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REMIXING THE LOST BOOK OF RHYTHM

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by

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ABSTRACT

Remixing the Lost Book of Rhythm focuses on sea-changes in communication, collaboration, and education. Writers today increasingly deploy digital and "musical" techniques such as sampling and mixing to share and transform information and ideas, and I look to diverse rhetorical traditions for clues to a digital pedagogy. I select from primary and secondary source materials—Ancient Greek musical practice, Indian *Tala*, disciplines of Yoga, global polyrhythmic traditions—as I seek to formulate a theory and pedagogy of "wiki" space. Students and teachers seeking to compose and dwell in the densely interconnected space of digital ecologies, I argue, can learn much from the creative and rhetorical practices found in interactive communities of sound and music today, which form a musical, technological, and rhythmic archive for composers training in the art of rhetoric. My archive suggests rhetorical practices of "rhythm," a long neglected rhetorical effect, are crucial to techniques for navigating the assemblages of technology and community that articulate our classrooms and workplaces today. Relying on theoretical work in technology studies, I amplify the role of rhythm in diverse areas of scientific inquiry and technological development, and look, for guidance, to the interconnectivity and fundamentally rhythmic practices of peer-to-peer networks. Teaching students to write in rhythm, I learned, proceeds by making and breaking links. Each of the five segments has its own flavor, and each segment addresses different effects that *Remixing the Lost Book of Rhythm* could have on contemporary composers. Readers learn, by watching my trial by (rhythmic) fire, how diverse practices of rhythm can work as way to form a commons with students and with ourselves, and discover that it is remarkably simple to bring rhythm and its respect for interconnectivity into our teaching and our learning, and to delay, embed, jam, divert, and remix rhythms in our own lives. Part I tells the story of the "filesharing subjects" that populate our writing classrooms today, and position peer-to-peer culture, where computers cluster and ambient networks compose themselves, as a topos and model for writing instruction. Penn State's licensing agreement with Napster provides atmosphere, and I forecast the segments that make up the rest of *The Lost Book of Rhythm*. In Part II, I take readers back to Ancient Greece, and outline a Greek treatment of rhythm. This chapter begins with a sample from Athens' rhythmic theorist, Aristoxenus, and builds into a vertiginous wall of sound—a swarm of cicadas singing unto Socrates—before it applies a magnifying glass to the terminology and concepts that seem to haunt rhythm and give it so much promise. This segment ends with a short practicum on some of the basic compositional gestures for finding balance when we lose our rhythm in contemporary information ecologies. Part III investigates the resonant aspects of rhythm in communication ecologies, based on an experiment mixing social bookmarking with wiki. The rest of the chapter is a bottom-up grapple with the phenomenology of delay and the stochastic dimensions of wiki—and other rhythmizable media—from the perspective of a musicians, students, scientists, teachers, and rhetoricians. Musical tools of composition have been around for a long time, and pop songs, commercial jingles, and Hollywood soundtracks barely scratch the surface of the global historical musical bandwidth. Recently, analog and digital tools for selecting, combining, tuning, and rendering media have made these templates available to the commons again. In Part IV, I evaluate the rhythmic principles of minimalism and their technologies for their interactive potential, and extract recipes and principles for teaching with technology. Part V, an experiment in “lossy compression,” seeks to transduce wiki's effects on teaching to the page.
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CHAPTER 1: FILESHARING SUBJECTS

Napster Miscue: A New Trope for Teaching in the Commons

The first part of this dissertation narrates how an observation, a hypothesis concerning the "filesharing subjects" that populate our writing classrooms today, turned out to be a bit of miscue, and how, in wiki, miscues themselves trope observation towards participation in ways that allow new rhythms emerge. Wiki practice turns our attention to peer-to-peer culture, where computers cluster and ambient networks compose themselves, synching into self organization. Peer-to-peer networks provide one topos for wiki pedagogy, which asks us how we might teach writing as the creation of links. With wiki, such connections can now unfold heuristically, as rhythm; the creation and interruption of connections. Penn State's licensing agreement with Napster provides atmosphere for wiki pilots, and I forecast the segments that make up the rest of the Lost Book of Rhythm.

In “Listening to Napster,” investment advisor and technology pundit, Clay Shirky (2001), writes: “Definitions are useful only as tools for sharpening one's perception of reality and improving one's ability to predict the future. Whatever one thinks of Napster's probable longevity, Napster is the killer app for this revolution” (emphasis added, p. 26). Why do I emphasize “this revolution,” in this sample? Imagine the time it takes for a hit record to make on revolution on a phonograph player: one revolution holds enough information for one short sample, not much more. So it is in the “infodynamic” space of the worldwide web, where writing happens today. Indeed, “if the Internet has taught technology watchers anything,” Shirky continues, “it's that predictions of the future success of a particular software method of paradigm are of tenuous accuracy at best” (p. 26). A simple and somewhat obvious observation, to be sure. That's just it though; observation is not as
effective as participation in the dynamic just-in-time/space of the worldwide web. Whether measured according to anthropologist and cyberneticist Gregory Bateson's pragmatic units of information (“the difference that makes a difference”), the conjugates of thermondynamics, Technorati hits, or global warming, observations about linking practices don't render the novelty or use value that narratives grown from a practice can. However, Shirky (2001) makes a very important point for those of us focused on the question of writing and writing instruction that would take such an ontology seriously because there is something more important than “getting it right” when it comes to developing and sharing descriptions and definitions about infodynamic ontologies.

Movement is created and sustained by working and writing in rhythm—that is to say, together. On the move, rhetoric becomes an art of interrupting each other; knowing when to cut in on a developing sequence, and how to detach from a deeply felt major premise when another premise arrives unexpectedly, with a clang. In “Order from Rhythmic Entrainment and the Origin of Levels Through Dissipation” philosopher John Collier and musician Mark Burch introduce rhythmic entrainment to describe the emergence of regular, predictable patterns within or between systems. Rhythmic entrainment realizes symmetries of information by means of sharing, but the production of information also manifests in moments of symmetry breaking. Collier and Burch offer this perspective to researchers in physics, chemistry, biology, measurement and communication, which suggests uses for writing instruction. Today, writers work with information so dense and ongoing in its generation and transformation that mathematical models of information production apply in everyday writing. When writing becomes a practice of creating and breaking links, a lot of noise gets mixed into the signal, and we find ourselves immersed in a kairotic space-time
comprised of information, where "not just meaningful distinctions," but "any distinctions" take hold (Collier & Burch, 1998, p. 2). Crucially, asignification and affect become important dimensions of community formation through writing. Democritus, Lucretius, Aristozenus, Plato, Liebniz, Freidrich Nietzsche, John Cage, and inumerable physicists and logicians have closely queried the infinitessimally small cuts and perforations that we feel so strongly in the discontinuous digitality of rhetorical practice today, which unfolds in what Thomas H. Davenport and John C. Beck name an “attention economy” (Davenport & Beck, 2001). How are we to get a handle on digital rhetoric? Collier and Burch (1998) provide a clue that this dissertation takes to heart. “The result of rhythmic entrainment is a simplification of the entrained system,” and this helps make sense of abundant and dynamic information because “the information required to describe it is reduced. Entrainment can be communicated, passing information from one system to another.” Crucially, “the paradigm is a group of jazz percussionists agreeing on a complex musical progression” (Collier & Burch, p. 1). When it comes to writing together, then, it seemed to make sense to start mixing the musical paradigms that made the brand name “Napster” synechdoche for the movement and resonance of music itself directly into composition pedagogy. Or, not? What is important, much more important than being right about this or any other pedagogical premise, is creating a space for experience and participation where students and teachers can learn how to share premises and build arguments together, heuristically. In an atmosphere of closure marked by universities, such as Penn State, signing licensing agreements with Napster and otherwise fretting over DRM and liability concerns related to copyright infringement, it seemed that getting a handle on the shift in musical practices (composing, performing, and listening) that provoked so many myopic bureaucratic measures
and court decisions would help writing instructors get a handle on the digitality of rhetorical practice. Rhythm, which cannot be had, but can be perpetually lost and found, is that handle. Wiki made it possible to experiment with rhythm in my teaching, and my dissertation is an attempt to share that what I have learned from this process, so far.

In what follows, snippets of narrative will interlace with theoretical and practical samples from rhythmic traditions of Greece, India, and the distributed musical practice enabled by resonance technologies such as the phonograph, magnetic recording tape, jazz ensembles, and, of course, wiki. I will refer to a handful of assignments (“3 notes and runnin’,” “Freesound,” and “Audience Finder”) and a Teaching Practicum (a course titled “602: English 15 in 15 Weeks”).

In the 602, upstart teachers became wiki wizards. When we mixed music with wiki, we learned that teaching writing in dynamic space develops best as a heuristic. Heuristic learning/teaching shows us plenty, but the most important lessons learned only arrived when students and teachers were able to let go of a premise or a hypothesis at the right moment in the emergence of projects in wiki space. Growing wikis heuristically forces you to let go, again and again: you don't get to be right. This is good thing because it shortcuts authorial habits and redirects attention to discovery process (learning) always unfolding in the commons. Letting go keeps you in tune and in time with the patterns on the Web, so you do not get lost (for too long) in the granular minutiae of cuts, cuts that are nonetheless essential for a sustainable rhetorical practice. The idea of a "mis-cue" is perfect for wiki pedagogy, where heuristics for learning how to write in rhythm—write together—can run, where one must stumble and stutter and leave gaps (playing apart, finding not one's voice but the commons). Wiki emboldens a pragmatic approach that also promotes experimentation; wiki
teaches students how to work with dynamic information because rhythm makes it ok to drop in with a “mis-cue,” to cause a ripple effect or even an interference pattern. Such rhythmic heuristics which directs our attention to the becoming-multiple of our medium—better; paying attention to the role rhythm in diverse communicative contexts allows us participate in this becoming.

This project directs attention to the role of rhythm in learning/teaching technocultural production. In this dissertation I argue that it is with rhythm—the creation and blockage of connections—that we can best teach students to navigate and connect up the fragments of discourse they find and produce on the Web. This notion of using an “asignifying” practice to teach communication seems odd at first, but it is supported by much recent cognitive science that suggests that cognition emerges from and is guided by affective and sensory processes. I also find support from the rhetors of ancient Greece, and embodied musical and rhetorical traditions of India and Tibet, and, after much trial by (rhythmic) fire, students writing in wikis here at Penn State.

When I first dipped into the wiki, the hypothesis went like this: students today comprise a “new generation,” a student body who deal with information fundamentally as filesharers. Unlike many of the administrators who manage educational delivery systems and the lobbyists who endeavor to encrypt creativity in legal technologies of control, students of the Napster/post-Napster era enter universities already experienced in digital media, more familiar with emergent forms of writing than the print-based forms of writing which have for so long informed our writing curricula and course design. As it turns out, this hypothesis would need to be qualified somewhat. And by no means did I figure this out on my own.
Branding the Commons

With this "censorship" as the fundamentally determining factor to the builders of musical instruments, the publishers of music, the record companies, the bands and symphony orchestras, the concert system, "interpretation" is virtually the only margin of aesthetic "value" left, and what we have in the twelve-tone tempered scale is actually a High Czar for Musical Economics, protecting all the aforesaid investments. If one of the substantial instrument or record companies were to follow the example of electronics, chemistry, and telephony concerns and make an investment in musical research looking toward the evolution of a system, or systems, and instruments really capable of utilizing historic materials and of expansion in the future, music as an art might become imbued with the spirit of curiosity and investigation which characterizes our sciences. (Partch, 1974, pp. 456-457)

Shortly after the Napster decision and the “legitimization” of Napster, the peer-to-peer software development firm O’Reilley held a well-attended conference on the future of peer-to-peer. Outspoken Stanford law professor and founder of the Creative Commons Lawrence Lessig introduced a legal comparison between RIAA v. Napster and Reno v. ACLU, the famous Internet pornography case. In this “first stage of Internet history, the Supreme Court was extremely respectful of the Internet and its potential, and there was still a very strong commitment to the idea that we not muck it up with regulations,” Lessig explains in an interview given at that time (Lessig, interview with O'Reilly and Koman 2005). In Reno v. ACLU, the Supreme Court decided that, because the Internet was still developing and showed great potential, it would be unwise to go heavy-handed on the legal front. The decision emphasized the importance of technological innovation. Inchoate innovations, trends, and developments should be allowed to develop unchecked by unnecessary legal restrictions. The message from the Court was that we should hesitate, rather than litigate and legislate, in early stages of experimentation on the Internet. Lessig continues,

But now, in the second stage of Internet evolution, when it comes to copyright issues, that attitude has disappeared. So with the emergence of P2P architectures
(which are being used to exchange music in ways that upset the music industry), rather than the court responding in the way that it did in Reno v. ACLU, the courts are in a knee-jerk way acting to shut down this emerging technology on the view that unless you stop it, it will be the end of copyright. (Lessig, interview with O'Reilly and Koman 2005)

After the courts first put the clampdown on Napster in 2000, we have witnessed an avalanche of aggressive tactics from the Recording Industry Association of America (RIAA), who seem to have an endless supply of funds and a will-to-litigation to match. The RIAA's massive efforts to protect the coming obsolescence of their business model, in coordination with the Digital Millennium Copyright Act, the Copyright Extension Act, have made it possible for the RIAA to put pressure on university systems administrators and Fortune 500 companies alike. Preying on administrators and CEO's greatest common fear—liability—the RIAA has attempted to outsource some of the policework of directly going after users who participate in after-Napster networks such as Kazaa, Bearshare, Morpheus, imesh, or any other P2P trading networks. The legal precedent and are chronicled in more detail elsewhere. Here, I will focus instead on “the Napster effect.” In Napster's wake, the production/consumption distinction (so cherished by publishers, the RIAA and the MPAA (Motion Picture Association of America) noticeably dissolved when communities of programmers and users brought a new wave of filesharing protocols to the Internet. This trend first became apparent in Kazaa's decentralized practice of doing business. After Kazaa was sued in 2001, they disappeared completely from the radar, only to remerge with a new business structure that was hardly a structure, at all. Kazaa's new armature was decentralized completely, dispersed worldwide. Server, domain, license, advertising, and all parts of the machinery, including the code itself, were dispersed in separate nodes, with geophysical touchstones in tax-haven island locations, Denmark, and Australia. RIAA
subpoenas might have pressed the issue, but it was Kazaa’s users (up to 60 million at the time) that produced this model of business in the rhythmic activity they engaged. Kazaa learned from their supernodes that decentralization, if intensified, could add exponential value to the circulation of information.

By that time Limewire, Bearshare, Grokster, and many other brand names surfaced, it became apparent that the rhetoric of business and law no longer provided the best descriptions for what had literally become a movement. Or even more precisely: after Napster, the movement and resonance that has always sustained creative and energetic practice now rose to the surface and garnered the attention of diverse communities bringing together diverse interests and practices on a common surface, a “commons” surface, even. Glenbrook South High School in Illinois hosts a number of helpful online learning modules, and physics instructor Tom Henderson's lesson on musical instruments in the online “Physics Classroom” explains that “an instrument can be forced into vibrating at one of its harmonics (with one of its standing wave patterns) if another interconnected object pushes it with one of those frequencies. This is known as resonance—when one object vibrating at the same natural frequency of a second object forces that second object into vibrational motion” (“The Physics Classroom,” accessed June 1, 2006).

Jesse Walker opens his review of Joseph Menn’s book All the Rave, which appeared in the Washington Post on June 8, 2003, with a telling statement from Hilary Rosen, the chief executive of the RIAA from 1999-2003, when the RIAA devised and launched their aggressive litigation policies against programers, listeners, and students. Hilary Rosen, Chief of the Recording Industry Association of America, put her finger on the contradiction after her trade group sued the upstart enterprise. "Your biggest problem,” she told its CEO,
"is that instead of a business, you created a movement. And it's impossible to convert it” (Walker, 2003, http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A21656-2003Jun5&notFound=true). What is interesting about resonance, though, is that all you can do is convert it, or, more accurately, let it resonate. One thing you cannot do is own it.

Indeed, what is this resonance, this movement? We can call it the commons, but this begs the question. In chapter 3 of this dissertation, I introduce a category of technologies, resonance technologies, that enjoin participiaption in the commons and the experience of the resonance that gives shape to what moves us in a variety of media.

Why did Penn State sign an agreement with “new Napster” in 2003, without consulting students and faculty, without a pre-licensing pilot study? Perhaps the RIAA's aggressive tactics provoked this top-down initiative. In January, the RIAA contacted systems administrators at universities, pressuring them to look at the records that by law say that outside parties cannot subpoena student records.¹ Once they got their foot in the door, warnings were sent to universities whose bandwidth harbored semi-P2P LAN hubs of illegal copyright use. Then, in February, the RIAA sent letters to 300 companies, some of them Fortune 500 companies. Perhaps inspired by numbers showing that illegal file-sharing was up 300% from 2002, despite the ceremonious crack-down on Napster just two years prior, and coupling that with statistics that show 30-40% of this activity was performed during “regular” business hours, the RIAA’s packet threatened businesses and provided proof (IP addresses, illegal files shared and the networks used to upload and dissemenate

¹The Legal Information Institute at Cornell Law School provides free legal information to the public. Including ull text of Title 20, the United States Code pertaining to education. Chapter 31, Subchapter III, part 4, “Family educational and privacy rights,” can be accessed here, at http://www4.law.cornell.edu/uscode/html/uscode20/usc_sec_20_00001232---g000-.html.
unauthorized copies) of filesharing activity. Also provided were the full description of the stiff penalties these activities were subject to, under law. Suddenly, the law seemed to overwrite the entertainment industry’s inroads into higher education. The law now included the DMCA, and the Napster ruling, and the Copyright Extension Act that works most directly to maintain old distinctions between “creative original ideas” and the protection of those who develop them on the one hand, and “consumers” of those ideas who have a “right” to purchase them. These penalties include legal fees, damages/losses suffered by the owner, and, somehow, all potential profits for the pirate. Berkeley law professor Pamela Samuelson observed that these “damages” could easily be gerrymandered into astronomical sums, or, as she put it at the time, “kazillions,” plus $150,000 per work shared illegally. Would we have to rewrite our curriculum? Would Internet law become progymnasmata for the rhetorical training we aspire to provide for the students enrolled in our classes? By March of 2003, it appeared that we wouldn’t have to go too far to teach these exigencies: the RIAA actually sued four students at three different schools, including Princeton and Michigan Tech. MTU’s president was outraged that his school was not given more time to approach this new problem. In April, Penn State unplugged 220 students who apparently were not frightened enough by letters and informative web sites sent and uploaded after the RIAA reached out aggressively in March. After a year which saw 3,000 subpoena requests to ISPs and almost 400 copyright infringement actions, the court’s January decision was reversed in December. But administrators at Penn State had already seen enough. Penn State president Graham Spanier and RIAA president Carey Sherman, as members of the Joint Committee of Higher Education and Entertainment, established a direct connection between entertainment and education. In a way, the RIAA’s cease and
desist campaign clarifies and even substantiates the large body of literature that takes up the
distributed and electronically mediated nature of writing in today's global corporate
workplace. Appealing to bottom line and effects on worker efficiency, the RIAA “scare
packet” linked information leaks, viruses, slow connection speed, and bloated bandwidth
costs directly to piracy, their preferred synecdoche for filesharing.

Here, we can finally find, in a wash of widely broadcasted business and legal
rhetoric, a reminder that the “Napster effect” on collaborative writing and decentralized
circulation, was already in effect before Napster. But when Penn State signed a licensing
agreement with “new Napster” at the end of 2003, it brought home and made palpably
exigent a shift in creative production in some ways new English studies, particularly writing
instruction in higher education. With electronic workplace environments, we find a
noticeable intensification of collaborative writing activity. And research has established that
the collaborative writing, document and archive sharing, and team models of project
research, development and design do not necessarily harmonize with the Copyright Act as it
is written and enforced. Now that the Napster effect has reminded businesses and venture
capitalists all over the world of the early Internet’s promise of “every user is not just a
consumer, but a producer of value,” the scramble is on to harness what the editors at
O’Reilly call the disruptive power of peer-to-peer. However, although we have to prepare
students for this legal/technological complex that will factor greatly in the future of writing
in the workplace, the RIAA's activity in 2003 suggested that it was time to think about
“collaborative writing,” “decentralized circulation of information in the workplace” and
other similarly clumsy rubrics somewhat differently. Again, Bateson's distinction between
necessary analytical activity and the fact that no necessity determines how inquiry should
proceed appears as a crucial axiom. If the space of the web has taken on *n-dimensions*, if it is simultaneously connected and discontinuous, open and closed, where should we, as researchers and teachers, focus our attention? For starters, it might be time to abandon “the author” as a pivot point for framing writing, teaching writing, and evaluating writing. When we read and write in networked environments, we tacitly and explicitly participate in a phenomenon of emergence that troubles traditional borders separating writer and audience. Texts emerge, and exabytes of information become n-dimensional as more and more connections are made in noisy nonlinear ecologies of writing. Nonlinearity emerges, then, by activity best described as interactive and rhythmic, and so the study of rhythm presents itself as a way to learn how to listen to, inhabit, and respond to texts in this space of writing.

With interactive writing, authorship becomes displaced (from the interior of self) and distributed (in networks of participatory production). The scene of composition today, then, extends beyond higher education’s traditional definitions of “writing,” indeed, beyond the capacities of the individuated “author.” Intensified sharing in peer-to-peer networks accelerates and leverages the power of the commons, the space of culture and knowledge where people can create freely by building on and transforming existing creativity. The digital commons promises innovation through mass participation, but free culture, or the commons, has, as we have seen, also attracted the attention of the Recording Industry Association of America and Motion Picture Association of American, who bring limitless funds and fight tirelessly to circumscribe the commons as “intellectual property” which they place in the hands of the few (http://www.riaa.com/issues/piracy/default.asp, http://www.mpaa.org/home.htm). Marjorie Heins calls the term intellectual property “oxymoronic because literature, music, and other creations of the human imagination are
not the same as land, cars, or corporate bonds—things we ordinarily think of as property,” adding that “the media companies that control most copyrights in this country of course disagree—which explains why copyright is such a hotbed of political strife today. For in order to protect their intellectual property, these companies have persuaded Congress to pass sweeping and troublesome new laws” such as the DMCA (http://www.fepproject.org/commentaries/coloradointellprop.html). When universities hastily patch together policies to avoid lawsuit and liability, they are not “protecting” students, rather, they are preventing students from tapping the resources, heuristics, and skills that brought them to the university in the first place.

