

UNIVERSITY OF CALIFORNIA, SAN DIEGO

**CVS: Concurrency, Versioning and Systems
& Other Essays About Collaboration by Modern Cultural Producers**

A thesis submitted in partial satisfaction of the
requirements for the degree Master of Fine Arts
in Visual Arts

by

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Committee in charge:

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The Thesis of **Jonathan David Phillips** is approved:

Chair

University of California, San Diego

2004

For my dear sister, Charis.

Miss you here, but will see you there

Table of Contents

Signature Page	iii
Dedication	iv
Table of Contents	v
Biography	vi
Abstract	vii
Acknowledgments	ix
Introduction to CVS	1
Bibliography	24

Book is available at UCSD's Geisel Library and at <http://cvsbook.ucsd.edu/>

NOTE: This Essay is VERSION 1 of the introduction to the book, *CVS: Concurrency, Versioning and Systems & Other Essays About Collaboration by Modern Cultural Producers*

Biography

Jon Phillips (www.rejon.org) is an open source developer, artist, designer, writer, educator, lecturer, and curator with 11+ years of experience creating communities and working within computing culture. His projects, both collaborative and individual, have been shown internationally at UC-Berkeley's 040404 Conference (2004), USC Aim Festival (2003), ICA London (2002), Bootlab (Berlin), and MAMA Media (Croatia). He is an active developer on Inkscape (<http://www.inkscape.org>), a cross-platform open source scalable vector graphics editor and is a project lead on the Open Clip Art Library (<http://openclipart.org>). Currently, he is writing/producing a book, "CVS: Concurrency, Versioning and Systems," (<http://cvsbook.ucsd.edu/>) about collaborative authorship and open source development and has started a "local" journal, SCALE (<http://scale.ucsd.edu/>), about remediation, aesthetics and computation.

Phillips completed his MFA in June of 2004 at the University of California, San Diego, where he studied with Lev Manovich (<http://www.manovich.net/>) and additionally with Sheldon Brown, Geof Bowker, Jack Greenstein and Joseph Goguen. He completed a BFA, New Media, at the Kansas City Art Institute where he studied with Patrick Clancy (<http://www.patrickclancy.org/>). He is affiliated with the Center for Research and Computing in the Arts (CRCA, <http://crca.ucsd.edu/>), California Institute for Telecommunications and Information Technology [CAL(IT)², <http://calit2.net/>], and University of California Digital Arts Research Network (UC DAR Net, <http://ucdarnet.org/>).

Abstract

CVS: Concurrency, Versioning and Systems
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by

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Master of Fine Arts, Visual Arts

University of California, San Diego, 2004

Professor Lev Manovich, Chair

CVS is a collection of essays by multiple authors working in seemingly disparate fields of cultural production: the open source software world, art, critical theory & writing, artificial intelligence, sound system design, music mixing and graphic design. This book posits CVS, or the necessity for concurrency, versioning, and systems as a framework with which to discuss current creative practices involving collaboration. CVS also is a technology used commonly in the Open Source software world to synchronize source code between multiple authors. This shared repository for group memory, usually used for software code, in this project extends the notion of code to encompass other languages (semasiographic: writing and graphics). This is a discussion of the concepts of synchronization, goal orientation and the use of technological systems to enable synergistic activities by contemporary cultural producers, defined as artists, designers, computer scientists, DJs, VJs, and writers. Diverse projects will be discussed: Jon Phillips' work with

Inkscape Open Source Scalable Vector Graphics Editor and the Open Source Clip Art Project to Neil Stuber's Vectorization techniques in the design field to Tim Jaeger's involvement in the VJ scene to Patrick Deegan's discussion of the SCALE journal to Fox Harrell's narrative on computational narrative. This work is a weaving of concepts and topics by emerging producers that are defining the landscape for the 21st centuries' social, aesthetic, scientific and cultural contributions. To read the most current version of the book, please visit:
<http://www.cvsbook.ucsd.edu/>

Acknowledgments

An enormous thank you to everyone who has supported me over the last few years. This has been a tough year for my family, with my sister, Charis, passing away in December of 2003 from a six year battle with cancer. I mention this because of the tremendous impact her bright life and struggle has had on me – my entire collegiate academic career, my present research, and where I am heading. While she lived only 26 years on Earth, her life and story have touched thousands. Everything I do is dedicated to my sister; I'm keeping my promise...

To my loving parents, Doug and Sally Phillips, you have been exemplary role models through these tough times. I proudly can say that both of my parents are also two of my best friends. You both have shown me how to act, what real love is between two people, and how to maintain during the most stressful of times. Since Charis passed away, I have often thought about how much quality content you both deposited in Charis and I. While it might not always have been cool to have had a dad that was a fiery Southern Baptist preacher that shook the pew with loud Amen's every Sunday, I can't help but see my father's influence in how I speak to people. My mom is the kindest, most caring person I have ever met. My mother never stops working. If she watches TV, she is grading papers, or reading the newspaper while also making tea (for someone else – probably me). I respect what my parents do; they both provide services to people. I try to be as humble as you both are in all my actions. I love you!

To my current network of friends in San Diego, you guys are the best. To the number one soldier, Neil Stuber. Brother, you were the last friend that I thought would have come out here to grad school, but are one of the most talented artists I have ever met. NYC is lucky to get you. Corrie Colbert, thank you for always asking me if I want to go to the beach, even though I was stuck in my work-mode half of the time. Patrick Deegan, you are the ultimate word smith, and a great friend. Thanks for helping me see that I too can write and connect my ambitions with a

textual articulation of my ideas – the collaboration is only beginning. In nine quick months I've become great friends with Fox Harrell. You are such a great inspiration to me. It is rare to meet someone that is able to connect diverse cultural interests with superior intellect, and still play some full-court, and then write a paper on multi-sorted algebra. Take care of your soon to be wife, Sneha. I will be seeing you both in Berkeley to play Capoeira.

