.info/rolodex/malina.roger.html (accessed April 22, 2010).

Miller, Dennis: Dennis Miller received his Doctorate in Music Composition from Columbia University and is currently on the Music faculty of Northeastern University in Boston where he heads the Music Technology program and serves on the Multimedia Studies Steering Committee. His mixed media works have been presented at numerous venues throughout the world, most recently the DeCordova Museum, the New York Digital Salon Traveling Exhibit, the 2005 Art in Motion screenings, Images du Nouveau Monde, CynetArts, Sonic Circuits, the Cuban International Festival of Music, and the 2004 New England Film and Video Festival. His work was also presented at the gala opening of the new Disney Hall in Los Angeles (2003) and at the SIGGRAPH 2001 in the Emerging Technologies gallery. Recent exhibits of his 3D still

images include the Boston Computer Museum and the Biannual Conference on Art and Technology, as well as publication in Sonic Graphics: Seeing Sound (Rizzoli Books) and Art of the Digital Age (Thames and Hudson). *Source*: http://www.dennismiller.neu.edu/ (accessed April 22, 2010).

Pagano, Scott: As filmmaker, motion designer, and spatial reconstructionist, Scott Pagano creates moving image content utilizing shards of architecture, disfunction, and futurism. With influences ranging from minimal painting to cinema, his work offers a re-envisioned perspective on the graphic stratas that saturate our visual perception. His meticulously constructed abstract artworks push the boundaries of audio-visual composition and process using a dynamic mix of cinematographic and synthetic imagery. *Source*: http://www.neither-field.com/ (accessed April 22, 2010).

Patterson, Michael: Mike Patterson is an animator and director of commercials, music videos and short films. He began his career in 1985 by animating the epic MTV hit, *Take On Me* for A-Ha. As a director at Rhythm & Hues Studios for nearly ten years, he worked extensively with 2D animation, 3D animation and visual effects. Patterson studied animation with Jules Engel at CalArts where he produced his Student Academy Award winning animated film *Commuter*. In fall of 2006, *Commuter* was added into the Museum of Modern Art's permanent collection along with seven Patterson & Reckinger music video clips. His current animation work combines digital illustration, live photography and visual effects. Collaborative visual music projects in development include cross platform audio-visual installations and performances. *Source*: http://cinema.usc.edu/faculty/mike-patterson.htm (accessed April 22, 2010).

Roads, Curtis: Curtis Roads creates, teaches, and pursues research in the interdisciplinary territory spanning music and technology. He studied computer music composition at California Institute of the Arts and the University of California, San Diego (UCSD) and received a Doctorat from the Université Paris 8. A pioneer in the development of granular synthesis (1974), he also developed (with Alberto de Campo) a sound particle synthesis program PulsarGenerator (2001), distributed by the Center for Research in Electronic Art Technology (CREATE) at UCSB. He is keenly interested in the integration of electronic music with visual and spatial media. His collection of electronic music compositions POINT LINE CLOUD won the Award of Distinction at the 2002 Ars Electronica in Linz and was released as a CD + DVD on the Asphodel label in 2005. *Source*: http://clang.mat.ucsb.edu/clang/biography_and_contact.html (accessed April 22, 2010).

Roden, Steve: steve roden is a visual and sound artist from los angeles. his work includes painting, drawing, sculpture, film/video, sound installation, and performance. roden's working process uses various forms of specific notation (words, musical scores, maps, etc.) and translates them through self invented systems into scores; which then influence the process of painting, drawing, sculpture, and sound composition. these scores, rigid in terms of their parameters and rules, are also full of holes for intuitive decisions and left turns. the inspirational source material becomes a kind of formal skeleton that the abstract finished works are built upon. *Source*: http://www.inbetweennoise.com/bio.html (accessed April 22, 2010).

Ross, Aaron: Aaron Ross is an interdisciplinary artist who makes computer animation, video art, and electronic music. My work is experimental, but draws upon a long tradition: the art form known as visual music. I summon the ghost of surrealism, with its noble goal of liberating the unconscious. Using high

technology, I hope to access the contents of the collective psyche to further the process of evolution. He teaches at the Art Institute of California, San Francisco. *Source*: http://www.dr-yo.com/ (accessed April 22, 2010).