Sarah Robbins (2003), Andrea Lunsford (1996), and others have framed the issue for university writing instructors in a way that favors discussion about content and the proper management of attribution and “protection” for students, who they figure as authors-to-be. My project, on the other hand, aims to participate in these important projects by amplifying the rhetorical and rhythmic functions of interactivity in the digital commons because we can learn a great deal about how discourse communities appear digitally and apply that to our approach to writing instruction. Jessica Litman concludes the 7th chapter of her book, Digital Copyright, with a reminder, that "the most exciting possibilities offered by networked digital technology aren't its potential to allow the instant distribution of books, music, and movies, but, rather, its capacity to generate new classes of unbooks, unmusic, and unmovies" (p. 108). How do these generative principles go into effect; how do they take hold?

In digital ecologies, we find the something capable of producing rhythm “in” the connections themselves, a space that sociologist Michel Maffesoli names “ambient
space.” Maffesoli explains that “ambience has a function: that of creating a collective body, fashioning an ethos” (p. 33). Although Remixing The Lost Book of Rhythm follows and when necessary cues the complexities of proprietary exchanges between individually (traditionally) conceived ethoi and from scholarly investigations into the complexities of copyright and authorship, this project maintains focus on the collective ethos Maffesoli describes as a series of experiments and gestures towards the sort of network pedagogy that the distributed and networked creativity of the cultural commons offer us.

The RIAA's 2003 campaign certainly posed a distinct challenge for English studies, particularly writing instruction in higher education. Pointed as this challenge may be, the available avenues of response need not be as narrow. True, we have to prepare students for this legal/technological complex that will factor greatly in the future of writing in the workplace. However, if we slightly shift our focus from the technical and legal quidditities and forensic vertigo these complexities induce, it becomes clear that just as Napster was a brand name for the commons that had portrayed commons activity as piracy, remix culture was another name for the community-forming practices of reading and writing we, as language instructors, have always tried so hard to profess.

I came to this impasse early in 2004, when, as the RIAA's efforts produced the first incarnation of a legal filesharing service, a “new Napster,” here at Penn State; meanwhile, I was preparing to teach my first wiki-based freshman composition course. The question on my mind was this: what is the Penn State-Napster agreement? How can it be supported, or leveraged into usefulness? Or, if necessary, subverted? In order to find out, I would have to bring a set of premises to the software itself, and bring these questions to my students. This forced an opening gambit, one that would not only frame
the course, but also the rest of my research into music's uses for writing instruction. I knew from my experience as research assistant to Rich Doyle during his initial foray into teaching with wiki that I would be writing with students. What sort of writers should we become? Should we focus on copyright and authorship? Or should we instead assume the presuppositions of remix culture and the distributed authorship heralded in 20th century musical practice and technological innovation? In the second chapter of *Mind and Nature*, anthropologist and cyberneticist Gregory Bateson catalogues a sequence of 16 presuppositions, or premises that, for Bateson, are elemental not only to scientific inquiry, “but also of everyday life” (p. 23). Number 5 states, “the division of the perceived universe into parts and wholes is convenient and may be necessary, but no necessity determines how it shall be done” (p. 35). Bateson, ever-vigilant for increasingly higher orders of “patterns that connect,” reminds us here of the active role perception plays in inquiry, but the stronger emphasis rests on the way we must handle the premises we advance in order to proceed—we must proceed heuristically, because “no necessity determines how it shall be done.” The time had come to test one major premise of my research: students arrive, “out of the box,” so to speak, already steeped in the ways of remix culture. At the same time, in light of the local and exigent brand-name “mash-up” (Napster as Commons, Penn State as University) providing a spectacular display of the rhetorical form and function of definition at a systemic level, it became absolutely necessary to test another hypothesis, as well. In good faith, I would find out what students could do with new Napster. I offered this notion to my students: when Penn State forged a licensing agreement with Napster, it provided students and teachers of writing with a fantastic resource for compositional practice.
Because, after all, even if Penn State's arrangement with Napster imposed limits on our practice, or simply proved to be ineffective, it would at the very least open up a controversial archive and starting point for writing together, in a way that wiki, as it turned out, would amplify; it would direct our collective attention to the dynamic and discontinuous media in which we work, play, and share ideas. I did not need a crystal ball to work out a back-up plan, because PSU-Napster went into effect in January, and I would have to wait until fall to teach the course I was designing. In the interim, communities of users on the Web were sharing the news: new Napster was not in the least bit useful. Tethered downloads, no selections. Students, figured as consumers provided not much more than consumer reports.

"Richard," a poster in a discussion thread prompted by the Register.com's story "There is Magic Behind Penn State's Napster Deal" sketching the connection between the RIAA and Penn State, sums it up perfectly:

One thing the pundits at Penn State hasn't considered: As an I.T. professional, I will in future consider Penn State alumni to be underqualified for any job under me, because they have not been exposed to open standards technology as part of their education, but rather subjected to a carefully-controlled "lab experiment" using closed-standard proprietary technology. Ergo, they will not be prepared to handle any emergent issues that don't fit into their proprietary mold that their "education" at Penn State has trained them to expect. And I use the word "trained" in the same sense as I would if the student were a horse, or a guide dog for the blind. (http://www.theregister.co.uk/2003/11/12/there_is_magic_behind_penn/)

Indeed, the "proprietary mold" makes foreclosures on information technology research, and confines education to the sort of training Quintilian deemed inadequate to rhetorical development almost two millenia ago. Furthermore, it boxes out the skill sets my premise was designed to solicit and enjoin in the invention, arrangement, and display of persuasive writing. Furthermore, the failure of the PSU-Napster agreement rests in a
more fundamental and bureaucratic misapprehension of the Napster movement. The Napster movement worked according to principles of resonance, and like the form of resonance known entymologist Pierre Grasse, in the 1950s, called \textit{stigmergy}. The stigmergy principle, taken by researchers studying the self-organization of biological systems, depends on activities other than mere consumption. As Camazine et al. explain in \textit{Self-Organization in Biological Systems},

\begin{quote}
Information acquired directly from other individuals is only one source of information used by organisms in self-organizing systems. In situations where many individuals contribute to a collective effort, such as a colony of termites building a nest, stimuli provided by the emerging structure itself can be a rich source of information for the individual. (p. 23)
\end{quote}

While it is in wiki that can tap into the full sense of the range of stimuli and uses for such information, the Napster model works under similar principles. In “The Cornicopia of the Commons: How to Get Volunteer Labor,” Dan Bricklen explains how, when it comes to filesharing, the normal, routinized behaviors of users add value to the database.

“Napster,” Bricklen explains, “is a manually created database created by volunteers.”

Created and maintained by volunteers. How?

Somebody needs to actually buy (or borrow) a copy of a CD, convert it to MP3, and store it in their shared music directory. Or, somebody needs to create an MP3 of their own performance that they want to share. In both cases, creating the copy in the shared music directory can be a natural by-product of their normal working with the songs, for example as part of downloading them to a portable music player or burning a personal-mix CD. Whenever they are connected to the Internet and to the Napster server those songs are then available to the world. Of course, that person may not be connected to the Napster server all the time, so the song is not fully available to all who want it (a problem with P2P). However, whenever someone downloads a song using Napster and leaves the copy in their shared music directory, that person is increasing the number of Napster users who have that song and raises the chances you will find someone with it logged in to Napster when you want your copy, so, again, the value of the database increases through normal use. What we see here is that increasing the value of the database by adding more information is a natural by-product of using the tool for your own benefit. (http://www.bricklin.com/cornucopia.htm)
Once connected, users, resonating at the same frequency (uploading and downloading copies of information coded with like information), end up tuning into larger patterns of connectivity. Even without the art, science, and legal savvy required to share files effectively, which become commonplace in everyday writing processes, "selfish" acts resonate with the sharing that builds a commons. Giving, it seems, is the best hack we have for ordering chaotic, information-rich ecologies of communication. These conclusions say as much about a shift in and democratization of musical practice, one that necessitates further research and experimentation into music's uses for persuasive writing.

Trumpets and violins I can hear in the distance,  
I think they're callin our name  
Maybe now you can't hear them  
But you will.  
-Jimi Hendrix, “Are You Experienced?”

So, almost before the first bell had rung, then, Napster taught us that ENG 15 "Downloading Persuasion: The Case of Napster" needed to shift its focus. But the real fun started when I introduced the sound editing assignment. I discovered that not all of our incoming freshmen arrive on campus ready to select, mix, and render; many were entirely deaf to DJ culture, including the idea the one's computer could be an instrument that could be tuned, and played, and used to create new ideas, and new arrangements of ideas, simply by taking browsing one step further by selecting and mashing together different elements in the patterns they perceive and indeed create as they browse.

In chapter 3, I sample and mix the ideas that polymath Alain Danielou, graphic artist Scott McCloud, and art historian E.H. Gombrich bring to the art of active perception to consider the ways commons culture amplifies the role of active perception.
Students are able to find room for this commons culture in the classroom, to be sure, but not quite willing, at first. Already and right away, the wiki dramatically shifted the teacher-student dynamic, as I had known it previously; and here, it became possible to glimpse teaching as a musical game of call-and-response, taking place in real-time, but one taking place in a common space comprised of nested riffs, refrains, and patterns of argument that could be revisited and revised in recursive gestures and sequences of rhetorical actions, gestures and actions that directly altered and effected the very commons providing the source-content, available order, and inspiration for what Bricklen might call “volunteer action” in the first place.

In an institutional context, however, volunteer action is hard to come by. After I provided downloading instructions for Audacity, a simple, all-platform, open-source sound editor, I gave them an assignment on the border between music and not-music, with emphasis on the writing on the wiki that would follow the editing experience: Manipulate a sound until you decide it is musical—or, go in the other direction, and trope a sound until you are ready to argue that it is NOT music; then, write about it.

One problem with this prompt; not enough impetus to listen to each other’s work. Another difficulty: if students can’t immediately see the potential payoff, in terms of the bottom line, grades, they may find ways to resist. Enter the commons. Downhill Battle's 3 notes and runnin' contest would provide a new template for tapping into the resonance peer-to-peer makes possible and the Napster saga made so palpable. The contest would allow us to re-approach everyday rhetorical and stylistic exercises in troping and arranging text and ideas, in class, with Audacity. The 3 notes contest also allowed us to enter the commons—or, more precisely, perceive our involvement in the patterns of
connectivity in which we have always been enmeshed. \textit{3 notes and runnin'} provided a template for a simple sample-remix exercise. In Audacity, a brief sample can be processed and rendered anew, even before it remixed into new contexts. Immersed in both sound and wiki, what kind of writing would we produce?

At the same time, the NWA case illustrates the degree to which legal codes and the oxymoronic "intellectual property rights" lens is out-of-step with rip-mix-burn performances and the overall attitude and innovative potential of the “share crowd.” The courts ruled “that even if a sample has been mixed into an unrecognizable form, artists must secure the rights to use such clips. In this case, NWA used a 1.5-second section of Funkadelic's "Get Off Your Ass and Jam” for their “100 Miles and Runnin'.” The ruling reversed a lower court decision.” If you place the needle on the band that separates this Funkadelic track—which closes side one of “Let’s Take it to the Stage”—from the one that precedes it, the swatch of sound in question is the first to meet your ears. But it seems to have little to do with the rest of the grooves on this track. Apparently, producer George Clinton (or somebody) decided that a short 3 seconds of a frenzied Eddie Hazel performance needed to be sampled at the peak of its histrionics, processed by delay echo (or perhaps Hazel himself filtered his signal between guitar and amp; of course, Clinton's recording ecology certainly allowed Funkadelic to trope sounds between mic-on-amp and tape), and placed within but only at the very beginning of an entirely different context and performance. Years ago, in 1987, Public Enemy sampled from this same band of Funkadelic, and this sample has been used by numerous high-profile recording artists since that time. While NWA admittedly used the sample, they had troped it beyond recognizabily. Quite simply, the looped noise in the NWA track is a new sound, a
different sound from the snippet of Hazel in question. "It's a ridiculous standard," said Nicholas Reville, co-founder of Downhill Battle, which organized the 3 Notes and Runnin' protest. "It's a standard that only comes about when the current copyright regime is totally out of sync with the way music is made today." (Dean, 2003, http://www.wired.com/news/digiwood/0,1412,65037,00.html).

The assignment prompt asked students to enter the 3 Notes and Runnin' commemoration and protest of Case No. 01-00412. In addition to submitting an entry and artist's statement, students were to post both to the wiki. Based on intuitions honed in my own musical practice, which has always been collaborative, I encouraged group submissions as well—as long as each group member blogged at least once (250 words) about the process. Finally, a second post was required to ensure that each student responded (in words) to another's 3 Notes and Runnin' entry, or responded to another blogger or bloggers' work in some way. (http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/Sept28)

Despite this seeming slam dunk, the assignment itself was not “successful.” In fact, the assignment admittedly did not work at all, if we were to measure of the number entries our class uploaded to Downhill Battle's database—less than a handful. Nevertheless, writing together on the wiki about the Audacity's limitations, the glitches in the upload mechanism at Downhill Battle, and the whole experience of shaping and troping sound—and writing about it on wiki—brought out ideas we could not have otherwise anticipated, and created more space for learning. One student's account of the experience suggests that we could have spent more time debugging and inhabiting the process. On October 4th, he wrote to the wiki about it:
I downloaded audacity awhile ago, when we first talked about the possibility of making our own music. At the time I didn't know that we would be using the three notes and runnin sample. I attempted to screw around with a couple of sounds that I already had on my computer to no avail. I'm pretty sure that the files were simply formatted wrong and I wasn't interested enough to find a way to change that around. So I finally had a chance to use the program when this assignment came up. I was real excited to get goin on it, and then I realized the huge amount of time it would take to make something that actually sounded good. This was sort of a momentum killer. I got goin pretty fast by lowering the pitch, slowing it down, and dropping the volume a little bit. I also had it fade in at the beginning and out at the end. I put a couple of gaps in this line. I then created a new line where I had the original sample fill in the gaps from the first line. This sounded absolutely horrendous and took way too long because I tried to match them up perfectly. This is about where I am at right now because the following day my computer started having some troubles, and I couldn't continue with the project. All in all I thought it was pretty fun to manipulate the music like that, just a little time consuming. I couldn't post my sample anywhere because I can't access the file on my computer.

(http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/ConfusedAudacity)

This account was one of the first that tipped me to one of wiki's fundamental pedagogical benefits: blogs, posted to a common and easily “programmable” or “shapeable” medium, such as wiki function as a form indirect communication akin to Grasse’s *stigmergy*. The shared medium comes to life, seemingly “on its own,” and as a livin (and open) system, solicits and promotes subtle and careful forms of rhetorical address—eventually. What I could not quite get to at the time was how to quickly render the assignment's *telos* into a timely response to the wiki, to go into a call and response dynamic with the wiki with the students. And, yet, this is what we needed to somehow model, and teach! No *one* could do this, but any one could learn when and how to listen, and when and how to respond. This would take some time. Planning ahead, I was at least tuning into the idea prompts could and should be designed and tuned so that high frequency “blogging” could at any time, when an unexpected rhetorical threshold was reached, go into direct interaction. Whenever an issue, a problem, or an occasion for
repeating and affirming—or refuting—a peer’s observation with narratives, examples, or extending analogies, anyone could, after the pattern of resonance supporting the Napster movement, chime in. Reading and responding to each other’s writing was not only possible with wiki; it was the wiki imperative. These bugs and limitations, combined with the clunky and discontinuous sentences daily blogging actually created a gradient on the seemingly unmanageable infinity the open edit window of wiki offers. No doubt you had to “listen in stereo.” On the one hand, “What’s all this nonsense getting in between me and doing what the instructor seems to want?” Such is the beginning of the end of the professorial void as “audience.” On the other hand, it became clear that the stuttering and dissonance cropping up inter-media (between sound editing and sentence craft) and, significantly, between people writing, could have a lot to do with how the “expanded classroom” actually expands. Collier and Burch (1998) compare examples of forced entrainment and spontaneous symmetry to illustrate the differences in energy costs between these processes. We believe that the same principles apply across all systems for forced resonance, including social systems. “In the case of spontaneous resonance… subtle applications of force in regions near the chaotic zone between attractors” effectuate changes in the system, as when a Japanese satellite that was supposed to go to the moon, but lacked the power due to other problems. NASA, who launched the satellite, worked out that there was a chaotic region in the earth-moon-sun system, and by applying a small amount of force near that chaotic region, transferred the satellite into a lunar orbit from a terrestrial one. (p. 5)

A forced entrainment—in this case, blasting from one orbit to the next—might take less time, but it would cost more energy, and these costs will determine the capacity of the system to go enter further entrainments. This is the instructor's dilemma in the far-from-
equilibrium commons-model, and it closely parallel to the author’s dilemma, which, however, music can easily remedy.

On another level, new heuristics presented themselves: "What is writing, today?" but also "What is music, today?" and "What is a musician, today?" Again, definitional questions enabled us to talk to each other; the wiki let us do to enact this to-and-fro in writing. In this way we could experiment with rhetorics of rhythm in our textual practice. In this process, it became apparent that music's immediate value in the composition classroom had less to do with learning copyright law and more to do with the affective dimension that music taps like no other medium. Before the 3 notes and runnin' assignment, it seemed pressing to ask, “How much music do people listen to in the file-sharing era?” or “In what ways can we extrapolate from copyright issues in music, learn from legal controversies surrounding file-sharing, and then apply what we discover to our own writing processes?” But when students started to feedback on the wiki, these questions gave way to new heuristics, and the students' writing set a new tone for the course. Not only is it perfectly acceptable and appropriate to query your own premises, the premises of your peers, and your instructor's premises, doing so is essential for learning. A willingness to play and experiment with one's “own” premises, recursively testing and revising them and finding new hypotheses is the key to the art of persuasion in the commons, where writing proceeds by linking. Once the blogging started, and students discovered that it was “ok” to “complain” about the technologies we use to write, they began to explore the way the common digital medium let musical production and textual production resonate. One student mused about these connections in terms of
the *tropes* that we use to create effects with language, to make words turn this way and that way:

I was thinking a little about how these effects that we can implement on Audacity can relate to the writing tools and tropes that we use. I talked in PrezDebates about how the candidates would use the same phrase over and over again (I just found on the list of tropes that Trey gave us, that this is called anaphora). I think that this relates to the echo effect in Audacity. This effect can be used, obviously to cause an echo of a particular part of the clip. But why would someone want to echo a sound…the same reason that George Bush and John Kerry “echo” in their speeches. Important themes and messages heard are wanted to be heard more than once so that it is easier to remember. Another effect is noise removal. This isn’t necessarily a trope, however, it can be compared to cleaning up writing so that it is concise and to the point, not confusing and wandering. Noise removal in Audacity is used to make a recording more clear and easier to listen to. This is something that is very important in writing as well as audio works. The fade-in effect in Audacity is like a sentence level climax. This occurs when there is a selection of words or phrases that are in order of ascending power. The music is also in order of ascending power as the volume increases gradually. So basically, these Audacity works are a little like the rhetorical writing that we do. The same tools are used in each medium, often for the same purpose.

(http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/WritingwithAudacity)

Echo is indeed one of the most elemental tropes common to the infoquake and musical practice. Voluminous writing detailing electronic experiments with sound have rendered a fine grain on these terms in detail comparable to the close attention philosophers and rhetoricians have always given to tropes. Teacher and composer Allen Strange (1972) points out that,

The terms ‘reverberation’ and ‘echo’ are often used interchangeably, but when working in an electronic medium there is a distinct difference between these two effects…reverberation is the sum total of all reflections of a sound arriving at a given point at different time,” whereas echo is the perception of the individual attacks of reflections unfolding and reverberating in linear time. (p. 190)

When the vocabulary of sound, and especially dub, comes into the writing process, students can begin to distinguish the effects of repeated claims from individual echoes, which is an important step in finding well-tuned modes of response, including the
counterarguments that require us to compose forms of rhetorical address that allow us to perceive the timing and placement of echoes, and know how and when to interrupt the delay patterns of reverberation and echo defining an issue or line of inquiry. These techniques are not, however, simply the inventions of electricians, jazz musicians have always used horns, reeds, strings, drums and voice to phase, flang, whah, reverberate and delay patterns of sound to create a space of interaction in sound. This is not to say troping sound starts with jazz, either. Alexander Weheliye (2005) reads W.E.B. DuBois’ *Souls of Black Folks* as: An extended echo chamber in which traces of spirituals reverberate with and against one another, forming a different textusonic machine…paving the way for future African American literary aesthetics, chiefly the Harlem Renaissance” and, of course, dub reggae, which emerged in the 1960s when “Jamaican producers started messing with the musical text via technological means—loosening its confines, turning up the bass and drum in the mix, distorting and displacing the centrality of the voice, opening it up to the cosmos (p. 102). Dub’s essential features—echo, reverberation, delay, and the creation of gaps by subtracting and adding elements of a given composition—can be rehearsed in wikis, opening up classroom compositional practice to the textusonic potentials of African American aesthetics and allowing the composition classroom to perhaps approach and enhance the the literary classroom’s ability to immerse students in the historical and political dimensions of African American culture.

The *3 notes and runnin’* assignment also revealed the latent energy and learning that could unfold in the classroom if students were able to write together. This aspect of our pedagogical heritage in the writing classroom, often filed under “collaborative writing,” works in theory, but always seems to be difficult to summon in practice.
Before we even began this assignment, we were looking forward to sharing some of our creativity without using words. In high school, Jamie even experimented a lot with digital movie editing, which has the same basic principles as this Audacity project. However, when we first looked into making a music sample on Audacity it seemed overwhelming. Now, that we have played around with the program for a little while it is still confusing, but the general idea is getting easier to understand. What Audacity does is it takes a section of music and gives you the ability to use that specific section to recreate your own sounds. For the particular contest, we were given a very short clip of a guitar riff and were told to transform it into a new sample. A major problem we found in the beginning was that the original sample was very limited and there did not seem to be a lot of opportunities to elaborate. After we laid down the first track, we started to play around with some of the effects. There were so many different things that we could do, that we found ourselves lost in a sea of endless possibilities. Eventually, we gave in and downloaded the tutorial. The tutorial did not tell us much, but it provided the very basics of Audacity. The next step after learning the foundations was to go back to our rough copy and continue to experiment with some more effects. What we wanted for our first track was almost like a base beat that we could build everything else on. This was one of the most important and difficult steps to accomplish. We tried various effects, but they all seemed to sound awkward and shitty. The more we play around the worse it sounds; and the passion we had from the start is being overshadowed by our frustration.