I also don't want to forget the various people who have come in and out of focus while in San Diego: Joel Swanson, Rachel Egenhoefer, Linda Kim, Nathaniel Clark, Matt Hope, and Kevin Wingate. All of you all have shaped my life in enumerable ways. Although we might not be in sync, I know that our ideas and time together has shaped my current course immeasurably.

Thank you to my advisor Lev Manovich for keeping me on point and pushing me to become more “articulate.” It is great to study with someone that has a tour schedule that rivals rock stars, yet always makes himself available to discuss ideas. Lev always makes a point to come to engagements, no matter how small, that I involve myself in publicly. Thank you as well to Sheldon Brown who helped to bring me out here and awarded me a Cal(IT)2 Fellowship my first year of graduate school. Although, I haven't spent as much time with Geof Bowker and Jack Greenstein, both of them have offered great advice that has directed my research. I respect you both because of your humanity. Also, thank you to my extended network, Patrick Clancy and Gwen Widmer in Kansas City. Pat taught me so much at the Kansas City Art Institute, and is the reason I'm at UCSD. You both have always encouraged me to keep up both my health-skills (cooking) and intellectual endeavours. I can't wait to sit in the garden this summer!

Thank you so much Carol Hobson at the Center for Research in Computing and the Arts (CRCA). Without Carol's support, guidance, and friendship, I just wouldn't be on track. I will miss you greatly when away from San Diego as I can always count on you. I'm gonna miss going to the faculty club for lunch – those were great meetings!

To all the Inkscape developers, you guys have shown me more in 9 months, then I learned in during a few years of undergraduate college. I can't wait to be done with this thesis and book so that I can plow back into Inkscape at full capacity. Thanks specifically to Bryce Harrington for taking me under his wing and showing by example how to help catalyze in the virtual realm.

Thank you to the administrative staff in the Visual Arts Department. When I first visited UCSD as a prospective student (with my sister might I add), BJ Barclay connected me up with excellent folks – she definitely secured the deal! Also, thanks to Scott Richards for witticisms and particularly good advice for me during a tough time. Thank you Loie Michael for all your guidance and good hugs. You always help me connect my ambition with funding – brilliant!

Finally, thanks to my entire family. I hope you all understand what I do now.

Introduction to CVS

This essay is version 1 of the introduction to the book, CVS: Concurrency, Versioning and Systems & Other Essays About Collaboration by Modern Cultural Producers, available at UCSD's Geisel Library and at <http://cvsbook.ucsd.edu>.

Have you ever planted a tree? Although this seems so basic, it is a truly rich experience. I've just arrived in Columbia, Missouri, USA from the California Mount Olympus, aka academic life in La Jolla, California at the University of California, San Diego. This is my parents home, where I grew up, and its my 25th birthday. I'm sitting here resting, enjoying the cool spring breeze while sipping some green tea and talking with my Mom and Dad about future plans. Yes, I am in the final days of pulling this book together; I am quite stressed and need to gather bibliographies and final writing edits from the authors. I really need to get a rough draft sent out to various editors: But, I know that the key to connecting the ideas presented is already here, over my head, providing shade and a pleasant space for us three to catch up. It is an enormous Sugar maple tree that now towers over my parent's back yard; I've missed several years of its growth while away at college and regrettably more from being too invested in my head to notice its stature and effects.

My Mom reminds me that I planted it as an 8 year old – a tree that I brought home from elementary school Arbor Day festivities. On further inspection, I notice little green and red pod-like butterfly eggs attached to a leaf that on first glance appear like berries. I move closer and scan the veins that run down a singular leaf. Amazing! There are all manner of color changes from dark green to light brown to bright reds. Meanwhile a little ant roves around steadily on some mission.¹ Each centimeter of the leaf has a micro-world unto itself. My Mom then mentions

¹ We should ask EO Wilson or Steven Johnson (*Emergence*. New York: Scribner, 2001.) what the ant is looking for.

that she sits outside when it rains and never gets wet. I tilt my head up and see that stratified sheets of leaves have grown just so that the water from the rain is collected and distributed around the tree. I realize that this is an adaptation so that water trickles down around the tree to various root systems under the ground. I then pan down to the tree's thick base and circumspect where it emerges from the ground; moving closer to the bark and base, I can see the roots moving outward, disappearing and reappearing, in expansion from the core of the tree.

After stepping back, I look around the yard and see the other brother and sister trees of various ages surrounding this maple. One tree specifically is pushing itself into the space of this tree. It has reacted by growing less on one side and in effect, this towering tree has grown more towards the east. I then scale out and remember my recent flight back from California to the Midwest. There is a progression from the artificial Southern Californian green abruptly to the reality, desert sparseness, and then gradually from the Colorado Rocky Mountains' snowy peaks to the dense lush green vegetation of Kansas and Missouri; I feel quite connected to my roots from this vantage point, but even more by being with my parents.

This tree's growth is a collaboration. I feel quite responsible for its placement here, yet realize that its care has taken so many more complex interactions. I received the tree from someone who originally nursed the sapling from a seed. Given to me by a teacher, my Mom helped me plant and keep it watered while young. The cluster of natural events that has allowed it to become a complex network and a part of other networks seems at times beyond me.

Similar to the maple tree, the complexities of associations that enable my own existence are beyond my analytical faculties. It is amazing that I am here writing this introduction, touching these keys on my laptop keyboard. And, now that I've brought my laptop outside, I've wirelessly connected it to my main computer in San Diego and am receiving e-mails from this same position. It is astounding that humanity uses silicon, the most abundant mineral on the planet, in integrated circuits at the heart of our machines. We then in turn use these technologies to further classify,

simplify, reduce and expand our perception of the complexity of natural occurrences in order to further understand life (how is technology unnatural?). As Geof Bowker and Leigh Star have pointed out, to classify is human.² And, while the tree obviously is a metaphor often used to visualize the Internet's structure,³ I'm amazed that I am a part of both systems – planting collaborations and nursing networks.