Sapienza, Stephanie: Stephanie has a master's degree in Moving Image Archive Studies from UCLA, where she specialized in issues of access for film and video collections, with a special interest in experimental film and animation. She has been involved with programming and promoting experimental filmmaking in LA since 2001 when she began volunteering for Los Angeles Filmforum, the city's longest running series devoted to screenings of experimental and alternative work by independent artists. She is now the Board President of that organization, a partnership that has proved mutually beneficial for both organizations. In addition to her work for iotaCenter, she is also the Project Director for Alternative Projections: Experimental Film in Los Angeles 1945 - 1980, a Getty grant project being undertaken by Filmforum to research and plan for a 2011 exhibition on postwar experimental filmmakers in LA. iotaCenter is assisting Filmforum with this project since it is one of the two archival repositories with holdings from the Creative Film Society collection, a major distributor of experimental work from the postwar era. *Source*: http://iotacenter.org/Members/ssapienza (accessed April 22, 2010).

Scroggins, Michael: Michael Scroggins is a pioneer in the field of performance animation. The utilization of realtime visual instruments in the creation of visual compositions of absolute color, shape, and texture has been at the heart of his work for over 25 years. His absolute animation works have been widely exhibted internationally including screenings at the Centre George Pompidou, Paris; Union of Filmmakers, Moscow; Seibu Ginza, Tokyo; and the Los Angeles County Museum of Art, Los Angeles. He was recently appointed Director of Computer Animation Labs at CalArts where he has been a member of the faculty since 1978. *Source*: http://www.iotacenter.org/program/publication/moritz/Absolut/michaelscroggins/view (accessed April 22, 2010).

Smith, Jarrett: Jarrett Smith is an audiovisual artist and software developed at Derivative, where he works mainly with the software TouchDesigner. See http://www.derivative.ca/ (accessed April 23, 2010).

Stadnik, George: Stadnik received a BFA in Experimental Studios from Syracuse University in 1972 and began to create Lumia performances for the annual Avant Garde Festivals in NYC. In 1978, he established a Lumiagraph studio in Worcester, Massachusetts - essentially a 10'x12'x8' light-tight room or camera obscura - where he made mathematically-based Lumia or light compositions and recorded them directly as unique still images on film, which were exhibited in galleries in the United States and Europe. During this period, Stadnik was awarded a grant from the Rockefeller foundation to create a piece for the WGBH New Television Workshop in Waterdown Massachusetts, produced numerous Lumia performances for galleries and planetariums and patented a photon light guitar. Due to the logistical limitations posed by the physical Lumia device, Stadnik turned to commercial software as an alternative method of production in the 1980s. Currently, Stadnik continues to create digital Lumia simulations using programs such as Maya 5.0 with Mental Ray, Final Cut Pro and DVD Pro Studio and a Macintosh computer. *Source*: http://iotacenter.org/databasetry?name=StadnikGeorge (accessed April 23, 2010).

Steinkamp, Jennifer: Jennifer Steinkamp received her BFA and MFA in Fine Art from Art Center College of Design. She is an installation artist who works with new media and video to explore ideas about architectural space, motion, and perception. Her works have been featured at major international

exhibitions including The Getty, The Hirshhorn Museum, Pintemps de Septembre, and The Venice Biennale. *Source*: http://iotacenter.org/databasetry?name=SteinkampJennifer (accessed April 20, 2010).

References

Albright, Daniel, ed. *Modernism and Music: An Anthology of Sources*. Chicago: University of Chicago Press, 2004.

American Abstract Artists. *The World of Abstract Art*. New York: G. Wittenborn, 1957.

Altman, Rick. "Moving Lips: Cinema as Ventriloquism." *Yale French Studies*, no. 60 (1980): 67-79.

Alves, Bill. "Digital Harmony of Sound and Light." *Computer Music Journal* 29, no. 4 (Winter 2005): 45-54.

Banham, Reyner. *Los Angeles; the Architecture of Four Ecologies*. 1st ed. New York: Harper & Row, 1971.