This frustration was unleashed only when students discovered that they were writing to each other, not to some imagined version of the teacher who would evaluate their writing. In the chapters that follow, I narrate assignments that illustrate the way wiki helped me tune the classroom further towards interactivity so that the students could render proposals and projects out of the smallest and seemingly “off topic” frustrations. When the students began to turn their attention to each others’ wiki posts, the conditions for a substantive and energized compositional space began to take hold—slowly, but surely. Here, one student responds to another, and the level of detail regarding the phenomenology of process sets a tone unheard of in my pre-wiki composition classes:

This is in response to Kevin's two blogs on the Audacity project. First of all I agree with him in respect to how difficult this project truly was. It's easy to create something, but it's very hard to put what's in your head into the program and work with it. I have a few friends who do that kid of stuff all the time with their own
music and other people's and it shows me how much work it truly is to produce music on the computer. I always held the view that electronically produced music stifled creativity and got away from the real expressive part of music. I realize now I was dead wrong simply because I was ignorant to the process. These computer programs are not made to simply plug it in and create cool noises that sound good in a rock song. These programs really give the producer everything to work with in so much detail that whatever is done to alter the music is authentically the composer's work. I now wish I had the knowledge to work with these programs because I think the frustration that many of us are feeling is due to the fact that it is so exciting to be creating this music, but we just can't pull it off. This shows that those who do pull it off are in fact talented musicians with a wide array of talents on the computer. The song that Kevin cited was one I noticed earlier as well. This song, third rythmic strike, was truly techno as it infused several different rhythms into something that could easily be played at a club without any second glances. I'd have to say the major thing I learned from this project was that music genius can come from many different instruments and means. Computer programs are just one way to truly express your musical views but like all instruments it is first necessary to practice and gain the knowledge to use it so that your view comes out easily and quickly.

Different media all require a practice, a recursive system of ongoing rehearsal.

When students began to show that they recognized this fact of writing, it taught me that in multimedia classrooms, the writing between each medium needed amplification if the students were to apply “infinite rehearsal” to projects that could grow and meet desirable outcomes.

Well I guess this is where I describe what I did to make my masterpiece for the submission. As well as I can remember I started out by turning the volume way up on my stereo and listening to the clip a few times. The first thing that I noticed was at the end, where the pitch changes a little, there's a different kind of wah wah sound. I took a small piece of that sound and laid it over top of the original track. I faded it in and out, changed the pitch a little and made it a little louder to give it a little hierarchy. Then I looped it like 40 times to give myself 30 seconds. Then I took a really tiny piece of the original, laid on top of the other two, and repeated it like 100 times for 30 seconds. This small repeating piece just gave a little beat in the background to tie the track together. Finally I took the original and changed the pitch way low to give it a hollow wailing sound. Then I slowed it down to emphasize this hollow kind of spooky sound. Lastly I just repeated the original enough to make thirty seconds. This definately isn't the greatest song in the world but it's good enough for me and my first music making experience.
When the students worked with a new technology in common, they began to set their own benchmarks. Even if only a handful of students share the methods they used to render the constraints of the contest into a learning experience, these short, but frequent, indirect communications suggest that wikis can be tuned to the distributed model, where rhythmic entrainment organizes chaotic moments into diverse but orderly experiences.

The Heurisitic Wiki, reflecting on superconductive order Samuel Taylor Coleridge Kubla Khan, the sheer prosody of the poem, testifies to the rhythmic nature of heuristic:

How could a mere human mind pull together words from the vastness of the set of all available English words and all the possible ways of combining them (a set that includes everything there is to say), into such a harmonious order? As every schoolkid who's tried to write a poem knows, as you try to get the rhyme to work, you usually mess up the meter; if you fix the meter, you break the rhyme; the meaning often suffers while you work on the other aspects; when you fix the meaning, you break something else; and so on. How did Coleridge manage to find a combination of words that fit all of these criteria at the same time?"

Let Wiki Take Your Higher

How did Coleridge do it? The answere may have somethig to do with opium, which turns the ego to zero, but such dependencies do not add up to a sustainable practice. However, turning the ego to zero is an essential aspect of rhythmic practice, and dissolving the authorial ego can begin when we simply open up the writing process to the resonance of the commons. Wiki distributes this rhythmic process. Nate Mackey describes a collective stutter in Bedouin Hornbook; for Mackey, letting one’s “own” process interleave with the processes of others is the way to move past platitudes about “collaboration” and call-and-response, community. Now, commons formation seems to match the speed of our brain functions at the neurological level, and cognitive science
demonstrated long ago how, at the physiological level even, the human brain functions as a connection machine. Furthermore, we can act on our understanding of Mind enmeshed in an ecology, Gaia, our brains can do even more than we can imagine. When we consider this dazzling connectivity that is life along with Nate Mackey’s formulation, "if consciousness were simple enough to be understood we’d be too simple to understand it," how can we pursue a pedagogy of the author alone (Mackey, p. 80)? Recipes for rhetorical and communicative performance in the commons start with this attention to connectivity. Connectivity, as we will see in our case study of minimalist composter La Monte Young’s treatment of rhythm in chapter 4, induces a feeling of the infinite, and, at the same time, provides the constraint and remedy for infinity’s oftentimes overwhelming effects.

Wikis are open source Web spaces that provide another way to orchestrate writer's workshops and peer review sessions. Wikis are community-forming technologies. Wikis make it possible for students to write a lot. Wikis allow students to write to each other. These three aspects of wiki produce a writing practice that proceeds on a higher frequency. The teachers that we or our students might imagine us to be are not the only systems dissipating in this practice, which is literally higher in frequency—writing comes to involve responding in a timely manner. The open source mantra “early and often” takes hold on this dynamic surface, as it is the only way our writing consciousness can participate in it. What is it? The commons. Suddenly, the “expanded classroom” is easily troped further, and the possibilities seem infinite. And yet, there is a gradient, of course: We are a class. One teacher and 24 students. Tuition and grades, expectations and anticipations about what a university is, or is supposed to be. Therefore, in the early
attempts to write in rhythm with wiki, in these “expanding classroomss,” the wikis took on a tone that seemed to provoke further troping away from “forced entrainments.” The energy, enthusiasm, production, and learning seemed to rather emerge from play, and even nonsense. Sonic tropes are tropes of amplification, and when introduced the the textual realm, and recognized by students to be useful for the entrainment of words and ideas on the wiki, the positive feedback principles of stigmergy appear as another way a community can emerge in a classroom initially merged by forced entrainment, along with the all templates for community-formation modeled by programmers, artists, and technicians in peer-to-peer networks. Anyhow, this involved a fair amount of definitional work.

Narrative and definition, taught “remix” style via wiki, put into relief three dynamics that should be of great interest to anyone feeling the rhetorical challenges we all face on an ecosystemic level, but of special interest to those of us who profess to teach writing. First, we learn from wiki about the important role of prolepsis\(^2\), or (anticipation) in distributed ontologies of writing. "Attention cycling," as we will see in chapter 2, happens through play. Second, wiki effects a fundamental shift in teacher-student relations because wiki puts questions of ownership in relief. Third, these shifts correlate to a shift in tech-assemblages—always moving; hence, rhetorics of rhythm. This opens up the teaching of rhetoric to rehearsal and training in the art of working on a continual shift; the continual shifting of technological assemblages that make up the space of

\(^2\)We can strengthen our writing by focusing on and working with the interference patterns external link that emerge when point meets counterpoint. Learning how to recognize and consider counterpoints, and how to time and situate the counterpoints we offer have always been fundamental to the construction of shared rhetorical dwellings. Classical rhetors named this art of anticipation prolepsis external link, and we will experiment with the various ways proleptic attention sharpens reading skills, helps us invent and arrange technical documents, explain complex processes to diverse audiences, and so much more.
writing. Working in dynamic spaces of ongoing movement requires a rhythmic approach to refining attention. Staying in rhythm and staying in tune with arguments and issues as they unfold in real time can only happen when we write together, interrupting each others’ sentences and opening up more space for collective consideration of word selection, syntactical sequencing, overall arrangement, content and tone of examples, and much, much more.

Furthermore, even in educational contexts, wikis can be tuned according to a wide spectrum of parameters according to seemingly infinite possibilities. Wiki, in these experiments, proved to be another sort of resonance technology—resonance technologies: phonograph, magnetic recording tape, and wiki; resonance: the commons. The jazz ensemble, the improvisation collective: rhythmic entrainment through tuning in to each other by means of the sounds reverberating in the commons space. Deriving from the Greek tropos, "to turn," a trope is a schema or script for turning attention. Tropes are particular configurations of language, and as these figures repeat, they become recognizable heuristics for amplifying and compressing one rhetorical choice over all other probabilities. When musicians add to or subtract notes from a particular melisma or otherwise draw attention to the development of a particular tone, they are troping right there. Used as a verb again: when you "trope" something, you tune that something to a pattern by entraining it to that particular and available pattern. Troping, turning, tuning; these are the very same. They at once require and install a second order of attention. Rhetoric is another name for this "attention to attention." So, in the Freesound assignment, we begin by working with sound. We learn how student writers tune to audiences, and our students learn that they already have an inchoate but intuitive and
therefore reliable sense of and method for listening for patterns in information and making rhetorical choices.

In group-composing exercises, student writers learn that they are tuning to something beyond our traditional understanding of audience; they are tuning to, and with users, fellow participants, informants, and contingent cooperators in contexts composed of technologies animated by our performances in language. In chapter 3, I will narrate from the “audience finder” assignment from a technical writing class I taught here at Penn State to show that when we move with the smear between producer and consumer of information, we are resonating with the commons.

We can start with sound, but writing is the "obligatory passage-point" to all other media. In other words, in order to be able to work together with multimedia, we have to be able to "go multiple" on both sides, both "multipeople" and multimedia. The ongoing media-hopping (analogous to the “pedal hopping” of effects-wizard J. Mascis of Dinosaur Jr. and legions of others before and after him, and the toggling between band organizer and “dub organizer” that Charles Mingus and John Coltrane pioneered in jazz) hallmark of infodynamic space (shifting rhythmizomena) actually produces more openings, more occasions to talk to each other. Communicative performance in multiple contexts demands that communicate with each other in ways that are share-able and sample-able into other media. Writing is this medium (rhythmizomena). This is why writing together is so powerful in the corporate workforce. We can begin with the medium of sound to introduce students to the role of tuning in the act of writing together; but today's pedagogical scene more than ever requires rhetorics designed for interactivity. Audience no more, users and contingent cooperators interact with open-end dynamic
Web presences where people talk to each other. From audience to the commons, we learn “commons courtesy,” which is less about propriety and property and more about well-timed sequencing of rhetorical gestures and choices.

Since the telegraph, electronic media emerge as increasingly configurable (programmable, rhythmizable) surfaces and conditions for inscription, response, and movement, and, as Marshall McLuhan (1964) recognized long ago in *Understanding Media*, once "sequence yields to the simultaneous, one is in the world of structure and configuration" (p. 28). Configuring arguments in a networked medium requires some listening, some facility with detachment, and lots of practice. Just as musicians rehearse the gestures of melodic development and rhythmic entrainment, we, as composers in far-from-equilibrium, rich, synaesthetic media, must become search engines for the tropes that help us make rhetorical choices as we narrate sequences and listen for available sequences turn narrative sequences into definitions and so much more. As we tune the necessary repetitions of rhythmic writing to higher frequencies, we find one of the oldest methods of writing instruction: feedback. In wiki, the feedback becomes quite literal: the indirect and informal communications accrete and establish a tone and tenor for learning that far outstrips classical teacher-student models. Cybernetics makes this same distinction between positive and negative feedback. Gene Youngblood (1970), who orchestrated resonance experiments with students in the form of tape-loop experiments at Cal Arts during the 1970s, simplifies this distinction by bringing considerable feedback at the basic level of energy that occupies phycisists. Youngblood’s workup on entropy and negentropy turns on the axis of consumption/production:

> We've learned from physics that the only anti-entropic force in the universe, or what is called negentropy (negative entropy), results from the process of
feedback. Feedback exists between systems that are not closed but rather open and contingent upon other systems. In the strictest sense there are no truly "closed" systems anywhere in the universe; all processes impinge upon and are affected by other processes in some way. However, for most practical purposes, it is enough to say that a system is "closed" when entropy dominates the feedback process, that is, when the measure of energy lost is greater than the measure of energy gained. (p. 63)

When the composition classroom awakens to the resonance—and the noise—of the commons, something special begins to happen. This is especially important at this time, when we obviously can no longer presume to accommodate the author writing alone. Systemically speaking, after the "death" of the author, writing comes to life. From the student-centered perspective: whether students come to us ready to write in clusters or unable to do anything other than repeat the claims they find on the Web, we can provide a space for refinement and rehearsal not just of skill-sets but of the forms of consciousness and modes of being produced by the ongoing entrainment and symmetry-breaking rhythms that form and sustain the commons. When writing with the Web, the paradigm of creativity is often the DJ, not the author. Peer-to-peer rhetors tend to think not in terms of the blank page to be filled but look instead for an original to be altered, transformed, and reshaped. While some students treat the Internet as an archive for plagiarism, others learn to work with and transform the enormous archive into plausible arguments and narratives. Despite this trend, most writing programs still teach writing as though students identified with the role of author rather than DJ. If we continue to think according to the premises of paper, we crowd out the time and space of rhythm, and then we cannot find whatever heuristics await us in all their undecidability to help us make space in our students’ time to learn and refine expanded rhetorical practices and translate those practices into advanced, collective, and lifelong learning and research itineraries.
Gestures such as “appropriating, sampling, copying, cataloguing, scanning, indexing, chatting, and audio/visual streaming” describe the ways p2p rhetors create and share multimedia space, and work together to form communities. Geof Sirc's (2002) list of gerundives sample from remix culture, and, this dissertation will argue, actually comprise the oldest rhetorical toolbox we have. Writing "to" the Web reinstalls older author-audience models of communication. Wiki allows us to practice and learn what it is like to write with the worldwide Web implies that when we work we are working the commons. And, as it turns out, this work involves a fair amount of play, which is another name for the rhythm that emerges when we bring Bateson’s sense of heuristics to wiki. Wiki heuristics make it easier to learn the crucial musical arts of the commons; beginning with the art of listening, communicative performance with collaborative and community technologies. When the resonance, not Coleridge or any one of us, is the composer, the rhythms of listening and performing open up new heuristic vistas where we learn as we write and write as we learn how to form a commons.

The Napster era brought the force of music into the history of P2P, and with that force, it brought the radical revaluation of authorship that comes with it into yet another relationship with technology. The branding saga, of course, continues: my space and You Tube squabbling over the making and breaking of links between their services, which, despite all appearances do not constitute the communities, connectivity, and noospheric commons-formation they no doubt enable. Wiki is one technology for staying in tune with the rhetorical practices sustaining and resonating the connective commons.

Next, turning to chapter 2, I will take you back to ancient Greece and outline a Greek treatment of rhythm. This second segment begins with a sample from Athens'
rhythmic theorist, Aristoxenus, and builds into a vertiginous wall of sound—a swarm of cicadas singing unto Socrates—before it applies a magnifying glass to the terminology and concepts that seem to haunt rhythm and give it so much promise, just as rhythm haunts chronos and its promise, history.
CHAPTER 2: SONIC STIGMERGY
AVAILABLE ORDER,
AVAILABLE MEANS FOR COLLECTIVELY COMPOSING WIKIS

1. “We have already pointed out that rhythm is concerned with time-lengths (chronoi) and the perception of them, and we must say it again now, because this is in a way the starting-point for the study of rhythm” (Aristoxenus of Tarentum, trans. Pearson, 1990, p. 3).

2. Writing in the 4th century BC, Aristoxenus of Tarentum provides us with the only extant Greek text dedicating undivided attention to the matter of “rhythm,” the Elementa Rhythmica. Unlike his Elementa Harmonica, the Elementa Rhythmica only comes to us as a fragment—all that remains is a portion of the second book, organized as a series of numbered segments. The study of rhythm in Aristoxenus' formula begins with a repetition: “We must say it again.” But this second book, which contains 36 short segments before it fades out opens with a backwards glance. In Lionel Pearson's (1990) translation, those of us unable to translate Greek get a glimpse of this lost book of rhythm in this brief recapitulation:

   In our preceding discussion, it has been explained that there are rhythms of several different natures and what each one of them is like, what the reasons are for giving them the same name, and what exactly it is in each case of which “rhythm” can be predicted. Now, we must speak about the particular rhythm that is considered part of music ((Aristoxenus of Tarentum, Pearson trans. 1990).

   Just a glimpse of this lost intermedia treatise is enough to incite the imagination. Today, immersed in multimedia ecologies of composition, we can go further than imagine the lost book of rhythm: this glimpse is enough to induce visions, and even
inspire a practice whereby we echo “rhythms of several different natures” (Aristoxenus trans. 1990, p. 3).³

Linguist Emil Benveniste (1971) observes that the signifier rhythm "serves to distinguish types of human behavior, individual and collective, inasmuch as we are aware of durations and the repetitions that govern them" (p. 401). Before he goes on to trouble the accepted etymology of terms, as it has come down to us through Latin from Greek, Benveniste further suggests that when we find, name, and organize patterns in nature, we “project a rhythm into things and events” (p. 401). Aristoxenus' starting-point for the study of rhythm is rightly concerned with more than the measurements of time, but also “the perception of them,” and in digital media, perception is shared and distributed more radically than ever before. So perhaps we can go further and say that this increasingly distributed “schema and correction” of perception is in fact a large part of what we do when we compose collectively in information ecologies. In what follows, I introduce the language of rhythm to a discussion about composing with computers and sound in an effort to amplify Benveniste's distinction between “singular” and “collective” activity and also to consider ways teachers and students might explore these same spheres of perception, together. Crucially, beyond a semantic engagement, the rhythmic activity of a distributed but collective and participatory ethos can only be apprehended by first-person investigation into the rhetorical operations of the commons.⁴ If teachers of writing experiment with the the simplest rhetorical and rhythmic functions and the most

³ Lionel Pearson (1990), M.L. West (1992), and Andrew Barker (1994-99), all three leading authorities on music in antiquity, who have translated some or all of Aristoxenus' fragment on rhythm. This dissertation works with Lionel Pearson's translation
⁴ Oxford English Dictionary entry for the intransitive verb “to echo” reads “of a sound: to be repeated by echoes, give rise to echoes, reverberate, resound” (OED, 2nd ed., 1989, Oxford University Press).
accessible and basic building-blocks for interactivity that bring a digital commons into being, we can learn a great deal about how discourse communities appear digitally and habitually weave what we learn into our teaching and writing practice.

3. To quote Friedrich Nietzsche from his lecture notes for a course on Greek metrics delivered at University of Basel in 1870-71, he stated the following:

“My feeling is that there is something comical and funny in a solemn glorification of a drummer's enjoyment.” (James Halpern)

Writing takes work, but writing together requires play. In a definition argument attached to the download page for the now ubiquitous Firefox browser, the technical writers and software developers at Mozilla tell us how “tabbed browsing makes surfing the web faster and more convenient,” just barely alluding to the inexhaustible indices that would detail all the rest of what clusters of users can do with tabbed browsing (“What is Tabbed Browsing?” 2005, http://www.mozilla.org/products/firefox/tabbed-browsing). Perhaps this is because the occasion calls for a staccato brevity and a focused business-like description of the technology for first time users, not suggestions and directions for the diversity of collective and ceaseless activity that such instruments enable users to participate in and orchestrate. Indeed, the proper timing and placement of such an index is difficult to imagine, and writing fashioned to describe such amplified complexity—imagine the graphomania that would endeavor to describe possible futures afforded by browsing and reading on the web—creates even more noise. In a similar way, words cannot render descriptions that compress musical information, even if they can produce more surface area for connectivity. To play the trombone, just reading or simply hearing technical instructions about playing trombone will not do—one must pick up the
instrument and play it. Likewise, ordering the complexity borne of networked computers becomes its own shortest description. In the words of complexity theorist Stuart Kauffman (1995):

>The theory of computation is replete with deep theorems. Among the most beautiful are those showing that, in most cases by far, there exists no shorter means to predict what an algorithm will do than to simply execute it, observing the succession of actions and states as they unfold. The algorithm itself is its own shortest description. It is, in the jargon of the field, incompressible. (p. 22).

In the context of a writing classroom, simply “jumping into the swim” and doing an assignment together becomes the only way to recognize and compose patterns amidst chaos.⁶

If we take the repetitions of tabbed browsing, the simplest and most often repeated gestures of navigating informational ecologies, and mix these repetitions with sound, we can introduce students to an explicitly rhythmic compositional process. In classroom experiments at Penn State, we bundle tabbed browsing and sound together, because, on the one hand, directing attention to tabbed browsing is so simplistic that it seems to state the obvious, and, on the other hand, students enrolled in a writing class do not immediately intuit the uses of sound for the purposes of writing. However, no “musical” experience is required because we direct students to the resources provided by

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⁵ In digital ecologies, we find the something capable of producing rhythm “in” the connections themselves, a space that sociologist Michel Maffesoli (1993) names “ambient space.” Maffesoli explains that “ambience has a function: that of creating a collective body, fashioning an ethos” (p. 33). In the opening chapter of my dissertation, The Lost Book of Rhythm, I argue that the rhetorical and rhythmic functions of ambient space manifest most dramatically on issues of intellectual property and filesharing for most of our students, and that it is perhaps easier to trace these gestures in the connections themselves, rather the content-dimension of this convergence. Here, I will simply propose a mixture of sound and wiki technology as a means for clusters of writers to substantiate information and actualize rhythm.