I prefer to exist in close proximity with various networks of interaction and structures of participation which enable people to understand complexity and relate to one another. The modern Western world, and particularly, American sentiment of the self-made individual, the epistemic subject and the myth of individual author is a dominant theme of the twentieth century.⁴ This has been famously critiqued by Herbert Schiller in the 1970s as a primary media myth of the modern consumer's "individuality" structured by mass media.⁵ Also, Jack Stillinger in his book *Multiple Authorship and the Myth of Solitary Genius* notes that "the Romantic notion of single authorship is so widespread as to be nearly universal."⁶ This still echoes into these first years of our new era. The view espoused in this text however is both a practiced critique and a reshaping by network of the present hegemony of sole authorship; for it is provided in this book that **all authorship is collaborative**. This critique does not deny the importance of strong individuals. Hence, why I state that I, emphasis on self, prefer to exist closer to these networks of interaction. While a standard book might have one person's name embossed onto the cover, or an artwork might be signed by an artist in Duchampian recognition of final versioning rights, this is an obfuscation of the multitude

2 Geof Bowker and Susan Leigh Star. *Sorting Things Out: Classification and Its Consequence*. (Cambridge: MITpress, 1999).

3 The tree structure is routinely used by projects like CAIDA (Cooperative Association for Internet Data Analysis) and representation of computer file hierarchies.

4 Jack Stillinger. *Multiple Authorship and the Myth of Solitary Genius*. (Oxford: Oxford University Press, 1991).

5 Herbert Schiller. *The Mind Managers*. (Beacon Press, 1973), 8-11.

6 *Ibid*, 183.

of events and associations providing the emergence of one version of a shared project, typically called a “final product.”⁷

This is not some erasure of individuality, but a push towards a collection of strong individuals in a network as Manuel Castells highlighted in *Rise of the Network Society*.⁸ While there is a strong misconception that the Internet would force extreme communal activity or some sort of collective Utopian intelligence⁹, the rise of the network has led to the rise of the individual where there is a “bipolar opposition between the Net and the self.”¹⁰ Sociologist Raymond Barglow states: “The historical shift from mechanical to information technologies helps to subvert the notions of sovereignty and self-sufficiency that have provided an ideological anchoring for individual identity since Greek philosophers elaborated the concept more than two millennia ago.”¹¹ Thus, technology is helping to dismantle the very vision of the world that it helped create. This provides a basic theory that when one is in less proximity to explicit participation with a network (Internet and social groups), the local dominates the global; the self dominates the network. These two views are in constant opposition, yet to reduce such a struggle into a linear spectrum is to wound the intricacies of interaction. Marc Auge adds more variables to this contemporary conflict by discussing Super-modernity as not simply a reduction to a battle between collective and self, what he calls the “mass individualization of references,” but more accurately combines an analysis of the overabundance of events and the overabundance of space¹²; for never before in history has the erosion of local culture been so terrorized by the new International global style, or 'world culture' consisting of these three elements, in which an individual must define one's self in more nuanced ways and through various diverse skills in collaboration with other specialists.

7 This concept of a final version, or product is actually false as well, but will not be argued here. Objects are in constant change and revision, much like ones collective knowledge, or an individual's identity.

8 Manuel Castells. *Rise of the Network Society*. (Oxford: Blackwell Publishers, 2000), 21-25.

9 Pierre Levy. “The Art and Architecture of Cyberspace,” in *Collective Intelligence*. (New York: Perseus Books, 1994).

10 Castells, 3.

11 Raymond Barglow. *The Crisis of Self in the Age of Information: Computers, Dolphins, and Dreams*. (London: Routledge, 1994), 6.

12 Marc Auge. *Non-Places: Introduction to an Anthropology of Supermodernity*. (London: Verso, 1995), 40.

The goals of CVS book are to provide a framework for discussion and a context for production, with the core concept being collaboration; a reason to discuss and analyze current working practices through working practice. But practice itself seems anachronistic, as now our runtime/real time tendency as a global culture is to exist in the action – practice is now performance. With the overabundance of events “we need to understand the whole of the present” and find a working path through the “growing tangle of interdependencies.”¹³ CVS book is a Google search through this growing web of connections; it is a slice of the modern cultural producer's practice. This entire project has arisen from a time period (December 2001 – March 2003) where several of the participants in this project were involved in more direct and what are considered “real time” events which encouraged rapid (almost artificial) brainstorming and realization of ideas (projects) in imitation of current media and contemporary thought. The tools did not determine action, but the limits of their use, or rather participants’ ability to perceive uses, in relationship to social application of media theory and computational metaphors created structures for participation.

The actualization of this book highlights the transition and adaptation from those experiments in favor of networking between historical events and present action on this book in prediction of future directions. The push and hype of immediacy of experience has saturated discourse on digital cultural practice. Walter Benjamin, Roland Barthes and others are often quoted in trying to further satisfy the cultural producer's work with constant closer proximity to their own identity, an erasure of the space between both. This shrinking latency of experience, possibly similar to Moore's Law (but for cultural production), is satisfied with progressively more efficient technological implementations. And, just as it might be the Age of Mechanical Reproduction¹⁴, this does not mean that technology determines social organization and activity as Raymond Williams states through his critique Benjamin's work. Similarly, Jay Bolter and Richard Grusin theorize that

13 Ibid, 28.

14 Or, was that the last era.

a viewer unswervingly wants hypermediacy and transparent media where “...to get past the limits of representation to achieve the real” is what is desired.¹⁵ This assumes that the ultimate satisfaction of a viewer might be the fulfillment of a directly mapped real time experience and interaction. This does not take into account the viscosity of the human body – the limits of self¹⁶, but rather promotes what I will call an accelerating **real time determinism**, a force that many author's from Lunenfeld to Virilio to Levy have promoted as somewhat Utopian and beneficial to society. In spite of these dominant digital cultural discourses, CVS book problematizes this view in favor of finding a better way to collaborate between multiple authors, and also a bold realization that real time systems are not enough to develop more thorough arguments. Not all arguments can happen as real time conversation between multiple participants. Party conversations from a distance are homogenized noise, whereas focused thought, or more developed arguments exist as asynchronous distributed authorship between participants. This is conversation on a slower time-scale, where the unit of conversation is larger texts that cite other sources and build upon arguments over time, rather than the immediate desire of the real time determinist's direct person-to-person confrontation.