Baudrillard, Jean. *Simulacra and Simulation*. Ann Arbor: University of Michigan Press, 1994.

"Beauty of Form in Machine Art." *Design* 35, no. 10 (April 1934): 8-9, 25.

Becker, Howard. *Art Worlds*. 1st ed. Berkeley: University of California Press, 1982.

Belson, Jordan. *Jordan Belson 5 Essential Films*. DVD. Los Angeles: Center for Visual Music, 2007.

_____. *Samadhi: And Other Films*. VHS. Montauk: Mystic Fire Video, 1989.

Benjamin, Walter. *The Arcades Project*. Cambridge: Harvard University Press, 1999.

Benton, Tim. "Dreams of Machines: Futurism and l'Esprit Nouveau." *Journal of Design History* 3, no. 1 (Jan. 1990): 19-34.

Blom, Ina. "The Touch through Time: Raoul Hausmann, Nam June Paik and the Transmission Technologies of the Avant-Garde." *Leonardo* 34, no. 3 (June 2001): 209-215.

Born, Georgina. *Rationalizing Culture: IRCAM, Boulez, and the Institutionalization of the Musical Avant-Garde*. Berkeley: University of California Press, 1994.

Bourdieu, Pierre. *The Field of Cultural Production: Essays on Art and Literature*. New York: Columbia University Press, 1993.

Brougher, Kerry, and Judith Zilczer, eds. *Visual Music: Synaesthesia in Art and Music Since 1900*. [New York]: Thames & Hudson, 2005.

Buhler, James, Caryl Flinn, and David Neumeyer. *Music and Cinema*. Hanover, NH: University Press of New England, 2000.

Cage, John. *Silence: Lectures and Writings*. Cambridge: M.I.T. Press, 1966.

Certeau, Michel de. *The Practice of Everyday Life*. Berkeley: University of California Press, 1984.

Chion, Michel. *Film, a Sound Art*. New York: Columbia University Press, 2009.

Charney, Leo, and Vanessa Schwartz, eds. *Cinema and the Invention of Modern Life*. Berkeley: University of California Press, 1995.

Collopy, Fred. "Color, Form, and Motion: Dimensions of a Musical Art of Light." *Leonardo* 33, no. 5 (October 1, 2000): 355-360.

_____. "Improvisational Lumia: Painting along with Musicians." *Leonardo* 34, no. 4 (2001): 353-354.

_____. "RhythmicLight.com." http://rhythmiclight.com (accessed May 3, 2009).

_____. "Visual Music as a Performing Art." *Offscreen* 11, no. 8-9 (September 2007): 1-4.

Collopy, Fred, Robert M. Fuhrer, and David Jameson. "Visual Music in a Visual Programming Language." In *1999 IEEE Symposium on Visual Languages*. Los Alamitos, CA, USA: IEEE Computer Society, 1999.

Cooke, Mervyn. *A History of Film Music*. Cambridge: Cambridge University Press, 2008.

Dabrowski, Magdalena. *Contrasts of Form: Geometric Abstract Art, 1910-1980: From the Collection of the Museum of Modern Art, Includingthe Riklis Collection of McCrory Corporation*. New York: The Museum, 1985.

Davis, Mike. *City of Quartz: Excavating the Future in Los Angeles*. London: Verso, 2006.

Dear, Michael, and Steven Flusty. "Postmodern Urbanism." *Annals of the Association of American Geographers* 88, no. 1 (1998): 50.

Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia*. London: Athlone Press, 1988.

DJ Spooky That Subliminal Kid. *Sound Unbound: Sampling Digital Music and Culture*. Cambridge: M.I.T. Press, 2008.

Domnitch, Evelina, and Dmitry Gelfand. "Camera Lucida: A Three-Dimensional Sonochemical Observatory." *Leonardo* 37, no. 5 (10, 2004): 391-396.

Draves, Scott. *Spotworks [the Evolution of Visuals]*. DVD. San Francisco: Creative Commons, 2004.

Duhamel, Georges. *Scènes De La Vie Future*. Paris: Mercure de France, 1931.