⁶ The musical sense of compression favored by Aristoxenus was *katapuknosis*, defined as the “close packing of the intervals of a scale” in Henry Liddel and Robert Scott’s *A Greek-English Lexicon*, available online at Tufts University's Perseus Project, [http://www.perseus.tufts.edu/](http://www.perseus.tufts.edu/). Andrew Barker (1978) tells how wandering musical theorists, known as *harmonikoi*, designed diagrams “to facilitate comparisons between scalar structures by displaying them all within the same theoretical pitch,” and named this procedure *katapuknosis* (p. 11).
the Freesound Project (http://freesound.iua.upf.edu/index.php), a collaborative database of Creative Commons licensed sounds.

Try this example: open your browser. Cut the following URL, http://freesound.iua.upf.edu/samplesViewSingle.php?id=1979, paste it into a fresh new tab, and loop this recording of a tabla, the pair of drums used in North Indian (Hindustani) classical music. Let it play until you finish reading the discussion of the rhythmic art and science of tala that concludes the third segment of this chapter. In the meantime, search the Freesound database and select a sample, or, perhaps just go along with Freesound's "random sample of the day" on the front page of the web site, either way, do as you did with the tabla recording: let it repeat, let it play.

With an Internet connection, a computer, and a tabbed browser, anyone can compose with sound; in different tabs, students can select and loop (repeat) sounds, which they can "score" by sharing links that interpolate their selected sounds' urls with images and text, including instructions for starting, pausing, sequencing, and layering the selected freesounds. These musical territories of production then provide the text for further prompts; for example, students listen to and read each others' freesound compositions, then write about their favorite composition, cite a certain sound, composition, or tendency across various compositions to construct a definition argument drawing distinctions between "noise" and "music."\textsuperscript{7}

\textsuperscript{7} "Swimming," Avital Ronell (1989) tells us in the classified directory of her Telephone Book, "creates a sonic space" (p. 432). Martin Heidegger's What is Called Thinking? (as cited in Ronell 1989) offers swimming as the exemplar of activities that we can only learn about by full immersion. "We shall never learn what 'is called' swimming...or what it 'calls for,' by reading a treatise of swimming. Only the leap into the river tells us what is called swimming." Likewise for the immersive medium of sound, and also, I will argue in the next section of this paper, user-editable media know as wiki.

\textsuperscript{7}To try a version of this assignment, follow this link: http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/JanuaryTwentyFifth You can post your composition to this same page by clicking "edit" and posting your "score," or you can create a new page
YoBit, a student in an advanced technical writing class here at Penn State, came to terms with her own assumptions about music that opened up the class to new ways of comparing premises:

I find it hard to describe exactly what music is, and I actually took a world music course last year. Through that course, I was able to listen to a wide range of music from many different cultures. I remember we were required to go see a Turkish song and dance on campus. I don't even remember what it was called, because I remember thinking "this isn't music.”

What YoBit was learning, however, had to do with more than music. In sharing Freesound compositions and writing about them, we all learned two very important lessons about writing in rhythm. First, sharing premises is not only necessary, it is subtle and requires give-and-take. Second, discovering that we already knew how to do a lot of this and music sort of baited us into showing the degree to which our preferences were in fact embedded in our claims as major premises, premises that when untangled cleared paths for growing and developing sustainable arguments and projects in writing.

So, the assignment encourages students to turn their computers into musical instruments and experiment with sequencing and layering freely available sound as a means for making a point, enhancing a persuasive appeal, and for sharing states of consciousness. But most importantly, sound in the computer-mediated classroom focuses collective attention on acts of reading and writing that depend on the recognition, synchronization, and composition of patterns. In Emergence, a study of self-organizing systems, Steven Johnson (2001) asks, "What is listening to music if not the search for

for your score from this page using “camel case”: after you click “edit,” jam two words together (My + Freesound = a brand new wiki space called MyFreesound). When you store your edit, your text will appear with a hypertexted question mark. Click the question mark to open your new wiki vista. Or, you may prefer to go further, and slightly alter the assignment, try it with a group of writers, and then link your activities to the page provided here.
patterns—for harmonic resonance, stereo repetition, octaves, chord progressions—in the otherwise dissonant sound field that surrounds us everyday?" (p. 128). Reading rhetorically, like listening to music in Johnson's formulation, means searching for patterns of resonance, recognizing the multiplication and modulation of patterns, responding to figure-ground bit-flipping, seeing sequences and finding gaps in clusters of ideas, proofs, premises, and claims so that we can not only tune in to but participate in their unfoldment. In other words, just as a dj must split his or her attention between two patterns—both the sounds already resounding out of the speakers across the dance floor, and those sounds still held in cue, as-of-yet only audible in the headphones but waiting to burst forth at the drop of the needle and toggle of the switch on his or her mixer—in order to “beatmatch” those sounds, we as readers and writers working in tandem must split attention between reading and writing in ways that find us participating in the arrangement of patterns, analyzing and recapitulating their changing forms and finding the timing and placement necessary to share patterns of information, including argument, with particular communities of readers and potential collaborators. Simply selecting and repeating information shows us how to begin. As Kaufman (2005) notes, it is more difficult to explain such activity than to engage in it. However, sound is unique in the way it creates a common space where writers can simultaneously “grok” the same complex patterns. Furthermore, working with sound in a browser in this way allows users to hold open and sustain multiple serial realities in parallel.

Brian Rotman (2000) introduces the distinction between serial and parallel to talk about the rhythmic oscillation between “the individual self and collective other, and about the circuits linking the modes of simultaneity/sequentiality and the polarities of
self/other with contemporary technoscientifically inflected culture” (p. 57). In the
composition classroom, working with sound at the beginning of a semester lets groups of
writers experiment with the rhetorical gestures of pattern-matching, and preview the sort
of reading and writing that collaborative writing requires.

While they fall short of suggesting that tabbed browsing provides an experience
comparable to playing music, the Mozilla Wordsmith team does in fact cultivate a
distinct \textit{rhythmographos} in their compressed description of tabbed browsing.\textsuperscript{8} Mozilla's
Wordsmith team even offer tips, which they call "shortcuts," and, in the context of the
dynamic possibilities for composing web space offered by the Freesound Project, these
shortcuts read like a musical score to be filled in by performers.

While it's easy to select tabs with a mouse, you can also cycle through tabs using
the keyboard: use Ctrl+PgUp (or Ctrl+Tab) and Ctrl+PgDn (or Shift+Ctrl+Tab). You can also select the first tab by pressing Ctrl+1, and so on up to the 9th tab
with Ctrl+9. If you have a middle mouse button, click it on a tab to close the tab." When “web pages are loaded in "tabs" within the same browser window,” it
becomes "easy to switch back and forth among multiple web pages," and, we can
extrapolate further, to switch back and forth between linear sequences and
complex patterns. (“What is Tabbed Browsing?” 2005)

Composing arguments in the attention economy of non-linear web spaces requires that
we recognize and select these patterns, these parrallel constellations of information, and
hold them in our scope of attention for durations sufficient to render them into linear
sequences of audience address.\textsuperscript{9} The sonic resources at the Freesound Project allow users
to build instruments for moving back and forth between serial and parallel arrangements
of space because a tab or opening can be made to stand alone or, a sequence of sound

\textsuperscript{8} \textit{Rhythmographos} defined as "writing on rhythms" in Henry Liddell and Robert Scott, \textit{A Greek-English
Lexicon}, available online at Tufts University's Perseus Project, \url{http://www.perseus.tufts.edu/}

\textsuperscript{9} In \textit{The Attention Economy: Understanding the New Currency of Business}, John C. Beck and Thomas A.
Davenport argue that while “capital, labor, information, and knowledge are all in plentiful supply....what's in short supply is human attention” (p. 2). Folding sound into a rhetorical pedagogy is one way to “tune”
attentional acumen.
patterns can overlay in parallel and be heard allowing “sonic moire patterns” to be maintained in our perception. Whether toggling, rat-a-tat-tatting, or performing a roll, readers—and writers—can "cycle through tabs using the keyboard" and make complex informational patterns recognizable and shareable (Mozilla Wordsmith Team). These instructions, here named “short cuts”—emphasis on the cuts, as I must now explain—uncannily, works with the same language that cluster around an ancient rhythmic tradition preserved by embodied percussion and dance practices and transmitted by a sophisticated (and perhaps sophistical) pedagogy, the compositional and improvisational art and science of North Indian (Hindustani) and South Indian (Karnatic) classical music, *Tala*.10 Opening, closing, moving back and forth, and cycling through—the coordination of these gestures produces rhythm.

Ethnomusicologist Martin Clayton (1999) reminds us that of course "cyclical metre is not...unique to India" (p. 19). At the same time Clayton states that:

If there is a difference in metre in Indian and Western music it may lie not so much in one being cyclical and the other not, but in the fact that Indian theorists have not been troubled by the apparent paradox of musical time as both linear and recurrent, whereas Western theorists have been inclined to play down the sense of recurrence, let alone cyclicity, in favour of a more singular conception of linear development. (p. 19)

Where we say "linear" and "recurrent" in a discussion of the attention to cyclical meter that facilitates the rhythm of *tala*, we could also say "serial" and "parallel," as in our exercises with tabbed browsing. Rotman (2000) explains that seriality is “exemplified in narratives, rituals, algorithms, melodies and timelines,” while the parallel mode has to do with “scenes, episodes, harmonies, contexts, atmospheres, and images” (p. 57).

Toggling serial and parallel modes is the art of writing in rhythm. The *idea* of "surfing

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the web" might become "easier and more convenient" with tabbed browsing, but when we actually “dive into the river,” navigating and composing order in information-rich ecologies of continual and often sudden change requires that we learn to move, as Aristoxenus would have it, "like this and like that," serial and parallel, linear and recurrent (trans. Pearson, p. 5). Such movement creates the conditions for rhythm in Clayton's (1999) formulation. Clayton proposes that "musical time exhibits two complementary aspects. One in perodicity, regularity, and recurrence, corresponds to the domain of meter, and gives rise to the concept of cyclicity" (p. 23). But where Clayton suggests that "the other is gestural, figural, and (in principle) unpredictable and relates to the domain of rhythm," (p. 23) a collectively composed musical time would seem to at all times require amplified and refined forms of attention to and means of maintaining a serial/parallel rhythm, including both skill in repetition and a cultivation of various forms of consciousness and modes of perception produced by particular combinations and arrangements of repetitions. Writing with sound, as in the aforementioned Freesound exercises outlined, creates the conditions for writers to learn to write together by showing the necessity for audience address, and the importance of directing our interloquitors' attention to orderly patterns in parallel and oftentimes stochastic space. But to really write together, we will require more than a tabbed browser. What becomes essential in this practice is the forming of “a commons.” The particularly plastic medium known as “wiki” is a useful way to establish a common surface for writing in parallel.

Let us now turn our attention to wiki technology, the visual and spatial analogue to the “rhythmizable media” of sound.
4. We must recognize rhythm and the rhythmizable medium (*rhythmizomenon*) as separate notions and separate natures related to one another in the same kind of way as shape and shapable material in relation to it (*Elementa Rhythmica II.30*).

Mixing the repetitions of tabbed browsing into Freesound, and then translating these strategies into wiki environments makes it easier to approach and configure wikis as *rhythmizomena*11. What are rhythmizomena?

In his translation of the Aristoxenus fragment, Pearson (1990) retains what he calls "quasi-technical terms" in parentheses. For example, "chronoi" describe both periods of rest and periods of motion, sound and silence. The term most repeated in the fragment is *rhythmizomenon*, which Pearson translates as "rhythmizable media," that which can be “rhythmized.” According to the *Bibliography of Sources for the Study of Ancient Greek Music*, “*rhythmizomenon*” is a present passive participle in form, in the nominative, singular, neuter gender, and is regularly derived from a Greek verb meaning "to bring into measure, rhythmicize." Its literal meaning is thus "to be rhythmed." Pearson translates Aristoxenus' rhythmizomenon into “rhythmizable media,” media that can by “rhythmicized” (p. 3).

The very idea of a *rhythmizomenon* presents itself in a manner analogous to the way wiki arrives on the scene of composition. Wiki "pages" are not pages so much as they are "infinite openings" that require cutting and arranging into what Aristoxenus calls *chronoi*. Wikis are “anyone-can-edit” media, and these plastic-yet-manageable *rhythmizomena* can be *shaped* by collective compositional activity. Aristoxenus develops the analogy between the “shapeable” and the “rhythmizable” very carefully. Recall that our *Elementa Rhythmica* fragment concerns itself with musical rhythm. In Aristoxenus'

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11 Mathieson tells us that “rhythmizomenon is a present passive participle in form, in the nominative, singular, neuter gender, and is regularly derived from a Greek verb meaning "to bring into measure, rhythmicize." Its literal meaning is thus "to be rhythmed."
analogy, then, sonic media are the unknown term, and the “shapeable” is presented as the known term. “We must now apply our sense-perception to the analogy that has been suggested,” Aristoexenus continues, “in an attempt to understand what happens in each of these two processes, in shaping the shapable as in rhythmizing the rhythmizable” (p. 7).

In a footnote, Pearson, our translator, explains that schema derives from the root sche- “have.” Therefore, “the shape (schema) is a particular arrangement of the parts of the object. It results from the way each part “has itself.” (p. 5) That is why is called schema. Musical rhythm, in the same way, “has itself” independent of the media that it “rhythmizes.” As Aristoexenus puts it, “likewise, rhythm is not to be identified with any rhythmizomenon” (p. 5) This distinction allows us to emphasize two important features of wiki presences. First, wikis are open to countless arrangements, both rhythmic and arrhythmic. Second, rhythmizable media such as wiki are dynamic media that allow multiple users to configure and reconfigure, or rhythmize, a common surface of writing, together. And how, we must now ask, does this shaping, or rhythmizing, happen? “It is the creation of persons who arrange the rhythmizomenon and make it like this or like that in respect to its time-lengths (chronoi)” (p. 5, emphasis added). Writing in the 3rd century AD, Greek musical theorist and compiler Aristides Quintilianus, sampling Aristoexenus, defined rhythmic composition according to three steps. In Thomas J. Mathieson's translation (1983), Aristides' language is precisely the language of what Lawrence Lessig (2005) has recently taken to calling “remix culture.”

For Aristedes, rhythmic composition falls under

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12 Lessig uses the term “remix culture” to describe a society that allows unrestricted access to creative works for the production of derivative works. He repeats the phrase frequently in an interview with Richard Koman. (“Remixing Culture,” 02/24/05).
The same categories as melic composition: choice, through which we know what sort of rhythm it is necessary to use; usage, through which we fittingly apportion the arses to the theses; and mixing, by which we combine the rhythms with one another, if it should be necessesary in some degree. (p. 102)

In other words, Aristedes counsels first the selection of material for rhythmizing, followed by arrangement of arses and theses, then artful combination. This recipe suits the palette of the star kithara player coordinating the sonic space of a particular composition alone, but clusters of writers, working together in ecologies of continual and often sudden change, necessarily enter into an ongoing shift in perspective and perception where timing and coordination is everything, even as everything keeps moving, as in the “telescoping” necessary to navigating and surviving video games from multiple perspectives. As the distinction between reader and writer, composer and arranger, gamer and author, observer and the observed blur and smear—a commons space, such as wiki—amenable to diverse registers of information, provides space for the cultivation of collective rhythmopoiia, or means for creating rhythm with images, sound, and text. It teaches composers how to navigate the “between” of rhetorical events, the beholder’s share.\(^\text{13}\)

Wiki lets us bring more of what music has always taught us into the composition classroom. Music, mixed with writing-by-linking activities in wiki, creates a dynamic and common rhythmizomena for rhetorical practice. There is something "Wolfram-like" about wiki, which is that wiki has proven, so far, to be irreducible; that is, you cannot reduce what wiki is to any algorithm shorter than itself—or at least, no one has found a way, yet.

\(^\text{13}\) When comic artists experiment with in the between-panel transitions that Scott McLeod (1993) calls "gutters," they make available what art historian E.H. Gombrich (1956) calls "the beholder's share," a rhythmic space of participation at the level of perception itself. Texts become "animated," or come to life, when the readers, or "beholders" have space to work and play. Footnotes and endnotes do similar work in genres of technical writing. In a sense, call and response is always happening, even when we read silently.
Making links is simple, but no simple theory accounts for or can guide this process; we must make and break the links.

I take Freesound as a model and exemplar for writing-by-linking. Freesound is an experiment in musical territories of production, a software for the formation and entrainment of a commons. Freesound solicits swatches of sound and makes them streamable, downloadable, and available for tagging, description, discussion, and composition. The fundamental units are rhythmic; these swatches are not offered as "files," songs, or composed products for sale or analysis. At Freesound, it is not about filesharing, it is about pattern sharing, and they are explicit about this in their selection criteria. What Freesound is selecting for is this part that cannot be owned; they want snippets of “it”—not to own it, but to entrain it. In chapter 3, we consider more fully the ontology of “it” of the commons. Once Freesound moved music's uses for my teaching practice away from serving as a trigger for traditional disputation about the status of copyright law, I was able to explore the dynamics of nonsemantic linking in a direct way, with students, on wiki.

This has the students working with this thing that they know how to do: share. Bringing this practice classroom allows us toggle between rehearsals that anticipate conditions of writing in the workplace, and perform the routines that drive scientific and technology inquiry and knowledge production today, at any time.

Here is a “rule of three”:

1. At the same time, this knack for sharing does not always jive with the sort of subjectivity the university solicits from students, as discussed in chapter 1 under the aegis of the “miscue trope.” But this disconnect is precisely what cues wiki. Wiki is an open
and distributed space. Making music together with students in wiki, I learned how to teach towards distributed subjectivities. Leveraging distributed subjectivity requires a different practice and pedagogy than classical evaluation and judgment of writing.

2. Writing-by-linking *moves* students from consumption and analysis to production. When writers try to "find their audience" in the heuristic wiki model, the commons-formation sensibility takes hold in the classroom. Forming clusters is key to this move from consumption to production. How do they do this? They tell stories, and spin narratives and compare premises as a way to open up new lines and possibilities. Then they learn that is ok to interrupt each other, and, the writing is the art of how to do so. Production starts with a stutter, in what semiotician of graphic fiction Scott McCloud (1993) calls the “gutter.”

3. How do they learn how to interrupt each other? Isn't forming clusters difficult in institutional contexts? This is what music brings to composition pedagogy, and this is not a transhistorical claim, but an exigent one now, because music grows p2p. Dialing back from music to sound, and "noise" depatterns and therefore opens up possibilities. Mixing semantic and nonsemantic compositional elements (units, patterns) is essential for this wiki pedagogy because linking is the way to teach writing in rhythm, which is to say, writing together. The rhythmic theory of ancient Greece does not provide the only clues to a gesturology of writing together, but, seeing as the Greek rhetorical canon has for so long informed our composition curricula, Aristoxenus’ starting point seemed like, well, a good starting point. Next, I want to focus on *lepsis, chresis, and mixis* for a short duration so that we might update and translate these terms into the repetitions of play. so that, rather than prescribe a compositional method, what Aristoxenus (1990)
called *rhythmopoia* or “means of using rhythm,” in advance, I can instead offer simple building-blocks for any number of ways clusters of writers can begin to form, structure, and temper one *rhythmizomena* of our day, *wiki* (p. 7).

6. Push Play\(^1\) or, rather than use the image of building blocks, let's instead translate *lepsis, chresis,* and *mixis* into the three easy push-buttons (tabs) for composition: “select,” “mix,” and “play.” Creating and revising patterns with selected sound material can get pretty technical (and so can sound editing software: consider the “logos vertigo” induced by counterintuitive but powerful and useful programs such as Pro Tools or Fruity Loops), but these rhetorical processes begin with simple gestures: selecting information, mixing it with more selected information, pressing play, and, crucially, listening back. Now, before you read on, go back to the Freesound project, push play, and loop the sound you find at [http://freesound.iua.upf.edu/samplesViewSingle.php?id=7959](http://freesound.iua.upf.edu/samplesViewSingle.php?id=7959). *lepsis*

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\(^1\) I sample the phrase “push play” from a poem/liner note that coordinates with “Proof at Last,” music rendered by the Order of the Silver Cosmonauts. You can listen to the sounds here, at CommonTunes.org: [http://www.common tunes.org/proofatlastfromthefi](http://www.common tunes.org/proofatlastfromthefi). The text reads “On a dirge quest? This we have divined. Password: “Proof at Last." Sounds of the Galactic Sangha, Transhuman Space Dub. Find your (Convention) center here and find it, well, now. Like the Silver Ones hath drooled, mercurial, it's time for response-ability. Don't be caught standing about, mumbling, stunned at the tardiness of your rage and terror while the Haliburton Extraction Funnel Starship with Citational Hyperdrive begins experimental non local distributions of ecocosmic value to itself. Empty. Listen through the agape gurgle of the wither while Earth becomes less globe than mesh, catastrophe, souped up and decked out in toxins. Insert properly fonted Dante, yes Hell, here, now in America, burning the edges of your pages. Because you have options: Sonic value modulation schemes with depopulation retarding sustainability functions. Community gradients of dense interconnection are the true infrastructure of survival—let go of the life boats and the duct tape and yes, the now propagating wars: Columbia Iraq Afghanistan Guanatamo Geronimo. Fossil Fuels Indeed. Push. Push play. And it all begins by breaking down sound and working it into fluid event-things, nearly singing, turned on a sound lathe until Persephone's Quest gets to invest in its ownself, and the Wyrd is again out, it is what has brung us, singing, (r)evolution resonates hallelujah. And so say welcome to the future while hugging the deep past into yourselves so hard there are ripples right through that fabric, that's what they call it, out and through us, you, your friends, allies and breathren, lovetron plant memeplex raga. Thou art that sound, now empty! Thus Sounded The Order of the Silver Cosmonauts.” (“Proof at Last” 2005).
First, let us focus on the art of selection, also known as sampling. Music figures heavily across many of Plato’s dialogues, and a Platonic concept of rhythm emerges in the *Symposium*, the *Protagoras*, the second, seventh, and tenth sections of the *Laws*, the *Republic*, the *Timaeus*, the greater and lesser *Hippias*, the *Cratylus* and the *Phaedrus*. But it is in the *Phaedrus* where we find a fundamentally sonic frequency—in insect form. In the *Phaedrus*, the myth of the cicadas cuts into and interrupts the dialogue, and sets the stage for a high-noon discussion on the conditions of persuasion, the means of rhetorical teaching, and the distinction between good and bad writing. Socrates (trans. Hackforth 1972) gestures to the cicadas, and ventures further, “I think too that the cicadas overhead, singing after their wont in the hot sun and conversing with one another, don’t fail to observe us, as well” (p. 117).