The question then is how can scholarly and more thorough texts be produced using new methods? While in contemporary society there has been heavy demand for technology to support conversation with chat, telephones, blogs, and media production; the push for adapting these systems to a deep and wide discourse has not been as high of a priority as the real time variety. The technology has existed for some time to support this type of collaboration similar to how the technology for Voice Over IP (VOIP), blogging, and instant messaging has been possible, yet didn't accelerate for ten to fifteen years from possibility to feasibility. Perhaps this complex

15 Bolter, Jay David and Richard Grusin. *Remediation: Understanding New Media*. (Cambridge: The MIT Press, 2000), 54.

16 Please read Joseph Goguen's essay in this book, “Against Technological Determinism” for a great argument against this type of media determinism, which is also a form of technological determinism. However, also note that Jay David Bolter and Richard Grusin are aware of this argument as pointed out by British Marxist Raymond Williams in their book *Remediation* on page 76.

phenomena happened only after technological socialization, the inexpensive availability of smaller devices, and the willingness of contemporary society to accept a higher rate of communication as being necessary to support business and personal life.

CVS has enabled discourse to move forward because of the local social necessity for developed continuous thought rather than fragmented bits of ideas. Something about the saturation of fragmented media culture, mass media's proliferation on multiple surfaces (televisions, projections, flat screens, on cell phones) in multiple spaces (bars, shops, kiosks, airport) is quite tiring. The hyper-twitch of modern media and coffee-culture is quite temporary; people do need downtime and do need sleep. Also, as people get older, they want to connect with history and regulate the rate of input, computing, and output; yes, our bodies do age and we do have some control over this. The faster one moves and multi-tasks in emulation of modern technology and fragmented mass media, then the more one consumes¹⁷; less is culturally produced (ideas and thoughts) and more goods are passively consumed. This has been embraced by modern society and is why our children are so twitchy.¹⁸ But, how can relationships between people become stronger? How can we develop a higher quality connection between multiple threads of the past, present, moving towards the future? How can we produce coherent statements and develop more thorough arguments?

The more thorough text, or longer essay requires more time to create and read than a real time conversation of similar length. Whereas quicker pop songs, International global style in modern cities, and unlimited broadband web surfing per-month are enticing, they are also quite limiting. For one can only take in so many news feeds, have so many friends, and fly to so many cities in a year. One must understand the limits of the body as our eventual death is inevitable. It is a hard limit, but is one type of barrier for information gathering. The library is only open so long,

17 Schiller, 25-26.

18 Ellen Seiter. "Children's Desires / Mother's Dilemmas: The Social Contexts of Consumption." *Sold Separately: Parents and Children in Consumer Culture*. (New Brunswick, NJ: Rutgers University Press, 1995), 7-50 & 235-238.

and while the Internet might always be on, people are not – we break down and cannot immortally consume information. In order to mediate, content must be filtered. Thus, we use Google to search for images in a haystack, or a store-locator from a website to find a local pizza joint. Also, rather than wasting two plus hours at an anonymous Hollywood blockbuster, or on a full-day movie download from Suprnova.org, the heuristics of data mining and selectivity of content¹⁹ is desired now by many. Beyond existing in the hyper-moment, or being determined by the increasing promixity to real time experience, which can never actually be achieved, one needs space and time to research and relate ideas to history and other people. This position is not neo-Luddite, nor reactionary to some weak idea like information overload, but rather is a significant place from which to create thorough (or more connected) content.

Much like the trusty book, the need for scholarly texts is not going anywhere for the foreseeable future. In the Epilogue to *The Future of the Book*, Umberto Eco projects the current need for books: “Even if printed on acid paper, which last only seventy years or so, they are more durable than magnetic supports. Moreover, they do not suffer power shortages and blackouts, and are more resistant to shocks.”²⁰ While this is true, the gap of benefits between the book and the e-Book, as open content author Cory Doctorow has trumpeted, is shrinking.²¹ Thus, as cultural producers, the problematic between real time and render time²², book and e-Book, represents an available slot which needs to be filled with content. CVS book is in between both of these dichotomies as it is created on-line in both real time and render time (wait time), and exists as an electronic version, but will be published onto paper for future iterations. So why not increase the efficiency with which this type of media is developed, or increase the distribution of these texts out

19 As Lev Manovich would say in reference to Apple Computers famous ad campaign, “Think DJ”

20 Umberto Eco. “Epilogue,” in *The Future of the Book*. ed. Geoffrey Nunberg. (Berkeley: University of California Press, 1996), 299.

21 Check out Cory Doctorow's great presentaiton on the future of the eBook, which he says is neither E, nor Book, in a tongue and cheek fashion. See Doctorow 2004 in the bibliography.