Duplaix, Sophie, and Marcella Lista, eds. *Sons & Lumières: Une Histoire Du Son Dans L'art Du XXe Siècle*. Paris: Centre Pompidou, 2004. Published in conjunction with the exhibition "Sons & lumières: une histoire du son dans l'art du XXe siècle" shown at the Centre Pompidou.

Dyson, Frances. *Sounding New Media: Immersion and Embodiment in the Arts and Culture*. Berkeley: University of California Press, 2009.

Escritt, Stephen. *Art Nouveau*. London: Phaidon, 2000.

Fischinger, Oskar. "A Statement About Painting" (1951). http://www.oskarfischinger.org/Fisch1951Painting.htm (accessed June 17, 2009).

_____. "Sounding Ornaments" (1932). http://www.oskarfischinger.org/Sounding.htm (accessed June 17, 2009).

_____. *Oskar Fischinger: Ten Films*. DVD. Los Angeles: Center for Visual Music, 2006.

Frisch, Walter. *German Modernism: Music and the Arts*. Berkeley: University of California Press, 2005.

Gell, Alfred. *Art and Agency: An Anthropological Theory*. Oxford: Clarendon Press, 1998.

Gombrich, E. H. *The Sense of Order: A Study in the Psychology of Decorative Art*. Ithaca, N.Y: Cornell University Press, 1979.

Gooding, Mel. *Abstract Art*. London: Tate Gallery, 2000.

Greene, Paul, and Thomas Porcello. *Wired for Sound: Engineering and Technologies in Sonic Cultures*. Middletown: Wesleyan University Press, 2005.

Hayman, d'Arcy. "Unesco Symposium on Technology and Artistic Creation in the Contemporary World." *Leonardo* 1, no. 4 (October 1968): 441-444.

Hess, Thomas B. *Avant-Garde Art*. London: Collier-Macmillan, 1968.

Holton, Gerald. "Henri Poincaré, Marcel Duchamp and Innovation in Science and Art." *Leonardo* 34, no. 2 (April 1, 2001): 127-134.

Horrocks, Roger. *Len Lye: A Biography*. Auckland, N.Z: Auckland University Press, 2001.

Hosokawa, Shuhei. "The Walkman Effect." *Popular Music* 4, no. -1 (1984): 165-180.

Israel, Nico. "Damage Control: Adorno, Los Angeles, and the Dislocation of Culture." *The Yale Journal of Criticism* 10, no. 1 (1997): 85-113.

Jacobsen, Thomas. "Bridging the Arts and Sciences: A Framework for the Psychology of Aesthetics." *Leonardo* 39, no. 2 (April 1, 2006): 155-162.

James, David E. *The Most Typical Avant-Garde: History and Geography of Minor Cinemas in Los Angeles*. Berkeley: University of California Press, 2005.

James, David, ed. *The Sons and Daughters of Los: Culture and Community in L.A*. Philadelphia: Temple University Press, 2003.

Jameson, Fredric. *Postmodernism, or, The Cultural Logic of Late Capitalism*. Durham: Duke University Press, 1991.

Keefer, Cindy, and Jack Ox. "On Curating Recent Digital Abstract Visual Music." http://www.centerforvisualmusic.org/Ox_Keefer_VM.htm (accessed on June 15, 2010).

Land, Richard I. "Non-Verbal 'Discussion' Using Music and Kinetic Painting." *Leonardo* 1, no. 2 (April 1968): 121-123.

Latour, Bruno. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press, 2007.

_____. *Science in Action: How to Follow Scientists and Engineers Through Society*. Milton Keynes: Open University Press, 1987.

Leslie, Esther. *Hollywood Flatlands: Animation, Critical Theory and the Avant-Garde*. London: Verso, 2002.

Levin, Thomas Y. ""Tones from out of Nowhere": Rudolph Pfenninger and the Archaeology of Synthetic Sound." *Grey Room* 12 (Summer 2003): 32-79.

Levinson, Jerrold. *Contemplating Art: Essays in Aesthetics*. Oxford: Clarendon Press, 2006.