Why did Socrates use the *cicadas* to set up this meditation on rhetoric and writing? Because they were there, in the form of a ready-made pattern, an available order, and a *sonic stigmergy*. In information-dense ecologies, *selecting* is a composing
gesture: we select what's there. When Kaufman (2005) introduces his most popular soundbyte, “order for free,” he explains how, unlike biologists who “suppose the order of ontogeny is due to an enormous and laborious effort,” he believes that “most of the beautiful order seen in ontogeny is spontaneous, a natural expression of the stunning self-organization that abounds in very complex regulatory networks....order, vast and generative, arises naturally” (p. 25). This is what Socrates does in the *Phaedrus*, one the most often-sampled dialogues in the rhetorical tradition; he samples available order, for free, reminding us that rhetoric should always take place in a conducive ecology.

Socrates in *Phaedrus*:

Here is this lofty and spreading plane-tree, and the agnus cast us high and clustering, in the fullest blossom and the greatest fragrance; and the stream which flows beneath the plane-tree is deliciously cold to the feet. Judging from the ornaments and images, this must be a spot sacred to Achelous and the Nymphs. How delightful is the breeze—so very sweet; and there is a sound in the air shrill and summerlike which makes answer to the chorus of the cicadae. (Phaedrus 230d, Jowett transl. http://ccat.sas.upenn.edu/jod/texts/phaedrus.html)

R. E. Wycherly (1963) details Plato's ongoing recourse to the scene of the dialogue and the sonic stigmergy it provides. "If Plato had painted this scene and left it just so, one would still have admired his art. But this is only the beginning. We are frequently reminded of time and place, and skillful new touches are added. Socrates' very activity produces the *pheromones* that stimulate further activity. Joe Gregorio (2005) explains that “termites in Africa can build incredible nests that are up to 30 feet tall that contain many tunnels and chambers. These tall complex structures are used to regulate temperature, humidity and oxygen in the nest which is all carefully controlled to promote the growth of the fungus which the ants eat. The construction of the termite mound is controlled through stigmergy, in particular the construction of columns and arches is controlled by the evaporation of pheromones. The ants place pheromones on the balls of mud they use for construction. The new balls are placed near existing pheromone concentrations. As construction proceeds and the columns get taller the pheromones near the bottom evaporate. If two columns are built near each other then the concentration of pheromones at the top of the columns will cause the two to be joined into an arch" (http://bitworking.org/news/Stigmergy). Is it possible that sound can also produce chemical resonances that can help coordinate the time and space of composition? "Replace ants with neurons, and pheromones with neurotransmitters, and you might just as well be talking about the human brain," says Steven Johnson in *Emergence* (2001), where he argues that "pattern-matching" algorithms of emergent software designed to "scan the wires for constellations of book lovers or potential mates" are part of a larger evolution of mind (p. 115).
wonder at his unusual surrounding is maintained to the end" (p. 89). Unlike other dialogues, in the *Phaedrus*, "the connection between scene and dialogue is less obvious, but it is maintained throughout deliberately and with subtle skill" (p. 90). So, Socrates' gesture to the “shrill summery sound” of the cicadas is a gesture of another polarity, one that bears repeating. While in Jacques Derrida's (1976) brief but brilliant account of the *Phaedrus* in *Of Grammatology* "Rousseau repeats" one Platonic gesture "by referring to another model of presence" in writing, we must repeat this gesture to the cicadas (p. 17). Derrida points out Plato's ambivalence toward writing in the *Phaedrus*, and Socrates is decidedly consistent in his invocations to both divine frenzy and the cicadae in the same text. Even if we decided that the bust on writing, that it can only repeat itself, is just as persistent, it is impossible to deny the common substrate of repetitions that govern all manner of *rhythmizomena*: text, painting, sound, and consciousness itself. In Hackforth's (1972) translation:

You know, Phaedrus, that's the strange thing about writing, which makes it truly analogous to painting. The painter's products stand before us as though they were alive, but if you question them, they maintain a most majestic silence. It is the same with written words; they seem to talk to you as though they were intelligent, but if you ask them anything about what they say, form a desire to be instructed, they go on telling you the same thing forever. (p. 521)

Socrates selects repeatedly. And, he has Phaedrus do the same, with Lysias' speech. The cyclical and utterly take-up-able (shareable) nature of this gesture (the sample) creates the ecological space between, where collectives form and transformation can take place. Can we give Plato that one, at least?

Now, go back to the first Freesound tab you opened (http://freesound.iua.upf.edu/samplesViewSingle.php?id=1979), and tab that tabla again,
this time, along with the cicadas sampled and shared by Sazman, here:

http://freesound.iua.upf.edu/samplesViewSingle.php?id=7959. chresis

Creating patterns with selected sound material is as simple as pushing play; four-track machines, inexpensive multi-track cassette recorders associated with home recording and do-it-yourself cultures of music, provide the best model of how this works. In wiki contexts, the analogy of four-track suggests an open window with four tabs. The Freesound exercises allowed us to actually resonate with what we often have to visualize: the combination of complex patterns of information as they, in Rotman's (2000) words, “go parallel” (p. 56). Basically, the composer working with tape produces novelty, creates new surface areas of embodiment and audience address simply by “laying down tracks” one on top of the other so that different selections of information (performances) can be heard simultaneously. In the third section of Mind and Nature, Gregory Bateson (1979) notices that "interesting phenomena occur when two or more rhythmic patterns are combined," and argues, in a sense, that the sort of "beatmatching" we are extracting from Aristedes' sense of chresis creates coherence. "These phenomena," which are theoretically limitless in example and type, "illustrate very aptly the enrichment of information that occurs when one description is combined with another." Such combinations essentially yield novelty, difference, and new information.

In the case of rhythmic patterns, the combination of two such patterns will generate a third. Therefore, it becomes possible to investigate an unfamiliar pattern by combining it with a known second pattern and inspecting the third pattern which they together generate. (Bateson, http://www.oikos.org/m&nmultiple.htm)

After proposing moire patterns as the most reliable model (perhaps better to say most reliable "constant") of “order for free” in dynamic information ecologies, Bateson stops to ask, "do animals (and even plants) have characteristics such that in a given niche there
is a testing of that niche by something like the moiré phenomenon?"

(http://www.oikos.org/m&nmultiple.htm)

If so, we might also ask: can we rehearse this behavior, and in the process finely
tune our intuitive receptivity and capacity for responding efficaciously to complex
patterns of information? In the composition classroom, attention to practices of *chresis*
will help writers and readers find each other and interleave patterns in rhetorical
processes of call and response. Already, metadata techniques of “tagging” cultivated at
social bookmarking communities, such as Connectedy (http://www.connectedy.com/) and
de.licio.us (http://del.icio.us/), facilitate gestures of “pattern-sharing” across the
filesharing demographic. Tagging helps composers at the Freesound Project create “sonic
moire patterns,” as well. Go to http://freesound.iua.upf.edu/tagsView.php Freesound's tag
page and explore the sounds that cluster under different tags, such as “ambient” or
“subtractive,” and select a pattern that coordinates with the freesounds you have opened
while reading this text. The rhetorical space that opens when we provide metadata (tags,
and their descriptions) is essential for collaborative community building.

*Mixis*

Aristoxenus and Aristedes have Indian counterparts in Bharata, Datilla, and their
commentators. Rowell (1992) introduces a section on *Tala* by sampling the invocation
composed by the commentator Abbinavagupta, which he offers to introduce the *tala*
chapter of Bharata's *Natyasastra*:

18 The emergence of the sample as a fundamental writing practice provides a narrative for the ways
communities, many built on music, have cultivated rhythm, but higher education has yet to participate in
this story of sampling, and therefore has yet to learn what the art of the sample itself has to teach us all.
Rap, as Siva Vaidhyanathan rightly argues "revealed the gaping flaws in the premises of how copyright law
gets applied to music and [showed] the law to be inadequate for emerging communication technologies,
techniques, and aesthetics," the very tools for innovation that we in higher education promise our students
(Copyrights and Copywrongs 133). Music produces increasingly controversial examples of what sampling

I offer threefold praise to this octoform body (Shiva), whose essence is illusion, holding a token of enjoyment, in whom there is perfect equilibrium of all worldly activity by means of divisions (kara), time (kara), and rest (laya).


By means of these three concepts and their corresponding *kriyas* or gestures, “the temporal structure of music is manifested. This,” Rowell (1992) continues, “is the essence of *tala*” (p. 189). In *compositional* space, *mixis,* “by which we combine the rhythms with one another, if it should be necessesary in some degree,” becomes an art of timing: learning when to press “record,” when to press “stop,” and when to press “play.”

Tala is the rhythmic art that teaches the coordination of such simple gestures in space and time. In "The Subconscious Language of Musical Time", Rowell (1979) explains that *Tala* “derives from a physical metaphor: the Indo-European root *TEL* means a broad flat surface, and the Sanskrit *tala* signifies an action applied” to this *rhythmizomenon* by physical actions called *kriyas* (p. 100). Practitioners trained in *tala* coordinate gestures (*kriyas*) of dividing time (*kalā*) with an attunment to “becoming time” (*kāla*), and in doing so, manage the “tempo,” or timing of rests (*laya*). In so doing, *tala* percussionists produce visceral sonic effects through flow and the cutting of flow, both “continuity and reticulation,” (p. 98). The art of combining sounding *kriyas* (compose) with silent *kriyas* (repose) renders, in percussion and dance, physical models of Aristedes' “art of...

activates: communities built by means of sharing, through rhythmic exchange of information. Even though music clients have pushed peer-to-peer and provoked the most legal controversy in the name of intellectual property, higher education has yet ask why music pushes peer-to-peer activity to new extremes. Sampling, the art of selecting information and placing it in new contexts and arrangements, is a practice common to musical and textual domains now that they share the digital medium, and can be cultivated as the art of selection is important to any pedagogy of digital culture. Not only is the sample the most focused form and gesture of composition, inculcating an art of sampling is the only way to navigate intellectual property issues with students, and find the best ways to model ethical modes of appropriation and transformation, fair use, and participation in distributed networks of production.

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combining rhythmic patterns,” in ways that suggest future avenues for inquiry into the ways ancient rhythmic art can inform future rhetorical practice (p. 98). Reading and writing *rhetorically* necessarily involves a practice of *mixis* “by which we combine the rhythms with one another,” but only according to *kairos* time, that is, only “if it should be necessary in some degree” (*On Music* 102 trans. Mathieson). In writing collectives, if the alternations between composing and reposing create fine-tuned capacities for response, the network determines the tempo, or *laya*, of our rhetorical choices, which, cyclically, tells participants when to listen, where to listen, and for how long, and, then, again, what and how to select.19 Rowell (1979) suggests that in Indian literature, cosmogenies often proceed in cycles: primal matter is split and differentiated, and, after distribution and arrangement, is maintained or held open in ordered time, then melted, or dissolved back into matter. “*Kala* is connected with the first phase by its function as that which divides,” or cuts, “*Kala* is similarly connected with the second phase, that of motion maintained” or held in balanced equipoise (*samya*) “in ordered time; and *laya*,” the space between the beats, the rests that determine the tempo and leave a sequence open for interruption, collaboration, and transformation through rhythm, involves “the dissolution back into elemental matter” (p. 100). For millenia, *Kalā-Kāla-Laya* has guided rhythmic arts in sound and dance. Today, this rhythmic compound can help us regulate the arses and theses of text-heavy information, as well.

Again, the instrumental analogy to the four-track helps us; just like playing a tape recorder or playing the buttons on any technological familiar, such as a cell phone, pressing “pause” or “stop” cuts into or interrupts selected sequences or subtracts layers of

19 I query Plato’s treatment of rhythm in these dialogues in greater detail in the second chapter of my dissertation, *The Lost Book of Rhythm*
an informational lattice when serial text goes parallel, such as when a narrative creates an atmosphere. A similar arsis and thesis is part of Socrates' performance in the *Phaedrus*, which reminds us that actualizing serial/parallel rhythms in text is a way of managing the shared space of writing that wiki enables. On this approach, sound mixes with wiki in a way that allows us to notice, experiment with, and otherwise consider the *cyclical* nature and *rhetorical* force of the sample, itself. Mixing Aristides' version of the Greek formula with Abhinavagupta's remix of Bharata's gestural compound allows us to see how the conditions for sampling come from the listening practices that the sample itself enables (press play...and listen), in an ongoing rhetorical process of dependent origination.

[stage directions: open and loop
http://freesound.iua.upf.edu/samplesViewSingle.php?id=1032]

So this is what Socrates did in *the Phaedrus*: he talked over a chorus track of repetitious insects.

7. The Noise Canon

*Listen to me, then, in silence;*
*for surely the place is holy;*
*so that you must not wonder, if, as I proceed, I appear to be in a divine fury, for already I am getting into dithyrambics.*

(Socrates, *Phaedrus*)

The "telephonic" concept threads throughout Avital Ronell's (1989) *The Telephone Book*. "Telephonics imposes the recognition of a certain irreducible presence of the other with *respect* to the self" (p. 82). Ronell asks, "to what degree has the Other become a technologized command post, perhaps even a *recording*?" (p. 82, emphasis added). Telephonics describes ways that communication technologies expand common
surface area: more contact. But this does not imply stability. Ronell's *Telephone Book* opens with a User's Manual that warns: "Dealing with a logic and topos of the switchboard, it engages the destabilization of the addressee" (p. 1). This destabilization begins with a synaesthesia of reading in wiki ecologies. Not so long ago, Ronell placed the call for an utterly sonic approach to precisely the destabilization that wiki—which means “to hasten” in Hawaiin—dramatically accelerates: telephonics."

Your mission, should you choose to accept it, is to learn to read with your ears. In addition to listening for the telephone, you are being asked to tune your ears to noise frequencies, to anticoding, to the inflating reserves of random indeterminateness—in a word, you are expected to stay open to the static and interference that will occupy these lines. (Ronell, 1989, p. 1)

Wiki can be mapped or thought as a visual and spatial analogue to sonic noise and the rhythms we project into *complexity*. Bell and Watson's "harmonic telegraph," which allowed more than one signal at time to travel a single telegraph line, is part of the story about how clusters of writers answered Ronell's call by mixing sound with wiki.

Experiments in sound can teach composition studies ways to rehearse serial/parallel movements in collectively arranged *rhythmizomena* such as wiki. In closing, I would like to “press pause” on this notion: if we answer the call, and listen to sound's conditioning effects on consciousness, and pursue sound's uses for tuning and conditioning shared writing spaces, and combine what we learn in wiki spaces that externalize our spheres of perception, clusters of writers, students and teachers alike, can compose together on a common *rhythmizomenon*, a common surface, a Tal. Hold on.

[stage directions: close
http://freesound.iua.upf.edu/samplesViewSingle.php?id=1032]

"Hello?"
Yes, teachers of writing in wiki environments? Avital Ronell, here. I would like to suggest that if "the somewhat occulted foundations of psychoanalysis and telephony in magic require further study," then the sonic pre-history of user-editable interfaces require examination, as well. (p. 99)²⁰

Bell's assistant Watson would seem to be the world's first "noisician," and Ronell (1989) suggests that "Watson may have been, as he here asserts, the first person to listen to noise" (p. 259). Ronell praises Watson for having "an ear for the silence that the telephone was capable of speaking" and preserving "asiginificatory signals, planetary talk, [and] supersonic crackles, rather than rushing in a supply of semantic cover. This," Ronell continues, "possibly imparts a more radical accomplishment than the invention whose conception he shared" (p. 259). Here, as Ronell folds Watson's testimony into The Telephone Book, she alters the font of the text, rendering a snapshot of the soundwaves rippling through the lost book of rhythm and across Watson's writing:

This early silence in a telephone circuit gave me an opportunity for listening to stray electric currents that cannot be easily had to-day. I used to spend hours at night in the laboratory listening to the many strange noises in the telephone and speculating as to their cause. (p. 258-259)

Watson's passion for anharmonics places him in the same rhetorical tradition as Socrates, who, at an impasse between love and writing outside the gates of Athens, asked Phaedrus to listen to the cicadas. This is what Socrates did in the Phaedrus: he talked over a chorus track of repetitious insects.

Listen to me, then, in silence;
for surely the place is holy;

²⁰ Jeff Walker (2000) discusses the different strategies that Plato and Aristotle use to manage rhythm's "psychagogoy." While Plato seems more obviously threatened, Aristotle jettisons rhythm by denying its magical force, naming it "supplemental and inessential, not even an essential feature of poetry in his Poetics, and, in the Rhetoric, rhythm's "psychagogic power to an audience's thymos largely (though not wholly) undiscussed" (pp. 281-282).
so that you must not wonder, if, as I proceed, I appear to be in a divine fury, for already I am getting into dithyrambics.
"The importance of Indian influence on Greek thought is not to be judged by the amount of information about it which has survived" (Radhakrishnan, 1960, p. 223).

Now Aristoxenus the Musician says that this argument comes from the Indians: for a certain man of that nation fell in with Socrates at Athens, and presently asked him, what he was doing in philosophy: and when he said, that he was studying human life, the Indian laughed at him, and said that no one could comprehend things human, if he were ignorant of things divine. Eusebius' (Praeparatio Evangelica)

This chapter considers the nature of movement, the rests that punctuate and promulgate movement, and the rhetorical dimensions of resonance. Musical transmission strategies are models for sharing consciousness, and rhythmic rhetorics help us compress, share, and unwind rhetorical "sutras" commonly known as “tags.” Musical practice informs writing online, particularly in the rhetorical art of "metatagging." When we move from file-sharing to pattern-sharing, and from pattern-sharing to consciousness-sharing, the affective and nonsemantic dimension of persuasion takes on a greater magnitude. In what follows, I narrate an "audience finder" assignment from a technical writing class to show that the need for rhythmic rehearsal increases as small "clusters" of writers, in outcomes-based groups working on problems and seeking forms of address move from tabbing, which held our interest in chapter 2, to tagging. Whether programmed into stuctured databases like HubMed or bottom-up folksonomies like de.licio.us, the commons' social bookmarking strategies work on principles of resonance. When we apply the mash-up principle and concatenate different media, such as del.icio.us, instant messaging, and wiki, we find out that writing really is the "obligatory passage point" in multimedia. Multimodal and multi-person, the art of tagging requires commons engineers to be down with OPP.
Bergson (1911), in the Duration and Tension section of *Matter and Memory*, brings movement together with quality and sensation, terms usually in opposition in his philosophical tradition. "Real movement is rather the transference of a state than of a thing" (p. 267). In digital ecologies, forming a commons is elemental to and inextricable from diverse investigative and persuasive practices across diverse forms of media. Furthermore, while these practices place demands on what we might call traditional reading and writing skills, they also enlist many other modalities of substantiating information. These are "tune-able" economies of information, where technical and affective rhythmizomema freely interanimate each other continuously. The repetitions and gestures that condition this space also condition the mind and bodies of the participants. Indeed, this demos is a far cry from the Athens of Ancient Greece. And yet, ancient concerns about the proper place and time for the lighting-like computations and resonances of affective practices, such as playing the aulos, somehow seem to address the phenomenology of the digital commons, which is a mixture of registers. We palpably feel the dynamics of attraction and aversion as the semantic and nonsemantic, sense and nonsense, and the sacred and secular go into \( n \)-recombinations. Socrates, in Lane Cooper's translation of Plato's *Ion*, tells Ion that,

> The gift of speaking well on Homer is not an art; it is a power divine, impelling you like the power in the stone Euripedes called the magnet...this stone does not simply attract the iron rings, just by themselves; it also imparts to the rings a force enabling them to do the same thing as the stone itself, that is, it attracts another ring, so that sometimes a chain is formed. (p. 220)

Here, Socrates defines Ion's facility with Homer as a sort of resonation, but only to distinguish it from any artistry or techne. This, I will argue, below, puts a placeholder on a gap, or lacuna, manifest not only Greek treatments of resonance and rhythm, but
wherever principles of resonance, entrainment, or symmetry-breaking take hold.

Furthermore, Socrates hopes to make clear that, as it is with Ion's persuasive speech, so it is with song, and dance. "The worshipping Corybantes are not in their senses when they dance" and, likewise,

> the lyric poets are not in their senses when they make these lovely lyric poems No, when once they launch into harmony and rhythm, they are seized with the Bacchic transport, and are possessed...for a poet is a light and winged thing, and holy, and never able to compose until he is inspired, and is beside himself, and reason is no longer in him (Cooper, p. 220).

Jaeger (1934), translates Aristotle's statements about the Eleusinean gatherings, where those who are being initiated are not required to grasp anything with the understanding, but have a certain inner experience, and so to be put into a particular frame of mind, presuming that they are capable of this frame of mind in the first place. (p. 134)

Music, for the Greeks, was not just a specialized art of sound, but a generalized art of rendering harmony, rhythm, and orderly motion. This *mousike*, Alex Hardie (2004) tells us in his essay "Music and the Mysteries," published in the edited collection *Music and the Muses*, played a significant role in the rites at Eleusis. The rhythmic and resonant arts work their wonders according to common principle, which is why the heterogenous lot of harmonikoi, Plato, Aristoxenus, and Aristotle spilled so much blood, sweat, tears, and ink investigating how and why. Sound, though, transfers complex information at lighting-like speed—the time interval of transmission, of musical communication may be indeed be the attraction of music for the sciences. What communicative uses will we find for sound, now, after the digital distribution of sense modalities put into question the function and the allocation of perception? This question will frame digital composition experiments in the future, because at root, as J.J. Gibson (1971) reminds us, "no matter what determines the allocation of attention, all organisms confront the same general problem: selectively
apportioning attention in order to enhance the input of relevant information," and this is the ontology of reading and writing today (p. 433).