22 Yes, I wanted to orphan this idea, as real time is the opposite of render time. Rendering implies that a process will take some time rather than be instantly gratifying. Possibly the opposite to real time is render time.

into the world through electronic augmentation? What new possibilities exist for this format? CVS book is a remediated book; it is creation of scholarly discourse, but still further it is the application of our newest social software and successfully employed social practices (tried and true Open Source software and community practices) that extend the book as a form. Carla Hesse in the same 1996 volume (at the beginning of the public Internet) postulates that a new mode of temporality provides public communication (fostered by new technologies) and is one in which public exchanges of written word will happen in real time, reshaping the literary system.²³ In the public sphere this has obviously happened (and continues to progress) with the pervasiveness of cell phones, laptops and instant messaging, but this has not overtaken the need for the literal non-hypermediated text. Isn't that what the individual already provides and has learned so well from our machines? There still is a need for the buffer, for memory, and for the book – for if real time communication is to dominate the scholarly text and book, similar to communication, there must be a memory of previous conversations and cognitive foreshadowing of what has and will be talked about – is written discourse not an iteration of this conversation? When one watches a streamed video, is the buffer not filling? Are books not already storage mediums for our real chat logs? Well yes, as Eco noted, paper has a longer shelf life than our modern magnetic storage media, but is still a form of storage.

This book employs three primary uses of CVS. **1)** It is this **book** titled CVS, Concurrency, Versioning and Systems which is a context and reason for participation by multiple producers. **2)** It is an **Open Source technology** called CVS, which is used as a way to synchronize writings between multiple authors. **3)** It is the **lead essay** written by myself which defines a **framework** for discussing successful collaboration on shared goal-oriented projects. These three contributions provided are an unearthing of current working practices by writers, artists, deejays,

²³ Carla Hesse “Epilogue,” in *The Future of the Book*. ed. Geoffrey Nunberg. (Berkeley: University of California Press, 1996), 32.

veejays, theorists, programmers, and developers, expressed through the development of thorough texts.

While this book has tried to avoid the current visual and textual noise of the inclusion of a homogenization of many semasiographic systems (graphics, texts, etc) as textual remediation of explicitly computational media, this book develops ideas primarily through written text. Yet, much like the 8 year old version of myself planting the young maple sapling, the planting of this book project delineated from wanting to facilitate deeper discussions, and connections with disparate concerns in order to catalyze activities and interconnections between multiple people. This will truly be a success if the ideas contained within are nursed, watered, and distributed, to be further seeded elsewhere.

I will briefly outline a few major ingredients of this text with a specific local bias that presents the context for this work and will end with a short chapter by chapter connection of the writings. This book is designed with multiple concepts, where each essay can stand alone as its own seed for future endeavors. If you would like to skip ahead or around in the texts, vis a vis hyper-linking, then please go right ahead. For the duration of this book, when the title of this project is presented, it will be called CVS book, CVS as framework will be identified as such, and any unmodified use of CVS alone is in reference to the Open Source technology CVS.

Historical Context for CVS Book

The history of this project is intertwined with MESH.FM, the journal Scale, and current local practice. Also, the majority of authors represented in CVS book are in the early career-building stages and as such, this text has much to do with the use of current technologies and the

value of contemporary media. Very much are the author's and myself reading about and participating in the latest Hip Hop, video games, electronic music, Lisp programming, Jamaican sound system design, computer hacking, Open Source culture, street art, Capoeira, graffiti, and social software. The primary interconnection between the participants is academic research at the University of California, San Diego. I particularly chose to attend UCSD, rather than other new media-centric programs in the fall of 2001 in the Visual Arts Department because I intuited the program was near a threshold of development where I knew that I could connect together the different resources available and push activity to a crest. I wanted to initially study with Sheldon Brown and Lev Manovich, both tops in the field. Also, UCSD offered excellent funding, lots of free space, and time to experiment. I often joke that UCSD's best offer though is free fast Internet – a major catalyst for the modern cultural producer.

Eventually, the lack of activity surrounding San Diego and UCSD's art and contemporary culture, the downside of living in San Diego, led to the creation of MESH.FM²⁴, an emergent collective of people, which heralded that there were no local informal spaces for creative experimentation. The lack of activity in the local scene, the use of computational and DJ metaphors, bountiful resources, and most importantly, people that could connect these resources together, catalyzed the formation of MESH.FM. The events that MESH.FM generated – sound rivals, parties, global web streaming – and projects – ad-hoc supercomputer cluster, multiple sound systems, and open huts – in some part still exist (which Nathaniel Clark expounds upon in his essay). Unfortunately, but positively, the group could not support the consistent roll-call for real time experiences, and the resources, both conceptually and economically, ran out.

MESH.FM's application of metaphors linked with the three fundamental forms of deejaying as described in Ulf Poschardt's book, *DJ CULTURE*, I underline them here to provide a

24 See Nathaniel Clark's essay "MESH.FM" at the end of this book for further edification on the issues I touch upon.

template for further discourse.²⁵ The first is **mixing** where two records are mixed to create a third form. While art has been dealing with the concepts of appropriation, re-appropriation, and collage, mixing takes its cues from the technological innovation of the original acetate record technology, inexpensive playback, and the overflow of newer iterations of pressed content (optical CDs) onto a medium in order to transition between multiple sound sources.²⁶ The second form is **remixing** which is “the deliberate diversion of a piece towards a particular context, a particular purpose. The remix brings a greater or lesser amount of the old piece into a new form, and according to the remix one might speak of a new song or a carefully renovated form of the old song.” The remix resounds in the re-development of past (art) histories as “a remix [that] can not only adapt to a new context, but also make an old (and brilliant) idea contemporary.”²⁷ The third form is the electronic entrapment of sound, or **sampling**. It makes possible the digital storage and manipulation of all kinds of sounds. Sampling makes it possible to transfer authentic sounds into an emerging artistic product.²⁸ This immediately brings to mind an array of common objects, or a bank of metaphors, all at a user's disposal to construct on demand (COD) in real time. While these deejaying concepts were originally applied to the art of sound manipulation, they were remixed for contextual, physical, and conceptual operations on objects, histories, styles, and events. These powerful forms are updates to the traditions of appropriation, quoting, referencing, and stealing with the added practicality of technical application through computational and scholarly implementations.