Lipsitz, George. "Learning from Los Angeles: Another One Rides the Bus." *American Quarterly* 56, no. 3 (2004): 511-529.

Lord, Catherine, ed. *CalArts Skeptical Belief(s)*. Newport Beach: Newport Harbor Art Museum, 1988.

Low, Setha M. "The Anthropology of Cities: Imagining and Theorizing the City." *Annual Review of Anthropology* 25, no. 1 (October 1996): 383-409.

Lubar, Katherine. "Color Intervals: Applying Concepts of Musical Consonance and Dissonance to Color." *Leonardo* 37, no. 2 (April 2004): 127-132.

Lysloff, René T. A., and Leslie C. Gay, eds. *Music and Technoculture*.Middletown: Wesleyan University Press, 2003.

MacDonald, Scott. *A Critical Cinema 3: Interviews with Independent Filmmakers*. Berkeley: University of California Press, 1998.

Malina, Frank. "Aims and Scope of Leonardo." *Leonardo* 1, no. 1 (January 1968): 1-2.

Manovich, Lev. *The Language of New Media*. Cambridge: MIT Press, 2001.

Marx, Karl, and Friedrich Engels. *The Marx-Engels Reader*. Edited by Robert Tucker. New York: Norton, 1978

McClung, William A. *Landscapes of Desire: Anglo Mythologies of Los Angeles*. Berkeley: University of California Press, 2000.

McDonnell, Maura. "Visual Music." (2002). http://homepage.tinet.ie/~musima/visualmusic/visualmusic.htm#recentwritings (accessed June 1, 2009).

McMurray, Peter. "Boston Cyberarts Festival: Visual Music Marathon/The Puppet Master by Eric Chasalow." *Computer Music Journal* 31, no. 4 (December 2007): 71-75.

Miller, Bernie. *Crime and Ornament: The Arts and Popular Culture in the Shadow of Adolf Loos / Ward, Melony*. Toronto, ON: YYZ Books, 2002.

Moritz, William. "Color Music - Integral Cinema." In *Poétique de la Couleur*, edited by Brenez, Nicole, and Miles McKane. Paris: Auditorium du Louvre/Institut de l'Image, 1995. http://www.centerforvisualmusic.org/WMCM_IC.htm (accessed 25 June, 2009).

_____. "Jordan Belson, Last of the Great Masters." *Animation Journal* 7, no. 1 (Spring 1999). http://www.centerforvisualmusic.org/BelsonAJ.htm (accessed June 20, 2009).

_____. *Optical Poetry: The Life and Work of Oskar Fischinger*. Bloomington: Indiana University Press, 2004.

_____. "The Dream of Color Music, And Machines That Made it Possible." *Animation World Magazine* 2, no.1 (April 1997). http://www.awn.com/mag/issue2.1/articles/moritz2.1.html (accessed April 28, 2009).

_____. "Towards an Aesthetics of Visual Music." *ASIFA Canada Bulletin* 14, no. 3 (December 1986). http://www.centerforvisualmusic.org/TAVM.htm (accessed August 2, 2009).

_____. "Visual Music: Cave Painting to MTV?" In *Sound & Vision*, edited by Herbert Gehr, 132-145. Frankfurt: Deutsches Filmmuseum, 1993.

_____. "Visual Music and Film-as-an-Art Before 1950." In *On the Edge of America: California Modernist Art, 1900-1950*, edited by Paul j. Karlstrom, 211-242. Berkeley: University of California Press, 1996.

Penley, Constance, and Andrew Ross, eds. *Technoculture*. Minneapolis: University of Minnesota Press, 1991.

Platt, Susan Noyes. "Modernism, Formalism, and Politics: The 'Cubism and Abstract Art' Exhibition of 1936 at the Museum of Modern Art." *Art Journal* 47, no. 4 (Winter 1988): 284-295.

Popper, Frank. *Origins and Development of Kinetic Art*. Greenwich: New York Graphic Society, 1968.

Porcello, Thomas. "Speaking of Sound: Language and the Professionalization of Sound-Recording Engineers." *Social Studies of Science* 34, no. 5 (October 1, 2004): 733-758.