In their unfoldment in space and time, "sounds manifest as a vast number of elaborate and complex variations," (p. 433) yet, at the same time, we seem to be able to easily deal with complexity and dynamism in sound, as compared with, say, mathematics. This leads Gibson (1971) to the conclusion that sound descriptors and categories such as loudness, pitch, duration and repetition don't adequately "get to" the physics of sound's unfoldment in time and space. For example, "instead of simple pitch," the pitch of sounds "in nature," in motion vary in "timbre or tone quality, in vowel quality, approximation to noise, in noise quality, and in changes of all these in time" and along with variations in duration (expanded to include qualities of transition into and out of other durations) variations in repetitiveness (expanded to include subtleties of sequence, regularities in rate, rhythmic capacities), loudness (changes in rate and directionality), all of "these variables can be combined to yield higher-order variable of staggering complexity. But these mathematical complexities seem nevertheless to be the simplicities of auditory information, and it is just these variabels that are distinguished naturally by an auditory system" (p. 80). In digital ecologies of information, the commons has evolved strategies of tagging and emergent classification schemes know as folksonomies, and these practices function to simplify and compress information in a way similar to music, and, also, like musical practices they also shortcut and "get in front" of rationalist tendencies and prescribed categories in the ways "intuitive" and musical modes of response do. Finally, and most significantly, tagging practices can be mixed into a wiki pedagogy effectively, because tagging occassions rhetorical modes of description, defintion, and
much more. Wiki provides a space for these necessities born out of group-writing. Once in rhythm, writers seem to confound Socrates' distinction between the artist and the mere "resonator" such as Ion himself. In the commons, technical and affective, sacred and secular, and other opposites go into n-dimension reanimations. In this context, the art of metatagging becomes an important part of any rhetoric of rhythm.

*AudienceFinder: Instrument/Template*

In a technical writing class here at Penn State, we mixed de.licio.us, instant messaging, and wiki with the announced purpose of finding and audience of users or interested readers for our semester projects. Before I narrate a little bit about how this wiki community formed, and describe the writing that brought us to what became the “audience finder” unit that, as I will explain, delineated an important threshold in our wiki's emergence, I want to call your attention to four important things. Because, as you proceed, I will ask you to look for these four “tracks” illustrative of and instrumental to wiki's pedagogical promise, and consider ways you might remix those four tracks, and build instruments for tuning into the dynamics of your immediate commons-formation contexts. In a way, *AudienceFinder* yielded a four-fold path leading from the rhetorical canon of invention to the commons.

First, finding while clusters of writers composing mission statements, definitions, and searching for an “audience” for their projects seek “identity in common” the transformational capacities required to navigate cyberspace also required clusters to continually dissolve their group's purpose and identity in common—or more precisely, into the commons.
Second, making space to find new forms of rhetorical address is necessary when
the distinction between producers and consumers of texts becomes smeared. The
literature on post-normal science's reckoning with the observer/observed distinction will
inform this distinction, and resonance technologies common to diverse strands of 20th
century musical practice can inform this transition.

Third, the role of "silence" (gutters, gaps, call and answer) cannot be
underestimated in resonant domains. When we get "lost," we find our rhythm again in the
rests between all the movement. In Ecstatic Spontaneity, Herbert Guenther (1987)
consults the Sahara songs of the Tibetan Buddhist tradition to create helpful diagrams
illustrated the centrality of silence to any rhythmic practice, and in chapter 5, I will
elaborate of Guenthers's visualizations and schemata to suggest their utility for mapping
shared spheres of perception facilited by wiki practice.

Fourth, commons-formation operates according a “mashups principle.” In our
case, we wove wiki, instant messaging, and social bookmarking together, and found that
we could tune the writing we produced on these diverant strands. By fashioning links,
render resonant domains, or attractor states, in the manner Socrates, in the Ion, ascribes to
the stone of Hercules. Simple, repeatable rhetorical gestures accrete and seem to impart
“to the rings a force enabling them to do the same thing as the stone itself, that is, it
attracts another ring, so that sometimes a chain is formed" (p. 220). In a wiki pedagogy,
this means that alphabetic writing does not go away—in fact, it is the glue, the obligatory
passage point where compressed tags are unwound, stuck writers find gutters left behind
by contingent cooperators, affect holds sway and effectuates resonance, providing clues
for where to turn next, or simply clues on how to write that next sentence. Group
heuristics unfold “in the between,” and rhythmic writing seems to “amplify” the silences, and extend the durations of collective attentional focus on the noisiness and interference patterns that bracket these lacunae, which puts what we will (below) call delay patterns into shared space, thereby making it possible and much easier for writers to interrupt each other, and jump from one attractor state to another. This process can be experimental and developmental in the sense of rhetorical or imaginative invention, or it can simply help writers find the next word, phrase, or sentence for the sequence under construction. Wiki even allows us to use class time to press pause on these moments of indeterminacy, and class time becomes a space for collectively considering the rhetorical choices available to a group of writers at any given point in the composing process. To introduce the patterning tools of social bookmarking to students, I simply ask, "what can a wiki DO with tagged browsing?" Tags, we learned can do a lot: they can compress description, definitions, analogies, and share affective rhetorical elements, such as “tone,” “color,” “flavor,” and much more, well into the nonsemantic registers that infect all communications ecologies today. The oldest models we have for these communicative practices come in the form of mousike, the sutras of the Shaivist and Buddhist traditions of yoga, the collective and spontaneous genios of free jazz, and the recombinant art of DJs and sound engineers. These practices provide clues for wiki practice, and allow clusters of writers to cue and miscue wikis. In this way, wikis can be configured as a resonance technology for arranging text, images, and sound.

Going Second Order: Remixing in Common

In chapter 2 we talked about how creating patterns with selected sound material is as simple as pushing play. Four-track machines, inexpensive multi-track cassette
recorders associated with home recording and do-it-yourself cultures of music provide one model of how this works. In wiki contexts, the analogy of four-track suggests an open window with 4 tabs. The Freesound exercises let different tracks resonate or dissonate the combination of complex patterns of information as they, in Rotman's (2000) words, "go parallel" (p. 56). Whereas sound editors like Audacity let us focus on acts of troping and bringing sounds together, Freesound encourages the overlay of tracks that will "work on their own." Put another way, Freesound provides no effects menus, nor does it provide the control over the real-time patterning like faders and toggle switches in the turntable-mixer assemblages Grandmaster Flash, Kool Herc, and Grand Wizard Theodore designed on the technological templates coming out of Jamaican dance halls in the 1960s and 1970s. However, even without experience or ingenuity with the tropological controls and functions of mixers, turntables and cassette players, student composers working with records or tape produces novelty, creates new surface areas of embodiment and audience address, simply by "laying down tracks" one on top of the other, so that different selections of information (performances), can be heard simultaneously. Significantly, this novelty was often noisy, and this noise proved necessary: it helped unhinge student writers' expectations about writing's relationship to truth, and the role of premise-matching in the processes that rhetoricians file under the canon of invention. Students noticed what Bateson (1979) notices, that "interesting phenomena occur when two or more rhythmic patterns are combined," or in other words, that beatmatching creates unexpected connections and disconnections. "These phenomena," which are theoretically limitless in example and type, "illustrate very aptly the enrichment of information that occurs when one description is combined with
another" (Mind and Nature). Playing these combination in classs demonstrated the degree
to which "preference-matching" produces the conditions for eloquence. Bateson's
description seems to suggest that the resonance itself composes the middle term, the
space necessary to any rhythmic writing, whether students are inventing arguments,
arranging documents, or troping the style of a project to the right frequency: "In the case
of rhythmic patterns, the combination of two such patterns will generate a third.
Therefore, it becomes possible to investigate an unfamiliar pattern by combining it with a
known second pattern and inspecting the third pattern which they together generate"
(Mind and Nature). In wiki, this investigation process can bloom, even run wild. The
audience finder assignment seemed like a way to help students find the same
compression and attendant "miracles" of resonance using words to "name tracks" and
therefore organize sentences, paragraphs, large data sets, examples, templates, inchoate
ideas, or any pattern whatsoever; specifically, tags would be the fundamental sample-like
units for organizing and mixing all the tabbing. Students, through a rhetoric of
metatagging, could write with a purpose, even as they cultivated the receptivity necessary
to tune in to exigent rhetorical situations.

From Tabs to Tags

If sharing music files can create musical territories of production, metadata
techniques of “tagging” cultivated at social bookmarking communities, such as
Connectidy (http://www.connectedy.com/) and de.licio.us (http://del.icio.us/), which
facilitate gestures of “pattern-sharing” across the filesharing demographic, can do the
same. Tagging, as we have seen, helps composers at the Freesound Project communicate,
so that the database itself can be easily tuned to create “sonic moire patterns.” The
rhetorical space that opens when we provide metadata (tags, and their descriptions) is essential for collaborative community building, but it depends on a lot of back-and-forth communicative performance, the art of the peer-to-peer rhetor. One of the simplest models for pattern-sharing is the playlist, a social-bookmarking genre built into digital music players like rhythmbox and itunes that can be traced to the "mix tape." Metadata works well in small clusters, where users use the standard tags but also add highly localized idiom, as a way to begin working out a problem (of definition, cause, value, etc.). When users share heuristics, inchoate and compressed categories and descriptions, they also need to unpack these staccato blasts of information, which are often so compressed that we can at first only respond with a silence, and then a query. Wiki is a space for affirming these gaps, and creating the necessary latency or delay for queries to emerge. Wiki provides space for students to query each other's constellations of tags in the same manner that they wrote about each others’ Freesound compositions. This creates the potentional, and space for sharing the consciousness of invention and discovery, for finding and sharing premises, working out interference patterns. When the writing classroom taps into the force of music, then, the network pedagogy students form amongst themselves dispels abstract notions about "audience" no longer haunt us, students write with a purpose, but at the same time cultivate a trust in heuristic processes essential to rhetorical invention.

One student testifies to the enjoyment found in "talking about tags." This training in communicative performance is facilitated by patching together social softwares, creating a patch directing students' attention to the medium where they write. In this IM script, we learn that IM+delicious=audience finder:
AIM IM with AudienceFinder18

10:36 PM
for part three of this audience finder what do we have to do
restate the question
for number 3 on our audiencefinder assignment curtis and i were talking and we weren't
sure if we were only supposed to stay with the delicious site or not?
i must say the tag idea is awesome tho
break out of the site, go where you need to go
if you find something useful (a template, a counterargument, an example, a potential
target audience) post it to your delicious
doing so a) makes your patterns share-able
yea
and b) folds the resource into delicious
okay okay
10:40 PM
cool
yeah we did parts 1 and 2 alreayd
3 just seems repetative
it is precisely that, yes
repetitio : trope #1
here, I'm emphasizing the importance of recursively working the commons
yea
recursivity
recursivity
well i like the tagging a lot
and then talkin with members about it
yes!
I love it, too
it is so incredible, I agree
working a group, you can tag things to suit the specific text you're about to write/are
currently writing:
yea okay so for part 4 we basically just put it all together
you can tag a whole sequence of pages (wiki and otherwise), then jump on that sequence
as a group, for example
yes, and part 4 emphasizes the audience bit
i.e. after all the tagging and snooping and lurking and looking, who's your audience (for
now, anyhow)?
so that should be the main idea we want to answer
10:45 PM
so since we did part two and one tonight
we could say do parts three and four tomorrow night right?
yes
so we can look around and discuss everything tomorrow
perfect timing
okay
yes
thanks trey
when you discuss, also open up a dialogue about how to use Wednesday??
cuz we'll be in the lab and working in groups: I think we all need the face time so we can proceed with full aplombe
i.e: Wednesday is a lab day, you and your group use the 50 minutes to max out the together time, hit me with questions etc, while we all have simultaneous access to the wiki
okay
sounds good
sweet. see you then. if you need anything, hit me here. over and out
10:50 PM
see ya

This assignment had telos, but the aim, "audience," is rendered abstract (as when a series of echoes sustain their tones to "smear" the sound into a larger reverberative space), indiscernable, and perhaps even archaic as social software amplifies the complexities of invention. Here, students work through a "description" of their "audience," and this heuristic informed by Bateson's (1979) *Mind and Matter* "the division of the perceived universe into parts and wholes is convenient and may be necessary, but no necessity determines how it shall be done." This produced diverse results and effects on our wiki and in our class projects. Students began to understand the medium, and "softwares" as tools for rhetorical practice. One group, comprised of agricultural science majors, had a ready-made exigence and group of users in mind from the beginning. As these students took their project, user-editable, bilingual technical standards modules for Pennsylvania agribusinesses specializing in the cultivation of mushrooms, online, their announced purpose for tagging was finding templates; similar documents for similar purposes.

i am not sure of the question i am to formulate. . .
10:50 PM
ok, head on over to the delicious site
and login
10:55 PM
are you with me?
yeah
i logged in
ok, once you can start tagging pages, tag your favorite procedural doc templates
ok
tag them
then,
see who else has tagged them
find out what other tags they used
follow
explore their tag library
the idea is this:
learn who you are writing for/to/with
but,
in your case
you seem to be in pursuit of a template
find templates, and then find better ones
don't focus on delicious, use it as a tool, find what you need, and run with it
ok?
cool
sounds good
another guide for you:
as you think "I am always evaluating available technologies and documentation,
searching, sampling, remixing" :
http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/EvaluationAssignmentOption
ok, no obstacles, no worries, just a golden road to usable documentation! Rock and roll!
11:05 PM
I'm also thinking of pasting all the IM convos I've had re: tagging assignment. could you
sprout a page for that off of the audience finder page, and paste our chat? thanks, over
and out for now

In surfing the commons, students find community. Groups already steeped in telos and
rhetorical purpose finding genres, models, templates, further remixing, folding back.

Delicious, through heavy group use, reveals itself to be yet another pattern, and
nothing more. This teaches students to unhinge their compositional practice from fixed
ideas about the distinctions between text and context, and working through this with
students prepares them not only for composing dynamic and accessable web presences
but also for welcoming and working with the dynamic commons.

*Rhetoric is Metatagging*
Del.icio.us is an open system for organizing, sharing, and discovering patterns of information. For this assignment, students, already working in groups joined the del.icio.us community, shared identities, and explored the potential of this commons-forming technology, and they did so together on chat and wiki with a goal: to "find your audience." But these telos proved to be a heuristic for a broad spectrum of communicative performance. First, we must participate. Without a wiki script, we might be tempted to decode the tags on sight. But tagging encourages oscillation between close reading and browsing so that we can inhabit each others' patterns as we would carefully read a paragraph posted to the wiki in a timely fashion. But more importantly, in order to learn how to share consciousness, an increasingly important dimension of rhetorical practice in information-rich ecologie, we have to write to each other about what a sequence of tags is attempting to do, whether we tag a string of words on to a single page or drape a tag word across a series of documents.

To find their rhythms, students started with IM sessions with each other, which they then posted to the wiki. Remembering the fundamentals of dialogue, students brainstormed start-up tags in chat sessions, tested them and applied them on the web, and created strings of tags in de.licio.us and, redundantly, on wiki. Then, students sampled from the crucial definitional terms, concepts, and processes they found and revised in their mission statement assignment before they applied these key words to web sites they wanted to share with the entire group. In other words, they "tagged" and then shared the links they tagged. Wiki allowed us to nest syntactical patterns of high-information content because these sequences of prose emerged from nonsemantic linking and play *between* media, and, significantly, incorporated the embodied “face time” we earned in
class as a byproduct of compressing and sharing our rhetorical aims with tags. In these spaces, students could tap into a wider spectrum of their communicative resources and at the same time become teachers to each other, as in this IM script posted to the wiki:

"dbzrpg15: What the heck are these tags though?
dbzrpg15: i don't get that part
VillageConMan: well basically we're browsing around different sites to get an idea of what our audience should be by going to various sites, tagging them, and sharing them with the rest of our group
VillageConMan: basically finding sites that are relevant to the project" (http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/BillAudienceFinderIM).

During this process, the wiki becomes saturated, and the group wiki mind is at once aroused and "brought to attention" by the stochastic resonance that high frequency exchanges bring about. This development facilitated even more recursion as groups honed their focus and even seemed to resonate with recent research that shows starlings' ability to learn novel patterns of generative grammar. As Gary Marcus (2006) explains in his introductory editorial in the April 2006 edition of *Nature*, “humans show much continuity with their non-speaking cousins in dozens of ways that might contribute to language, including mechanisms for representing time and space, for analysing sequences, for auditory analysis, for inhibiting inappropriate action, and for memory” (1117). Starlings are social birds who not only flock together but take flight simultaneously, shift direction, and land again all together in a manner as instantaneous and miraculous as the complexity and cohesion jazz musicians simultaneously maintain. In a similar way, students tagging together communicate tremendous amounts of information in short order, and the clusters that form during *AudienceFinder* are able to research, plan, and produce interesting and useful final projects together in a required technical writing course that had to that point jammed my efforts to induce collaboration.
At this stage, what we wanted to know was, "What can a wiki do with tagged browsing?" In our daily blogging, we had already explored other examples: LastFm, for instance, uses metadata to entrain communities via music. Students then made pages for these chats in wiki. Students used analogies and definition to revise these chats and play tag in writing. Students then designed a wiki space to work out tags, unpack them, and anticipate their project needs and how they might entrain with communities they found playing tag. Students designed this space with "gutters," leaving negative space, and sharing and sequencing links here. Eventually, students began to double back on these wiki spaces and remix them. Writing across the gaps, cuts, and *caesura*, from one link to the next, writing together, students created sequences of writing that they could again revisit and remix for their final projects.

Then, for reasons having to do with the importance recursion has to do for writing in rhythm, each student needed to "fly solo" for a stretch: jumping back into delicious, they listened again to the commons. They searched "diagonally." They searched their groups' tags, found new tags, and followed patterns (available order). Why? Because writers do, in fact distill a sense of audience, even if it is more like finding a niche in a topical socio-technical context or issue. In this way, writers realize where and when they might refine their group's tags, create patterns of bundled tags, and find sites that seem to warrant multiple tags. Crucially, students notice where, when, and how their focus shifts from investigating and searching via tags to shaping and writing with tags. Tags, then, emerge as pragmatic *protoi chronoi* for communicative performance and help students shape the media they write on and between. Before too long, all this compression needs unpacking and so the recursive looping brings writers back to sentence craft, and each
time, the selection amongst rhetorical choices becomes more "informed." At a certain point, a cluster of writers will break into a new and different level, and begin to plan rhetorical choices to maximize a particular frequency in a way not unlike the emergence of attention on a particular and immediately relevant frequency or series of harmonics occurring amidst the stochastic resonance of neuronal activity in the brain. A cluster of writers who came together as future scientists interested in different, specific forms of energy, taught each other about the techno-social particularities of hydrogen, nuclear, and biodiesel alternatives when they listened to the patterns they found and decided to create accessible and editable learning modules for high school students interested in alternative energy: "With the help of del.icio.us, we tagged several articles related to nuclear, biodiesel, hydrogen, and we discovered that most people who tagged these articles happened to be enviromentalists. They cared a lot about planet Earth and wished to pass it on to the future generation in great shape. Hence, we decided that high school students with a keen interest in protecting our Earth would make a good audience for the project (http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/NuclearBiodieselHydrogenAudienceFinderRough)

Then, they got together again, as did each cluster. Meeting again in IM, the students narrated their journeys to each other, and posted these dynamic exchanges to the wiki as more fodder for remixing. The project's aim and audience, still an open question, may however have become more focused at this point, as the alternative fuel cluster discovered; a real project limited the bandwidth of available patterns, and the resonance itself seemed to be selecting amongst the narrowing range of efficacious rhetorical choices. Regardless, the writing had become at this point ongoing, and the wiki was more
active during this phase than ever before, requiring all of us to adjust our "recent change" settings so that more of the high frequency interactions in a day's time could fit on the screen. Things were getting pretty chaotic, but one step remained before we could move to the next assignment, where students composed a proposal memo with a work plan and due dates. Students, for the last step of the audience finder sequence, selected from and mixed the outcomes of all the previous steps of the assignment into a new wiki space where they provided a provisional audience description write-up of 300 words or so, with links. This step allowed students within clusters to explicitly come to terms with the rhythmic nature of rhetorical choices; on the one hand (arsis), so many connections had become apparent, and on the other hand (thesis), useable documents were organized in a way that forestalled connections and beatmatched only to specific frequencies. One group, focusing on sustainability, reported that "after searching and tagging on del.icio.us for a while one night were able to find a vast amount of websites dedicated to alternative energy and sustainability. These sites ranged from treehuggers.com, which is a small web community comprised of ecologically friendly people keeping tabs on green developments, to Ecotricity which invests and develops large scale wind farms throughout the United Kingdom, to finally Home Power Magazine, which is dedicated to installing and supporting solar and wind turbine energy in small independent homes and facilities. The result of all this websurfing led us to the conclusion that there are a wide array of audiences for sustainability....Del.icio.us shows the endless possibilities on where to go with our project (http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/SustainableAudience);.
a far cry from writer's block, indeed. Here, the rhetorical and compositional strategies we had for so long used in our teaching had become valuable, even desirable, to writers looking for ways to effectively participate in projects of sustainability and the science and politics of energy. Moving back and forth between media, the individuals comprising each writing cluster bootstrapped into higher levels of selecting, organizing, and displaying arguments and technical demonstrations.

One of the great things about rhythm is how well it integrates with its environment. In the audience finder assignment, some clusters learned about how life sciences were tuning into rhythm to understand the origin of life and to revaluate information science's relationship to evolution, and about how industry uses information to anticipate and shape markets (bird flu project). Each group, in the process of coming together on a real project with real exigence, enacted a bottom-up grapple with the phenomenology of rhythmic writing, incorporating the perspective of musicians’, future scientists’, teachers’ emerging rhetoricians as they clustered. One question that had long haunted my pre-wiki practice concerned the ways in which communities formed, but as we explored this mixture of social bookmarking, I.M., and wiki, all the clues pointed towards the ways in simple writing gestures go into symmetries to organize stochastic space.

Rhetorical communities were formed by a network pedagogy of indirect communication through a shared medium. Music culture online provides training in affective dimensions of persuasion, as we have seen in the Freesound experiment. A pedagogy built on these principles would not impose order via order but would compose order out engagement with rhetorical softwares that diagram the complexities between
open systems; in other words, resonance, rather than forced entrainments produce more useful information. Rhetorical communities, then, like biological and mechanical symmetries, form in a musical way.