Similarly, computational metaphors were employed to broaden the artistic possibilities of MESH.FM. Specifically, the primary physical interfaces of modern computer systems such as input, computing, and output, were used through common language (conversation) to discuss the manipulation of physical resources. This along with reading as many O'Reilly computing books as

25 Ulf Poschardt. *DJ Culture*. (Quartet Books: London, 1998), 32-25.

26 Ibid, 33.

27 Poschardt, 33-34.

28 Ibid, 34-35.

as possible, like *Learning the Unix Operating System*²⁹, provided a rudimentary understanding of Free and Open Source culture for several participants. New media clips, people, funds, and food would enter into a context, i.e., from 5 – 9 PM on a Friday night with tens of people at a time entering, defining and exiting a space (such as a gallery in San Diego or rented empty store-front in Los Angeles). Upon entry, these “resources” would be computed (mixed, remixed, and sampled) by the people present and then they would output further remixed media and social action through the enhanced conglomeration during linear interaction. Eventually, through a growing interest (primarily lead by myself and Nathaniel Clark) in Open Source culture and Linux, these ideas, a subset of computing, came to dominate the metaphoric mixing and sampling of the MESH.FM ideology. Specifically, the recontextualized aphorisms of Open Source like “release early, release often” and “patch first and discuss later,” as well as more unspoken reductive remixes, or uses of the terms “open” and “source,” further extended MESH.FM into new territories. In addition, the actual technology of the Open Source revolution began to be used as in the realization of the Brainstorm Linux Supercluster, and in my own personal work. The actual adoption though of Open Source and my induction into these communities did not happen till approximately six months after the last event.

29 Grace Todino, John Strang and Jerry Peek. *Learning the Unix Operating System*. (Sebastopol, CA: O'Reilly & Associates, 1993). Also, check out <http://www.oreilly.com> to learn about all the wonderful O'Reilly books, of which many can be found for free on-line.

When MESH.FM eventually ran out of resources, and the main participants needed personal down time, I dedicated my newfound peace to Open Source Software and culture; I wanted to learn. I generally avoided large groups in favor of a tight-knit local network of friends to focus my mind and squeeze more time out of my schedule to learn Linux. During this low-key time, the relationships between the author's in this book grew stronger as another local network flourished from local nourishment; the network of friends, scholarship and development progressed outward from the strengthening of the individuals which in turn reinforced the local network.

Thus, the ultimate integration between the rapidity of MESH.FM and the newfound focused scholarship first took the form as Scale, a journal of aesthetics and computation primarily developed by myself and Patrick Deegan. In a novel fashion it is a web-based front end for a PDF submission system where the remediation of newer media is placed into a rather traditional form, the scholarly journal. From this monthly periodical it became apparent that longer essays needed to be collected, edited, and published into a cohesive whole.

Originally, CVS consisted as a project strictly between four authors: Linda Kim, Neil Stuber, Joel Swanson and myself. The original concept indirectly related to this new technology I used, CVS, and thus the book became about versioning and collaboration between us four designers. Each piece of the book would be open for anyone to create graphs, charts, text and graphics onto the pages, yet there needed to be some simple way to negotiate the transactions between the four authors. The specifications for the project were 100 pages, full color and a decent budget to print a few thousand copies. This iteration of the project died out when the resources were no longer available, people's schedules shifted and it seemed that the visual noise of current graphic design books turned out to be not nearly as interesting as a scholarly collection about collaboration. Conceptually this project also seemed dry because it had the red flag of many a nineties new media cliché. Like a project MESH.FM created where a small generator powered a

microphone and speakers to project the sound of the generator itself back out into the air, the question became, why is this interesting? Joel Swanson asked why the book couldn't simply take shape as something tangible like a children's novel. He asked if a specific instance might be better than using this old "recursive discursive" approach. I agreed with his assessment. Why is it necessary to self-referentially construct a system that both creates content (scholarly texts) and is about the creation of these texts when one (or a group) could create multiple brilliant examples using this system? Lev Manovich's Soft Cinema project handles this beautifully with his first movie "Texas", constructed on the fly using his algorithmic cinema generator developed in association with ZKM. Later, his developers, under his guidance, worked the kinks of the system, and he released a second iteration, "Mission to Earth" at the USC Art in Motion festival V (April 2004). If the system is only about itself, then the progressive develop of content will be constantly intertwined with the system of development. Thus, I began to redevelop CVS book as a collected set of essay about collaboration rather than clichéd recursive content.³⁰

Eventually, CVS book became a hybrid project using a WIKI and CVS to collect authored texts into a centralized location so that others could view and modify the content. Whereas the original approach sought to have a limited system that didn't contain content, this time I developed the basic summary and framework of concurrency, versioning and systems in order for multiple people to plug in their own interests into the book. Rather than allow the book to develop into a homogenized noise-state, a light structure outlined the initial project's intent, a more extensive project description and roadmap of deadlines. Overall, this iteration of CVS works because of application of Open Source technologies and enculturation of Open Source practices learned from the nine months I have spent as an Open Source developer on Inkscape, a scalable vector graphics drawing tool. My question, as I presented at Berkeley's 040404 symposium and UCLA Hammer's Digital Storytelling conference (along with Patrick Deegan) in April of 2004,

³⁰ Please see Manovich's Soft Cinema project: <http://manovich.net/softcinema/index.html>

asks if CVS can be used for creative content development beyond its normal use on software code?

The answer is a confident yes.

Publishing, Publishing Models, and Scale

Beyond the Gutenberg years till the Penny Press of the 1830's to artist Samuel Morse's telegraph and eventual recycling by mass media and now Internet, each new media has brought its own features to publishing. Also, multiple media have brought multiple publishing models.