Powell, Anna. *Deleuze, Altered States and Film*. Edinburgh: Edinburgh University Press, 2007.

Raban, Jonathan. *Soft City*. New York: E. P. Dutton, 1974.

Richter, Hans. "Easel-Scroll-Film." *Magazine of Art* (Feb. 1953): 78-86.

Rowland, Anna. "Business Management at the Weimar Bauhaus." *Journal of Design History* 1, no. 3/4 (1988): 153-175.

Russett, Robert. *Experimental Animation: An Illustrated Anthology / Starr, Cecile*. New York: Van Nostrand Reinhold Co., 1976.

Scarborough, Kim. “Futurism: Manifestos and Other Resources.” http://www.unknown.nu/futurism (accessed April 25, 2009).

Scruton, Roger. “Absolute music.” *Grove Music Online*.

Sennett, Richard. *Classic Essays on the Culture of Cities*. New York: Appleton-Century-Crofts, 1969.

Shaw, Debra Benita. *Technoculture: The Key Concepts*. Oxford: Berg, 2008.

Snow, C. P, and American Council of Learned Societies. *The Two Cultures*. Cambridge: Cambridge University Press, 2008.

Soja, Edward W. *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places*. Cambridge, Mass: Blackwell, 1996.

Soja, Edward, Rebecca Morales, and Goetz Wolff. “Urban Restructuring: An Analysis of Social and Spatial Change in Los Angeles” *Economic Geography* 59, no. 2 (Aptil 1983): 195-230.

Stauffacher, Frank. *Art in cinema: a symposium on the avantgarde film together with program notes and references for series one of Art in cinema*. San Francisco: Art in Cinema Society, 1947.

Tanner, Jeremy. *The Sociology of Art: A Reader*. London: Routledge, 2003.

Towards a New Art: Essays on the Background to Abstract Art, 1910-20. London: Tate Gallery, 1980.

Taylor, Timothy. *Strange Sounds: Music, Technology & Culture*. New York: Routledge, 2001.

Perkins, Morgan, and Howard Morphy, eds. *The Anthropology of Art: A Reader*. Malden: Blackwell Pub, 2006.

Scott, Allen John, and Edward W. Soja, eds. *The City Los Angeles and Urban Theory at the End of the Twentieth Century*. Berkeley: University of California Press, 1996. http://www.netlibrary.com.ezproxy.lib.utexas.edu/urlapi.asp?action=summary&v=1&bookid=6895 (acessed March 2010).

Tuchman, Maurice, Judi Freeman, and Carel Blotkamp, eds. *The Spiritual in Art: Abstract Painting 1890-1985*. New York: Abbeville Press, 1986.

Thornton, Sarah. *Seven Days in the Art World*. New York: W.W. Norton, 2008.
“Untitled Document.” http://www.centerforvisualmusic.org/TAVM.htm.

Vesna, Victoria. “Toward a Third Culture: Being In Between.” *Leonardo* 34, no. 2 (April 1, 2001): 121-125.

Vostell, Wolf. *Dé-Coll/Age Happenings*. New York, Something Else Press, 1966.

Weber, Max. *Sociological Writings*. Edited by Wolf Heydebrand. New York: Continuum, 1994.

Whitney, John. *Digital Harmony: On the Complementarity of Music and Visual Art*. Peterborough, N.H: Byte Books, 1980.

Youngblood, Gene. *Expanded Cinema*. 1st ed. New York: Dutton, 1970.

Zeki, Semir. *Inner Vision: An Exploration of Art and the Brain*. Oxford: Oxford University Press, 1999.

Vita

Leo Cardoso was born in Southern Brazil, where he studied music composition and ethnomusicology. His main areas of interest are: experimental art; sociology/ anthropology of art; technoculture; (new) media studies; science studies; intersections between technology, science, and art; and theoretical issues on urban ethnography. He has also written on media (TV and cinema) and music during and about the dictatorship in Brazil [1964-1985]. He is starting to research music among Deaf communities and hopes to expand his understanding of technocultures and listening practices through rhizomatic ethnographies. For more information visit http://leocardoso.org.