Nils L. Wallen’s (1991) book, *Biomusicology*, builds a working definition of music resonates with cybernetic definitions of the dynamics of information. Rhetoric and composition has been more interested in assessing how student writers—who, as we shall see, Wallen might name “sub-systems in a superior feedback loop”—cultivate “preserving” or “fluctuation controlling processes” of writing. And this is perhaps partly because classroom space works as a site of fluctuation control. If classrooms can also be thought of as a “subsystem,” (ecology) then they are far too often the subsystem that is not open to the set of processes that increases fluctuation in feedback loops. When we say "open-sourcing" the writing classroom, we are interested in the possibility of cultivating group-composed, dynamic, open-ended project spaces that emerge as “dissipative structures," patterns that emerge to order the disorder and chaos that is elemental to open-ended creative production. In wikis tuned, by means of linking-based assignments, for interactivity, students perform “evolutionary” writing, where they participate in “fluctuation increasing processes” and fashion principles of coherence as well. A balance of what Edward De Bono (1969) calls depatterning and patterning tools and then intervene on the autopoesis and self-enhancement that sometimes propagate in multimedia contexts and open up space for commons-formation. Here, as with music, principles of nesting train participants in the subtleties of time and timing. "Music," Wallen argues, "is an open system of evolving structures growing into sound artifacts which not only consume actual time but generate virtual time; the system and its space-
time structures are ultimately conditioned by bio-geocultural parameters of behavior and deportment....music relies upon a superior feedback loop compounded by three sub-systems: (a) the auditory system as integrated in the complex brain circuit: sub-system 1 (SS1); (b) the sounding structures of the artifact as analogue to living organisms: sub-system 2 (SS2); and (c) the space-time environment: sub-system 3 (SS3). The superior feedback loop alternates, like the subsystems, between positive (fluctuation increasing=evolutionary), and negative (fluctuation controlling=preserving) processes; they are, by definition, open, comparable or analogous to a dissipative structure." (Wallen, pp. 16-17).

To elaborate further on the language of dynamic "sound artifacts," Wallen refers to the ordering effectuated by dissipative structures. Wallen relies on Erich Jantsch (1976), whose article "Self-Realization through Self-Transcendence" characterizes dissipative structures as systems that come about as adaptive processes

Try to maintain their capability for energy exchange with the environment by switching to a new dynamic regime whenever entropy production becomes stifled in the old regime. This is the principle of 'order through fluctuation,' which reverses some of the dynamic characteristics holding for closed systems near equilibrium (Jantsch, *Evolution and Consciousness*, p. 76).

This would involve the cultivation of ecologies that unhinge readers’ semantic-overlay practices and highlight the ways language routes through larger networks (nested positive and negative feedback loops in the argot of biomusicology) in order to rehearse and perform the Dionysian techniques, gestures, and signing that would "run the program," the experiments that install gradients (the living texts of information exchange) in a struggle for entropy, experiments that enact transitions of energy between living systems. Interestingly enough, such close consideration of the energetics of sound separates
language from speech in a way akin to sign languages, such as American Sign Language (ASL), which soundlessly operates apart from linguistic strictures—again, the *mousike* of Greece and the chironomy of mudras in the the rhythmic arts and sciences of India. Aristoxenus’ term *rhythmopoia* lumps speaking, writing, singing, and dancing together as some of the multiple practices that install these gradients and trace order (composition) out of the complexities of movement in dance, sound, and language. Studied as a rhetoric, rhythm allows us to get a handle on the ways writing multiply and connects up with diverse practices online, and, therefore, working with language’s asignifying dimensions, particularly the ways that affect plays a part in the composing processes of the peer-to-peer rhetor.

As a specific example for parallel research to take up, we can connect the history of open source programming to music via a narrative that describes the filesharing, sampling, and mixing tools that comprise the space between content and expression in these communities of knowledge production, “gaps” where discussion falls “off topic.” These discursive fault lines and fragments lay bare the rhetorical softwares that fit writing, coding, and music to each other in a way that suggest that these rhetorical communities form via musical and other Dionysian techniques that we can call a rhetoric of rhythm. These “gaps” and “off topic” moments at times create awkward silences or allow noise into the mix, and therefore enjoin our participation by creating openings for extralinguistic response, allowing for new mixtures of consciousness to emerge. In the mix, rhythms emerge and dissolve according to the patterns created by the distributed participants.
Versionist Riddim Community, for example, builds a commons using the terminology of dub. In an interview, the site founder, who simply goes by the name "Versionist," explains how his dissatisfaction with the reggae and dancehall were, to his ears—becoming homogenized. Taking matters into his own hands, he said, "I bought various music production programs and churned out about 20 riddims in a month. Some were good, some were not so good. But, I was doing it, and I wondered how many other people were trying to do the same thing. So I decided to try to make a place for this sort of thing" (http://www.irieites.de/interviews/Versionist_Dub.htm, accessed June 1, 2006).

In the tradition of dub reggae, Versionist remixes the "modes of delivery," the ways music creates networks by remixing their patterns in ways that trope them towards ongoing participation. Dub music, Alexander Weheliye (2005) suggests, “is the mother of all remixes” (p. 102). “Analyzing” a web presence like Versionist, students first notice that Versionist is a community, and realize quickly that one cannot “analyze” a community, one must join and participate in that community. “Analyzing” multiplicity, then, breeds production. Once we affirm the writing that happens when we respond to multiplicity, all we have to do is create space for students to make mixtures of the various rhetorical gestures we provide for them. For example, at Versionist, and with Audacity, we can ask, “What is dub?” and “What is a version?” and form a commons around these definitional queries, which themselves create further opportunities to write to each other.

The combination of the sonic content and form in such musical territories of production makes space for students to cultivate close reading skills as they inhabit and create a phenomenology of the timing and placement of response patterns in interconnected
space. All of this begins, as we saw in chapter 2, with play, and this play depends on an art of selection.

The Protoi Chronoi and the Art of Selection

Aristoxenus' fragment on rhythm does not say much about the pyknomata of the harmonikoi (he details the the practice of writing “compression algorithms” with pynknomata in the Elementa Harmonica), but it does propose the term protos chronos to describe "primary time-lengths" that "cannot be further subdivided by any rhythmizomenon" (Pearson trans., 1990, p. 10). Elsewhere, the protos chronos is "the time-length which is too short to contain even tow notes or two syllables or two signals." But rhythmizomena, it must be understood, "takes on different forms" but these differences are "conditioned not by [the rhythmizomenon's] own nature but by the nature of the rhythm it adopts." Rhythm is not previously determined goal or pre-set metrical count, rhythm must emerge in time. "The same spoken phrase or sentence (lexis), with different arrangements of its parts, each arrangement different from the other, takes on as many difference as there are differences in the nature of rhythm. The same argument applies to melody, and to any other medium which is capable of being rhythmized in the kind of rhythm that consists of time-lengths" (Aristoxenus, Pearson trans., p. 4). For performers in any of these media to find, establish, or follow a particular rhythm these time-lengths, for Aristoxenus, must establish protoi chronoi that do not pursue the matter further than time-lengths that cannot be made mutual in performance, that is made to be repeatable and sharable across performances and between performers in common. "Here is the way we should try to understand the meaning of 'primary.' One of the the appearences that presents itself very readily to our senses is that speeds of movement do
not increase to an infinite degree of intensity" (emphasis added) (Book II., p. 11). "There seems to be a limit, when the time-lengths into which fractions of a movement are to be fitted are not reduced any further." (Book II, p. 11). In other words, the performer must be able to "match" notes, syllables or gestural signals to the minimal time-lengths in a manner that will take on a particular rhythm.

In the fragment "On the protos chronos" found and preserved by Porphyrius, Aristoxnenus repeats the claims made against the infinitism promoted by pursuing the limits and proposes instead a taxonomy of useful rhythmic forms for lexis (words), melos (notes) or any other rhythmizomena. As Lionel Pearson (1990) summarizes in his helpful commentary, “in theory, there are countless different ways of playing these notes. But not in practice, when a musician is performing” (p. 76). Here, we can see why musical practice has expanded today into diverse media, and indeed why writing on the web is a musical practice par excellence. Consider this: What can a computer do that our hands and voices cannot perform? The computers that saturate the field of higher education, if put to distributive use, allow writers to select, compare, and recombine large patterns of information to create new arguments and ideas. Wikis help turn computers into resonance technologies not unlike the phonograph or the multitrack cassette recorder, and as such can make computers, as instruments, distributed and rhythmic in their use for classroom purposes, just as they have functioned in open source programming communities. Wikis make this easy enough for any teacher to do—any one can use wiki to remix their pedagogy, whether they are upstart teachers, like the graduate students training to teach with wiki in the 602 Teaching Practicum or seasoned, wizened professors. Wikis can and should be treated and tuned as rhythmizomena precisely because they at once present us
with similarly “countless” possibilities, but at the same time, provide all users with the ability to perform in and shape the rhythmizomena to arrange and compose the medium.

Much of what we know of Aristoxenus we owe to Aristedes Quintilianus. As we've seen, when Aristides Quintilianus rejuvenated Aristoxenus' theories he presented us with one of the earliest formulations of the select, mix, and rendered formula for ordering or rhythmizing patterns of sound.

In Book I Section 19 of his treatise, *On Music*, Aristedes seems to introduce the geometers point as a practical protoi chronoi for musical practice.

'Protos' is an uncompounded and smallest chronos, which is also called a point. I shall call that chronos smallest, as far as we are concerned, which is the first to be grasped by sensory perception. It is a point because it is indivisible, just as the geometers named what was indivisible in their own case the point. This, the indivisible chronos, occupies as it were the position of a monad, for it is considered in diction in respect to the syllable, in melos in respect to the note or one interval, and in motion of the body in respect to one form. This chronos is termed protos as it relates to the combination of the rest of the notes. (Mathieson trans., 1991, p. 95)

*Resonance is the Composer*

In *Matter and Memory*, Bergson (1911) dedicates an entire section to the indivisibility of movement. Bergson states "every movement, inasmuch as it is a passage from rest to rest, is absolutely indivisible" (p. 246). "This," he adds, "is not an hypothesis, but a fact, generally masked by an hypothesis." Then, "my sight perceives the movement in the form of a line AB which is traversed, and this line, like all space, may be indefinitely divided" (p. 246). In chapter 4, I will discuss more about the ways that mathematics, music, and philosophy come together around the “problem” of infinity. In chapter 5, I will suggest that wiki pedagogy delays and dissipates these concerns by means of a rhythmic practice.
Of course, Bergson’s main point in his discussion of matter and memory is a definitional point about movement that creates interesting overtones when we mix it with Socrates' rap in the Ion or the becoming-global tone in Cage's nonsemantic prescription for the cut, or frame. Cage (1937) wrote his script for those ears that needed such hailing/healing.

But first, here, where we contemplate the infinite, we might read for any of the tropes or forms (pause here on rhythmos and timing, sequencing of forms) infinity provokes. Bergson turns to the a distinction that could be said to be of immeasurable magnitude, but for now let us suffice it to say that it is a distinction the wiki brings to the fore in a composition pedagogy. "It seems then, at first sight, that I may at will take this movement to be multiple or indivisible, according as I consider it in space or in time, as an image which takes shape outside of me or as an act which I am myself accomplishing" (p. 246)

What gets lost in all of these high resolution workouts on movement, in the authorial mode? What is the gap? What is the lacuna? For now, we will call it “rhythm” itself. Bergson then weaves thought experiment that marks an interesting turn in the arc of this section of Matter and Memory—a turn to a different medium. "Now the smallest interval of time which we can detect equals, according to Exner, 1/500 of a second; and it is even doubtful whether we can perceive in succession several intervals as short as this. Let us admit, however, that we can go on doing so indefinitely. Let us imagine, in a word, a consciousness which should watch the succession of 400 billions of vibrations, each instantaneous, and each separated from the next only by the 1/500 of a second necessary to distinguish them. A very simple calculation shows that more than 25,000 years would
elapse before the conclusion of the operation. Thus, the sensation of red light, experienced by us in the course of a second, corresponds itself to a succession of phenomena which, separately distinguished in our duration with the greatest possible economy of time, would occupy more than 250 centuries of our history. Is this conceivable? In general, we must distinguish here between our own duration and time. In our duration—the duration which our consciousness perceives—a given interval can only contain a limited number of phenomena of which we are aware. Do we conceive that this content can increase; and when we speak of infinitely divisible time, is it our own duration that we are thinking of? Yes we do. We call this increase in information the infoquake. We embrace the stochastic nature of this information increase, and we consider the ways rhetoric a rhythmic process, a pilates of writing, a yoga. Abstract space is, indeed, at bottom, nothing but the mental diagram of infinite divisibility. But with duration, it is quite otherwise (Bergson, p. 273).

At first, Bergson seems to reduplicate the *katypuknos* methods of the *harmonikoi*, but this thought experiment invites us to leap out into a different medium, out of the rational discourse of the infinitesimal cut that borders on mathematically experimentation, when Bergson renders explicit the ways that color compresses information. Sound performs a similar compression, and this in part explains why the harmonikoi, as well as both their successors and their critics, were willing to bet on sound and spend so much energy dividing and subdividing sounds. Musical practice reminds us of this and provides one remedy that renders reflexivity into recursivity. Bateson's (1911) distinction in his glossary. Rhetoric, as metatagging, helps us teach writers how to form clusters and cultivate shared space of engagement where mixtures of interference patterns and resonance determine the difference that makes a difference in increase-of-information contexts.
Bergson's (1911) thought experiments on duration and space raise interesting questions about the role of rhythm in communication today. Much of our communicative performance unfolds in digital space; a discontinuous rhythmizomenon. Our everyday communicative practices (our digital rhythmopoeiia) render seemingly endless permutations of forms out of zeros (0) and ones (1) in an ongoing production of novelty. This rhythmizomenon changes constantly. Just as maintaining equipoise on a bicycle requires repeated actions, and in the same way percussionists establish a sharable medium of sound by striking and refraining from striking in repeating patterns, reading and writing in infodynamic space requires a sort of pilates of writing, an active and rhythmic approach. Also, once you find your balance in "1.0" of any given rhythmizomenon, it is time to adjust again, and move with the rhythm of version 1.1. The dynamics of our communication ecologies dynamics pose challenges to even the most precising descriptive and analytical pyknomata of the information sciences and the disparate research itineraries that comprise complexity studies. Music thankfully reminds us again and again that we have even more compressed models of "diagramming" time and space, and, most importantly, music reminds us that ours is a shared space. Bergson warns that we must not confound the data of the senses, which perceive the movement, with the artifice of the mind, which recomposes it. The artifice of the mind, in the Indian theory of the elements, bhuta, emphasizes the creative and shared aspect of the "recombinant mind;" the "elements" of this theory are translated by Danielou (1967) as the "spheres of perception." The shared, distributed perceptual space music makes so palpable offers a way to play between the notes together and find modes of being and inquiry that do not reduce the impulse of the commons and activity between intervals
(large or small) to particular models, rational or irrational. When music reminds us that space is shared already, it also calls to mind the interconnectivity of the web. If we must necessarily build our collectives in spaces measured in files, bits, bytes or any other infinitesimally small rational "cut," we must balance this approach with experimentation based on musical practices that create shared spaces of resonance where complex ideas and patterns can be communicated \textit{instantaneously}.

Prigogine and Stengers (1984) have argued that Bergson's insights regarding reductionism warrant revisiting because they anticipate the way that far-from-equilibrium research intervenes on the long and winding conflict between reductionist and antireductionists in their work \textit{Order out of Chaos}. "In biology, the conflict between reductionists and antireductionists has often appeared as a conflict between the assertion off an external and an internal purpose" (Prigogine and Stengers, 1984, p. 174). It would seem that the value of Bergson's insight relies on his version of duration, which emphasizes timeliness.

A system far-from-equilibrium may be described as organized not because it realizes a plan alien to elementary activities, or transcending them, but, on the contrary, because the amplification of a microscopic fluctuation occurring at the "right moment" resulted in favoring one reaction path over a number of equally possible paths (Prigogine and Stengers, 1984, p. 176).

In the commons, tropes of amplification seem to create what Bergson, as we will see, calls “miracles” What are these commons? What is “It”? Tags: play, mix, \textit{bhuta}, rhythmizomena, resonance.

There is certainly play in such a movement, and this chiasmus is authorized, even prescribed, by the ambivalence of the pharmakon. Not only by the polarity good/evil, but by the double participation, in the distinct regions of the soul and the body, the invisible and the visible. This double participation, once again, does not mix together two previously separate elements; it refers back to the same that is not identical, to \textit{common-element or medium} of any possible dissociation.
What is the digital commons? Much of the Internet runs on Apache server software [external link]. Apache is created and maintained by an open source [external link] community who share the code and the work, and the software is distributed for free. The Creative Commons, an initiative started by Stanford Law Professor Lawrence Lessig, in 2001, extends the open source concept to the sharing of ideas and collaborative activity of all sorts. Lessig argues that copyright law often thwarts innovation by preventing the connection between ideas and technologies. The history of science and technology, and of music, suggests that innovation emerges out of freely shared, peer-reviewed information, where scholars exchange knowledge and engage in collaborative, if competitive, inquiry. Different commons spaces produce different rhythms. Numerous (and potentially exponential) ephemeral communities, such as Slashdot, patterned by a revolving door of participants (contingent cooperators) who propagate ideas and produce projects, information, and value in short-order. Likewise, initiatives such as The Public Library of Science and the Internet Archive, that strive to make scientific, medical, and cultural knowledge freely available, also "rhythmize" a common surface for ideation. According to various free dynamics of exchange, communities form, and in doing so, free ideas and facilitate innovation and novelty through interconnection. In short, by sharing our work, we enable many unexpected connections and form communities of collaboration. This mixture of anticipation, delay, shared perception, aggregate attention, create active, redundant, resonant fields—this is the commons. The commons is resonance. Derrida's (1981) “common-element or medium” explicitly connects Danielou's (1967) sonic “bhuta” (shared attention and perception made easier via (emphasis added). ("Plato's Pharmacy" in *Dissemination*, trans. Barbara Johnson, p. 128, emphasis added)
immersive medium of sound), which I will elaborate on, below, with Aristoxenus' rhythmizomena (shared rhythmizable media) that we heard about in chapter 2. This connection cues sound and gives clues for how using computers to play with sound can help us learn to inhabit cyberspace in common. Next, we will revisit the Greek concept of the protoi chronoi vis-a-vis Henri Bergson's (1911) writings on duraton and movement. Bergson's observations open up our meditation on the commons to the discourses of cognitive evolution, and what Merlin Donald (2001) calls the “first hybrid mind.” Donald argues that rhythm as basically the most compressed (immediate, lightening like transmissioni of togetherness) of all perceptual templates (and therefore, if we amp up his case, gestural templates), and that something like the sample-mix-render bundle of gestures gave rise to the "first hybrid mind," which is another way of denoting the commons.

**Bergson’s Miracle and the Smallest Interval**

Musical practice and the lightning-like computations we are capable of in the medium of sound make explicit the way bhuta's double function ("element" and "medium") emphasizes the ontology of a shared medium, in other words, the commons surface. “Real movement” Bergson (1911) says, is rather the transferrance of a state than of a thing” in Matter and Memory (p. 267). Here, as on the dynamic space of movement that where we read and write, when we are “sharing, ” we are not transferring or moving “things” or “files,” rather, we are sharing states of mind. This is the point that Bergson's thought experiment, whereby 250 centuries would be required to even describe what our spheres of perception immediately recognize as “red.” Interestingly, Bergson's principle of real movement continues to work itself out in a manner of compression not unlike the
trend towards the smallest interval we have been tracing here between the figures of the
protos, chronos and lacunae. Essentially, “sensations” on the one hand, “escape
measurement,” while “movements, always divisible, are distinguished by calculable
differences of direction and velocity” (Bergson, p. 267). Bergson admits that by
formulating propositions on duration, he has “in reality, only been progressively
narrowing the interval between the two terms which it is usual to oppose to each other,—
qualities or sensations, and movements” (p. 267). Somehow, though, our consciousness
translates movements into sensations. The premise here is that movement takes place
outside our consciousness, and it is this problematic that produces the seeming paradox,
or as Bergson puts it, “the miracle of communication.” Our consciousness according to
this model do so

By a mysterious process is said to translate [movements] into sensations, which
afterwards project themselves into space and come to overlie, we know not how,
the movements they translate. Hence the two different worlds, incapable of
communicating otherwise than by a miracle (pp. 267-268)

This miraculaous transference of a state is sharing spheres of perception.
Merlin Donald (2001) explains this miracle by means of models provided by

evolutionary psychology. Donald bundles perception/attention/memory in a way that
relates to the ontology of the well-synched patterns that do emerge amidst the chaos of
the infoquake. What Bergson called a "miracle," cognitive science attempts to parse, but
the The "Plan/execute/review" formula leaps does not spin endlessly in the eddy of the
smallest interval. Instead what we find here is no less than a template for gesture in the
broadest sense, the kernel of a "kinematic imagination," that Donald describes as the
"most basic form of intermediate-term governance," which "

in humans...extended its reach from perception into the domain of action, but
crucially, it is the same control system. Working memory attention, and explicit
recall are combined into a review routine that can evaluate the success of a self-initiated action in context, and modify it accordingly. In this extended sequence the focus of attention is not the reward or punishment that follows an act, or its social consequences, but the form of the act itself (emphasis added). (Donald, p. 272).

Donald's outline calls to mind the rhythmic theories of Aristoxenus when he continues, and adds that:

The most compelling example of this ability is our unique sensitivity to rhythm ... rhythms can be played out on any muscle system, in any combination ... a rhythm is a perceptual template that expresses temporal relations; it can originate in a sound, feeling, or something seen, it can be played our vocally, manually, or with the whole body. (p. 272)

Furthermore, these rhythms are irreducible, they "cannot be reduced to discrete or digital elements. This is a fuzzy skill, where the Gestalt, or overall pattern, dictates the shape of the action and a metophoric principle rules" (Donald). Thomas Mathieson's (1999) reading of Aristoxenus' theory of rhythm in his Apollo's Lyre likewise asserts that Aristoxenus sought to emphasize the importantce of the composition of the feet of any given arsis and thesis over the scrutiny of the measure of any protoi chronoi (p. 338).

Again, we see how the shared consciousness that Fisher (1969) reminds us of ("knowing with") is closer to the bhuta theory of elements, whereas the “digital elements” of reductive thought experiments, taken too far, extinguish the force Derrida traces in the Timaeus and the Phaedrus. A similar distinction, as we will see later, haunts our definitions of repetition, and our distinctions between “noise” and “music,” to this day.