Publishing is the activity of putting information in the public arena. Although this can mean something as simple as making an announcement in a pub or market square, for some centuries it has usually referred to the business of producing books, magazines, newspapers and other printed material. A modern book **publishing company** (or **publisher**) is usually involved in buying or commissioning content, editing it, and preparing it for printing. And, it usually also controls the advertising and other marketing tasks. However, it is usually not directly involved in the retail sale of the product.³¹ Thus a **publishing model** is a structure within which publishing occurs – a framework for functionality. A generic publication model implies dealing with some form of writing, as in a book or magazine in high circulation to mass audiences.

The particular media-centric debate between publishing models locates CVS book in a discussion of the periodicity of media, which connects with the earlier debate about the scales of time: real time vs. render time. The more frequent the periodicity of a media, the more aptly it can be used to connect conversation, or permit the possibility of immediacy. The lengthening of the period between development and publishing, time between issues, and the one-time only printing of a book, all engender features (and limits) to the actual content of the media. While this

³¹ <http://en.wikipedia.org/wiki/Publishing> is a fairly general community-generated definition of definition of publishing.

collection does not espouse a McLuhan-esque media determinism, it is important to be able to map the media battleground in order to control what will be effected by each media's limits. On the subject, McLuhan states: "The railway did not introduce movement or transportation or wheel or road into human society, but it accelerated and enlarged the scale of previous human functions, creating totally new kinds of cities and new kinds of work and leisure."³² Similarly, the choice of publishing a monthly magazine compared to a 500 page book, will require different organizational schemes in order to assemble the released version. These complex qualities, also called limits, presented by each media are not so much located in the object or the content of the media, but are contributed to by social practice and context, rather than an object having a rather Marxist embedded production value. Is a 100 page weekly magazine like Newsweek the place for a 40 page academic discussion relating the American Revolution to terrorist cells? And vice versa, is a 500 page book the proper place to collect weekly unanalyzed news and sports statistics? Rather, each human-made media is a form for certain types of content – always shifting and remediating newer media and their contents in the process of actualization.

Therefore the random short periodicity of on-line media (websites and blogs) and regularity of mainstream print media (magazines and newspapers) are polarized against the slower developing media such as the book and the scholarly journal. While the magazine as a format is released monthly and many times weekly, as in Newsweek or Star Magazine, scholarly journals are known for incredibly lethargic development cycles measured in years (approximately one to two). Further still, books with any sort of research take just as long if not longer to develop and publish. During these long development cycles, on-line publishers churn out daily content which is instantly gratifying to an author (or group). While magazines have a more developed consumer model of sustenance and editors in place that filter the mis-use of words, facts, quotes and grammar rules, the personal web publishing model has a local network that understands the

³² Marshall McLuhan, *Understanding Media: The Extensions of Man*. (Cambridge: The MIT Press, 1964), 8.

nuances of a one's particular language and that catches what an editor would normally accomplish. Also, local on-line publishing is further adapted by blog engines through the implementation of a commenting engine as part of publishing on-line; comments are entered by peers, creating feedback and further comments. There are limits to this system, as the instant (real time determinism again) presents certain possibilities and limits others. How will this type of system be distributed? Also, how thorough is the local content of a blog? Does it connect with various histories, or resources outside of the local community of bloggers (and readers)? Therefore, CVS book is created with the longer development and release period media's (books) surrounding wont of scholarship, but developed at speeds that are closer to the rapid-fire release schedule of the magazines, journals, and on-line informal publishing.

Prior to CVS book, the gradual rise of the journal Scale became the first foray into this fast and slow media approach. There had been an urban myth of many a Southern California new media journals but very few results. No advanced on-line or print journal existed as of January of 2004. Tim Jaeger and I placed the first brick in Scale's development when we started a mailing list connecting together like-minded digital practitioners; he came up with the name and I engineered the web site's code. The initial Scale mailing list consisted of fifteen people all within the same local conversation circle, all too busy to set-up a weekly meeting at a stable location to discuss relevant topics. This development then ran as a background process until Scale the journal rose to prominence and I consolidated both into the Scale community. The creation of a successful community that exists in both physical and virtual space must come from consistent connections between members of that group. A mailing list provides the social glue for various activities and is simple enough that most user's understand the technology.

The brilliance of not being too connected, not atrophied in thought, and not traveling too much, allowed myself, Patrick Deegan and Neil Stuber to initiate Scale, originally titled "Journal," in a matter of 5 minutes over some pints of Stella at our favorite La Jolla spot, the Shack. So much

scholarship already exists dormant and unpublished; plus, the rhetoric of developing a publication had underwhelmed us. We realized that between Deegan's interest in scholarly writing, Stuber's graphic design chops, and my technical skills, we could build a website (<http://scale.ucsd.edu/>), send out press announcements (from the mailing list), solicit for content (personal e-mails), design, and print an entire journal in the matter of hours. A day later, with much copying and printing of articles, emerged "The Journal." It had a fresh color cover with an icon of an open book, ads for events, longer essays, and a lo-fi staple bind connecting multiple contributions together. This Journal ran out within hours of its initial release announcement – the participants had picked up shovels and helped fill a need.

For the second issue The Journal community decided to change its name because as Scale-list member (and later editor) Temenuga Trifonova pointed out: it seemed like a one-time joke and the mailing list and journal communities coincided.³³ The barriers for participation were lowered from the beginning so that all that would be required of a contributor would be to submit a PDF file under 10 megabytes at <http://scale.ucsd.edu>. The user could adhere to these soft barriers of style and file guidelines if they wanted to, but they still are not technically enforced. Rather, a contributor would hopefully feel motivated to follow the guidelines in support of their own social reputation in the community. The key to seeking broad participation is to employ an easy submission process; this then allows for a high quality monthly journal that represents the interests of the contributors. In effect, Scale's motto has become the "local going global" in effort to maximize getting friend-of-a-friend (FOAF) contributions in particularization rather than globalization and in feasibility of actually pulling together immediate material that is relevant to the participants who are also the readers (rather than having to be a scavenger for people's media).

Still, Scale did not lend itself to the more focused collaboration of longer scholarly texts – it is still too much of a scavenging of people's wares already completed. Also, Scale only allowed

³³ Plus, we must learn from media conglomerates and consolidate energy and resources (joking!).

for the submission of PDFs where the guest editor each month is more of a DJ where the submissions selected each month are for inclusion in the print version.³⁴ The submissions are mixed according to their content and the editor's own biases as the criteria for a month's issue. Thus, Scale's shortcoming is the lack of collaboration on texts and graphics submitted, or rather, the scale with which edits occur is not in-line with the traditional role of an editor, but more zoomed out to the role of a DJ track selector – now a media selector.

CVS book is a furthering of scholarship that allows for multiple authors to work on texts together. Editors of CVS book are more like producers or engineers working in a studio rather than the real time editing of a DJ. This system permits texts to exist on-line and operates distributively in closer approximation to Open Source Software development moreso than the traditional extended time and resources that a single authored book consumes. Whereas an equivalent book written by a so-called author would take a year or more, CVS book has taken approximately 1-2 months for development. Furthermore, where the current model of authorship allows for edits of texts on the scale of years, CVS allows for the versioning of texts on the real time scale (now). With the proliferation of on-demand printing and free PDF readers, CVS' model of publication is ready for when e-Reader's (Doctorow 2004) and inexpensive electronic devices will augment and stand alongside the persistent book. Book's as objects are not disappearing anytime soon, as Eco³⁵ and others have commented on, because people want something to read when they go to the bathroom, or if they want to focus on reading alone. A laptop or electronic device allows too much almost. I can't read more thorough texts on my laptop because of the constant flow of e-mail and instant messages from my student's popping up. (Yes, I should just shut these devices off, but I need them on as they support my working style, and provide counterpoint for this argument).

34 Please note that all submissions remain on-line even after the final decision for the resource-limited final version is a choice selection of the monthly collections.

35 Eco, 299.

The remediation of new technology onto old media is of utmost importance in the renewed interest in scholarly texts. It is obvious in reading some media determined magazine like Wired that the desire for hypermediacy of the modern information society citizen demands similar windows on the world as provided by web browsing on multiple devices. These popular magazines are very much a remediation like CNN's Headline News' multi-mediated multi-windowed interface.³⁶ Similarly, CVS book is a remediated book, where the newer real time social softwares and modern technological systems enabling software development have augmented the standard published media (publication) and the publication model itself.

System of Building the Book: Automation and Autonomy

The texts in this book were originally all written on a basic WIKI system. The roadmap of deadlines were placed on-line along with a project description that detailed what the authors were working on, both posting their texts and also editing others simultaneously. This simple system of production employs the standard network of social software used in Open Source development, as well as the CVS group-oriented project development framework.³⁷ Eventually this system transferred to actually using the technology CVS in order to synchronize the style formatted OpenOffice.org document writings between all authors. I then custom wrote a series of BASH and PERL scripts as a way to use the CVS system to compile the entire book into nightly builds – as a collected PDF file.³⁸ The CVS repository contains all text files, the table of contents, frontmatter, and graphics necessary for the final book. First, I had to write a simple script which

36 Bolter, 189-192.

37 Both of these concepts, the network of social software and CVS framework are discussed in the upcoming essay, “CVS: Concurrency, Versioning, and Systems.

38 The main website for the project is here: <http://cvsbook.ucsd.edu>. The CVS file tree is here: <http://cvsbook.ucsd.edu/cvsbook/src/>. The nightly PDF builds of the collected book are available here: <http://cvsbook.ucsd.edu/cvsbook/src/bookbuilds/>

converted each text file into a PDF. Then, I built a script which reads a makeshift table of contents to combine, in order, the final PDF. The final touch though, and something that I am now using for Scale development, is a page number generator which plugs the page number sequentially to each page. I will eventually adapt this last system to print the CVS book info, chapter name and authorial credit for each section. This system is therefore automated to do the heavy repetitive lifting so that viewers (what are called end-users, or readers) can observe the growth of the project over time without having to learn how to use CVS. In many respects, the final CVS book build is a compiled text from all author's ingredients.

The importance of using the technology CVS as a creative tool and the Open Source development model, including social software, all place the importance of communication onto the actual user's of the system. The autonomy (individuality) of a user is privileged. Whereas monolithic groupware projects and digital whiteboard systems seem like they should be the category-killer for group projects, as they represent a centralized space for people to project their ideas onto, they are actually failed experiments in interface design. People cherish diversity, as is represented by skinning and customization of users' desktops. The network of social software (chat, CVS, mailing lists, etc) is a cluster bomb-like approach where the stable ingredients in a developer's toolbox are the standard communications protocols (HTML, Jabber protocol, TCP/IP). This is unlike the Microsoft-style imposition of dominant uber-ware in favor of a user's preferred choice of software. For social practice maps onto virtual practice; cultural software maps onto software; and thus, any technology that is used, must catalyze social action rather than provide a highly tailored mouthpiece – a high-barrier filter – that disables usability and limits multiple ways of accessing the same content.

Scope and Organization of this Book

While *CVS* is the main essay in this book, the major concern is to gather contributions from other people to bolster the claims pronounced by concurrency, versioning and systems. After this book is complete, this section of the writing will be completed to further connect the ideas together. As this project currently stands, the introduction and initial essay function like the Linux Kernel: they are modular components which can be added to and subtracted in collaboration with you.

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