What is often missing from these debates is the crucial role of “nothingness” and emptiness long researched by rhythmic traditions of meditation and yoga. To the mathematikoi, Danielou might have asked, “What comes after infinity?” The answer, according the Shiva Sutras: zero.
"Paradoxically," Donald (2001) notes, turning towards zero, "the hominid mind achieved" a shift, "from perception to action," a shift that "had an enormous impact on group behavior because it created patterns of public activity that were increasingly complex and unpredictable" by taking a surprising turn—inward. By "turning further in on itself," hominids upgraded their "ability to imitate, gesticulate and acquire complex skills" and this "generated waves of novel activity, which reflected back and forth, creating an increasingly complex and unpredictable public theatre of convention," which we are calling here the commons, if not the Commons.

Across Plato's *Dialogues*, composed in 4th century B.C. Greece, Socrates finds numerous occasions to talk about musical aesthetics, music's affective powers, and strictures regarding music's proper use in education. In the Timaeus, Plato commingles perception of sound, harmonic theory, and cosmology. It is hard to argue with Barker (1989) who notes that "Plato's accounts of the sciences of astronomy and harmonics are strikingly idiosyncratic" theories concerned with and connected up with "an ideal mathematics of motion" (*Greek Musical Writings Volume II Harmonic and Acoustic Theory*, p. 53). Musicians and astronomers shared practices of compression, particularly in their affinity for diagrams. "The visible movements of the stars and the audible movements that constitute sounds are to be treated merely as 'diagrams' or perceptual aids, from which the mind can be led to grasp on the intelligible mathematical principles that perceptible movements may imperfectly exhibit" (p. 53). In *The Republic* 2.1 530c-d, we can see how the magnification and manipulation of small intervals relates to compression. These two meanings both manifest in La Monte Young's musical practice. While a noisecian like Masami Akita sets up his laboratory at the edges of chaos, Young,
as a minimalist composer, deigns to direct attention to the smallest units and almost "static motion" at the horizon of perception. Particular arrangements of small intervals take focus because, according to Young, these smaller intervals can be arranged—composed—in such a way that these small, or compressed, intervals resonate higher orders of harmonics. On the one hand, Young and Plato share an affinity for mathematical theories of harmonics. On the other hand, Plato's treatment of the pyknomata in the Republic suggests that Young's entire oeuvre, a singularly focused exercise in treating the smallest intervals, or microtones, as units that can be arranged to measure, is in vain, or at the very least, useless. In chapter 4, we will place a magnifying glass on Young's harmonic practice, as he works it out in his *Dream House* installation, as a way to map and query his peculiar and instructive treatment of rhythm.

"Motion," Socrates said in the *Republic* 530c-531c, "presents not just one but several forms, as it seems to me. A wise man, perhaps, might be able to name them all, but two are quite obvious even to us," harmonic form and astronomical form. What seems to get under Socrates' skin is the way that the *harmonikoi* (often mentioned scornfully by Aristoxenus, for other reasons) "measure heard concords and notes against one another, and so to labor to not purpose, just like the astronomers" (p. 55). "Their behavior," Socrates continues, "is quite ridiculous, when they name some "pyknomata," and incline their ears as if hunting out a sound from next door." Of course, we are laughing now, and Socrates keeps spinning. He continues, this time in a way that no doubt suggests a practice and path that must in some way or another connect the figure of the pyknomata with the various forms, practices, and theories that I suggest here relate to Aristoxenus' *protoi chronoi*. When we find high resolution discourse, in Greece and
elsewhere, querying the form and function of resonance and movement, we find a compelling lacuna, to say the least. In a manuscript....The rhetoric of the cut, of the "infinitessimal," shares certain features with ecstatic testimony of the saints, the Sahara songs that transmit Tibetan Buddhist ideas about *sunyata*, and other noetic media. These rhetorics, much in the way life on earth emerges to degrade the temperature difference between hot sun and cold earth, emerge to manage or otherwise grapple with the void. Intermedia, we rely on rhythm, not definitions of rhythm.

Now, if we go along with Socrates, all of this attention to small intervals may sound "ridiculous," and the *harmonikoi* could be said to take quite a beating in this Socratic definition of movement; however, as Socrates carries on, the accretive resonance of humor propels his analogy-sequencing brings to an object worthy of our attention, even and especially today. Socrates piles on, conjuring the image of *harmonikoi*, serious-looking clowns hard at work, but to no good end. The *harmonikoi*, Socrates continues, are always obsessing over meaningless distinctions,

some of them asserting that they can still just hear a sound in between, and that that is the smallest interval, by which measurement is to be made, while others take issue with them, saying the notes sounded are already the same, each group putting their ears ahead of their mind. (p. 56)

These small intervals are no small matter for Plato, nor should they be. Because although it seems to be a desire for order that compelled the Pythagoreans and the scrupulous *katapuknosis* practice of the *harmonikoi*, there science opens up the possibility for effacious selection and recombination of nonsemantic units, for ends persuasive and otherwise.

John Cage (1937) brought his characteristic optimism to these trends to these possibilities long after Plato's time but well prior to our present movement; now, digital
technology has redefined creative production. John Cage in his work “Future of Music: Credo” in Silence, states:

The composer (organizer of sound) will be faced not only with the entire field of sound but also with the entire field of time. The "frame" or fraction of a second, following established film technique, will probably be the basic unit in the measurement of time. No rhythm will be beyond the composer's reach. (p. 5)

Who is the composer in this infinitessimally perforated rhythmizomenon that Cage predicted and in which we are now immersed? One google query will show that science and marketing share interest in such questions about resonance. There is rhythm to the way these communities cluster, as well, and future research will collate and display these patterns. The “off-topic” nodes in a discussion forum are just one sign-post pointing out the crucial role of gaps, noise, and affect play in writing today.

John Collier and Mark Burch (1998) introduce rhythmic entrainment to describe emergence of regular, predictable patterns without or between systems. Rhythmic entrainment realizes symmetries of information by means of negentropic sharing and production of information. Collier and Burch offer this perspective to researchers in physics, chemistry, biology, measurement and communication, which suggests uses for writing instruction. Writers work with information so dense and ongoing in its generation and transformation, that the theoretical information theories of mathematics apply in everyday writing life. Writers, manage a kairotic space-time comprised of information, where "not just meaningful distinctions," but "any distinctions" take hold. In this attention economy, asignification and affect become important dimensions of community formation through writing. Collier and Burch's definition of information draws from logic, physics, and communications theory, and these three disciplines have in their own ways contributed to the precising if vertiginous techno-scientific discourse that emerges
on or around the figures of rhythm, especially fluctuation, Lucretius' "clinamen," and the
eye of intermezzo turbulence itself, Plato's "Nurse of Becoming," the insterstices between
the discrete dharma of a granular ontology, the ineffible lacunae. At the same time, this
definition of information seamlessly meshes with the geneology of protos chronoi we can
trace from Aristoxenus through Bergson to Cage, whose "frame" seems to enunciate the
discontinuous and granular palates afforded by the digital medium that mathematics,
music, and the computer have brought into being.

Collier and Burch (1998) offer an assessment of the role of entrainment in diverse
discourses, and the same figure of the protos chronos we trace here also appears in their
assessment. "The notion of information places a central role in our treatment," they
explain (p. 1). The basic idea of information is that of a distinction between two things. In
standard language, the notion is restricted to recognized distinctions, or at least ones that
are in a position to be recognized, but information theory, as it has developed in abstract
mathematical form, does not restrict itself to just meaningful distinctions, but to any
distinction. This idea has three roots:

(i) logic, which can be traced back to Leibniz at least, but reaches its fullest form
in the algorithmic complexity theory, which gives a measure of information in
terms of the minimal number of distinctions needed to identify something
uniquely, (ii) physics, going back to Maxwell and his demon, but expressed more
clearly by Szillard (1921), Schrödinger (1946) and Brillouin (1962); and finally
(iii) communications theory, due to Shannon (1949) (Collier & Burch, p.2).

Here, Collliler and Burch open up another geneological vector of the protoi chronoi. On
the one hand, it could be argued that such geneological work would reduplicate the
conceptual lacuna that constrains and fosters this voluminous discourse, one that relates
to diverse metaphysical considerations of writing. On the other hand, inquiry into the
function of the smallest cut increasingly shows the role of rhythm in the spontaneous symmetries that surprise us amidst the chaos.

The conceptual space opened in such a scholarship will create new openings in exigent enjambements of our sciences and technologies where they intersect with our efforts to write with our students, particularly on the politically fraught issues impinging on teachers' ability to work with the premises of the evolution in formal educational contexts. Future research and writing-intensive courses could yield fruit by scanning the history of particularly technologies for the rhythmic dynamics of the rhetoric and discourse that emerge around the question, “Who is the composer?” on systemic levels.

Indeed, as Prigogine and Stengers (1984) explain,

In biology, the conflict between the reductionists and the antireductionists has often appeared as a conflict between the assertion of an external and internal purpose. The idea of an immanent organizing intelligence is thus often opposed by an organizational model borrowed from the technology of the time (mechanical, heat, cybernetic machines), which immediately elicits the retort: “Who” built the machine, the automaton that obeys external purpose? (p. 174).

Experimentation with the rhythms that emerge in chaotic wikis allow writers to actively work with perennial questions, even in “mundane” technological contexts.

Lacunae and Resonance Technologies

Call and response and pattern-sharing become essential elements in investigative and persuasive domains as we move from the paradigm of the author to the stigmergic paradigm of distributed writing subjects brought into being in resonant domains in the commons. “External fields, such as the gravitational field,” or we might add, any rhythmizomena isolated or brought into being by our spheres of perception, “can be 'percieved' by the [whole] system, creating the possibility of pattern selection,” explain Prigogine and Stengers in *Order Out of Chaos* (1984). (p. 163). Furthermore, as Eisner
claims for any sequential art, the durational aspect of selecting and mixing larger patterns presupposes and depends on the gaps, the rests, the blank, empty holes of the patterns selected. In “Forerunners of Modern Music” John Cage (1949) wrote “the material of composing is sound and silence. Integrating these is composing” (p. 62). A composing practice built on this premise will undoubtedly involve restraint, detachment, and understanding of the relationship between creative production and sacrifice.

The liner notes from Impulse record's recent repackaging of John Coltrane and Rashied Ali's interstellar space take 7, in drawing our attention to the unrecorded or “unwritten” as we listen to the transduced performances, the Coltrane/Ali entrainments that made it to the magnetic tape. "A fragment of music form the engineering sound check and two false starts (-4 and -5) of "Jupiter Variation" appear before the start of track 1. Rewind from track 1 to hear them. These fragments are previously unissued. This language of the lacuna is here inflected with the idiom of engineering. The liner notes become technical documents, instruction sets or how-tos that again illustrate that the noetic and ineffible induce production of language. The interest lies in the locus of their emergence as lacunae of a particular resonance technology, magnetic recording tape.

Master numbers were assigned to only three of these six pieces. Take numbers, per Van Gelder's system of assigning one continuous sequence throughout a session, show the actual order in which the pieces were recorded. Take 7 was apparently not assigned. (emphasis added). (Liner Notes to Interstellar Space compact disc)

Take 7 is, essentially a lacuna. Emphasis added. The category of "resonance technologies" introduced here emphasizes an affirmative and creative role to gaps, rests, silences, "empty particles," void, and other concepts and practices that can easily drop into formulations of sunyata.
The *Oxford English Dictionary* charts five commonplace uses for the term lacuna:

[a. L. lacum a hole, pit, f. lacus LAKE n.4 Cf. LACUNE.]

1. In a manuscript, an inscription, the text of an author: A hiatus, blank, missing portion. Also transf.

2.Chiefly in physical science: A gap, an empty space, spot, or cavity. a. gen.

   b. Anat. ‘A mucous follicle; also, a space in the connective tissue giving origin to a lymphatic’ (Syd. Soc. Lex. 1888).

   c. Anat. One of the small cavities in the bone substance which contain the bone corpuscles or osteoblasts (Syd. Soc. Lex. 1888).

   d. Zool. One of the spaces left among the tissues of the lower animals, which serve in place of vessels for the circulation of the body fluids.

   e. Bot. An air-space in the cellular tissue of plants, an air-cell. Also, a small pit or depression on the upper surface of the thallus of lichens.

Acts of sharing consciousness such as those effectuated by sharing samples/swatches/tags are processes best compressed rhythmically. As the art of good timing, or *kairos* becomes inflected by just-in-time conciousness of the commons, amplified by wiki into a “recent changes” state of mind, the art of selection begins where we place our attention and attract the attention of others. Participation is the only hack on distributed attention. Therefore, the phonograph-cum-writing machine known as the turntable, and the multitrack cassette recorders, technologies that artists have used to participate in and produce the powerful experience that Nietzsche also named rhythm. In Book II.84 of *The Gay Science* Nietzsche (1974) discusses the “elemental and overpowering effect that we experience in ourselves as we listen to music,” and
turntables, sequencers, and cheap cassette technologies have played a part in the play of rhythm's powerful effects across and between different media, or, as Aristoxenus would say, *rhythmizomena* (p. 138). DJs mix disparate sounds to move a group of dancers in real time, but at first glance, tape technology seems to move much more slowly. We can at least concede that multitrack tape recorders are like a personal computer in two ways. First, you can program it for business or tune it for pleasure; in both scenarios, the protocols of selection (reading and writing) are the same. Second, what you render with your selections depends on what you fly in on top. Musical tools of composition have been around for a long time, and pop songs, commercial jingles, and Hollywood soundtracks barely scratch a shaving of the global historical musical bandwidth. But recently, analog and digital tools for selecting, combining, tuning, and rendering media have made these templates available to the commons again. Indeed, you do not have to become an engineer in order to record cool sounds—as we learned in the Freesound assignment, discussed in full in chapter 2, the resonance is the composer *all the time* in the medium of sound because writers can divide the tape into 4 parallel lines. Now, composing with sound is not a prerequisite rite of passage for learning how to develop rhetorical dance moves for moving with the infolanche. But some of the fundamental gestures of filesharing are best felt in sound, and feeling is important in an infodynamic ontology. Music and technology - including emergent sound technologies and tools that have been with us for some time, now—let us rehearse and perform these gestures: and, along with some rhetorical and affective programming, groups of people can learn what it feels like to write with filesharing protocols; what controls to use and in what sequence.
The rhetorical art of anticipation, or *prolepsis*, helps rhetors find their rhythm in the patterns of information they surf on the web. Practices of rhythmic patterning first noticeably got mixed up resonance technologies when DJs in Jamaica, and then the Bronx, began to sample and rearrange instrumental breaks on already-pressed records. By the 1980s push-button sound sequencing technologies emerged, and these samplers make it easy to see how these practices, which Alexander Weheliye (2005) aptly names practices of “Sonic Afro-Modernity,” anticipate the ways that reading rhetorically in dynamic and distributed ecologies of writing emerge today. When computer users collectively and actively interrupt and rearrange the sequences of information (ideas, narratives, discussions, arguments) comprised of sound, text, and image, they are beginning to write rhythmically. In order to cultivate a joyful process (anticipated by Nietzsche and recorded to tape by Funkadelic one century later) of simplifying, compressing, and tuning dynamic and abundant information, interlocutors must first learn how to share sequences of information ("I see your sequence!") and maintain attention on sequences for practical durations. Perhaps most importantly, sequential artists must also learn how to play the gaps. Graphic artist Scott McCloud (1993) recently took to calling these narrative gaps in sequences "gutters," in a different context, in *Art and Illusion*, art historian E.H. Gombrich calls this space the "beholder's share" (*Art and Illusion*, p. 182). Indeed, the DJ's scratch is not mere ornament: cutting sequences of sound can maintain musical flow, divert and reroute swatches of sound, and even interrupt sound so as to create the beholder's share, the between-space where collaboration and transformation can take place. What can composition classrooms learn from a genealogy of sonic sequential artistry? Working with wiki, we learn that
sequential artistry has precedent in sonic resonance technologies. What particular ethics of participation emerge when writers combine resonance technologies? What hacks do they provide for creating a commons?

In an interview first published in the Italian publication *Famiglia Cristiana* in 2001, Will Eisner, the artist credited with coining the term "sequential art" said this about the nature and range of the openings afforded by sequential art's elemental cutting gesture.

The blank spaces between images, when properly employed are not blank. They are abstract elements of time and space in which imagined action connects the images. Remember sequential art functions without sound, or motion. The sounds, the motion, the dialogue, the emotion the artist creates on a page are meant to be perceived by the reader. (http://www.willeisner.com/shoptalk/shoptalk4.html)

Suddenly and obviously, sequential art needs subsonic feedback before there can be any audible sound. If we can be slightly "precise on" Eisner's sense of comics as a "soundless medium," we can see that the blank spaces resonate, resound, and reside in "the spheres of sensory perception" that Hindu philosophers named *bhuta*, or "elements," in Alain Danielou's (1967) translation the term. These elements are not to be understood "in the sense of elementary matters...but rather...the subjective elements by means of which we construct, for want of better information, the idea we have of the external world" (p. 20). Gene Youngblood (1970) noticed that "in the cinema, feedback is possible almost exclusively" in the beholder's share, where

the viewer is forced to create along with the film, to interpret for himself what he is experiencing... information (either concept or design) reveals some previously unrecognized aspect of the viewer's relation to the circumambient universe—or provides language with which to conceptualize old realities more effectively— the viewer recreates that discovery along with the artist, thus feeding back into the environment the existence of more creative potential, which may in turn be used by the artist for messages of still greater eloquence and perception. (p. 65)
While Youngblood seems to offer this language to name the fluidity of content and even identities that emerge in the very act of perception (schema and correction) in "commercial media," he in fact imagines a fluidity of design that only emerges through high frequencies, through feedback in larger ensembles of shared bhuta, which are, essentially, shared beholder’s shares, if we take Gombrich's beholder share in its active, creative sense. The beholder's share is shared when discontinous and sequential media become immersive, as when wikis go recursive. The art of interrupting sequences and nested patterns distributes and nests the beholder's share.

Eisner focuses exclusively on the form of a synaesthetic mode: sequences depend on the space between panels, and the gaps in a given sequence. But what happens here? What could happen? These between-spaces are not the dematerialized vacuoles abstracted by electro-cartographic technologies of data visualization common to medical technology, rather, they are spaces delineated intensively as a multitude of forces (http://64.233.187.104/search?q=cache:vQWAVRGwo6IJ:www.math.yorku.ca/SCS/Gallery/milestone/milestone.pdf+n+electro+cartographic+strip&hl=en&client=firefox-a ). In digital ecologies that distribute and "synaesthecize" such forces and our very sense modalities as well (Rotman "digital mathematics"), is it efficacious to say that sequential art functions without sound or motion? Here, I would like to to suggest that a progymnasmata of digital literacy must synaesthecize form (tech assemblages) and content (sound, vision, olfactory, and beyond) in order to learn from both emergent and archaic practices of sequential interactivity. Synaesthetic modes of reading and writing, if shared in a common sphere of perception, produce complexity that an art of sequencing emerges to cut, shape, arrange, ariate, and fertilize commons space. In another context, it
will be fruitful to trace a rhythmic genealogy of sequential practices; meaning, I will trace
a distributed sequentiality, with an emphasis on the ways that the immersive medium of
sound has, curiously, always been a "special effect" for sequential artistry. Aristotle's
"supplement," raga's "ornament," and the shamanic science of ordering chaos by
sequencing refrains known as *icaros* are just a few archives that will support the collation
of these precedents that teach the necessity of inhabiting disorder for durations that allow
available order to emerge.

In *African Rhythm and African Sensibility*, Western scholar John Miller Chernoff
(1981) narrates his attempts to learn African apart-playing. What emerges in his
description is a participatory sonic sequential art where

> apart from simply learning to maintain their rhythms, the most difficult task the
students faced was learning to continue to maintain their rhythms. A rhythm
which cuts and defines another rhythm must leave room for the other rhythm to be
heard clearly, and the African drummer concerns himself as much with the notes
he does not play as with the accents he delivers. (Chernoff, p. 60)

Like these participatory and sacred recipes, four-track compositional scripts start with
zero and proceed to one, via repetition. Repeatedly transitioning, reduplicating,
chorusing, accelerating, but also decelerating, juxtaposing, jump-cutting, splitting, and
also, perhaps most importantly, stopping and abiding in the lacunae of timelessness that
perferate the dynamic mesh that wyrs weave when we affirm their irrational penumbra,
these gestures denote the laya of dynamic wiki gatherings, and the laya of four tracking,
as well. Time is experienced in both its serial and parallel forms. Because of this, both
four-tracks and wikis produce "programmable" experience in the sense that cyberspace
pioneer Timothy Leary (1967) used the term.
Multitrack cassette recorders can be deployed as "disorder into order" machines, and as such, can model gestures for both symmetry-breaking and the entrainment of patterns in wiki. At first, the idea of a sonic "writing pad" that allows writers to record, mix, and overlay disparate (any), complex information streams may induce panic: overload of information overload. However, 4track technology comes equipped with well-defined and productive limits, and 4track functionality fosters gestural and repetitive movements: press record, press stop, press play, press stop, switch tracks, press record.... Repeating and rhythmizing these gestures yields dramatic and unforeseeable transformations, juxtapositions/counterpoints/overlays, recursive movements, split signals, and feedback loops, and much more. Indeed, 4tracks can produce fascinating experiments in stochasticism, and in such multitracking experiments, chaos registers forcefully. At the same time, most 4tracks feature a "zero return" function, usually a button labeled "RTZ." Press the RTZ button, and the tape will rewind, automatically stopping at the zero counterpoint, which can be set and reset at any point on the tape. One press of a button can bring you back to rest. Crucially, zero-stopping creates openings, lacunae for distributed ontologies of production, because these simple "resting points," or session-ending gestures allow weaving strategies to emerge and code and programming to appear from elsewhere. Semiotic in graphic fiction Scott McCloud (1993) dubs these lacunae the "gutter," the space between frames where all the action is, the "beholders' share," even a commons of the Mind-At-Large that collectively and differentially stitches together fragment with fragmen.

Rendering a sharable "burn," a mixdown that becomes available to the commons for further repetitions, listening, and reappropriation, becomes in some situations an
imperative, in others, a ceremony. When we translate this model to wiki, with its emphasis on the imagining and actualizing of links, session-closing rituals become sharing gestures, movements towards and with the source of the rhythmic and connective elements that sustain sonic experimentation, the commons of the wyrd. So the 4track model encourages experimentation with information in a highly compressed form (the medium of sound), but, like Leary's experiential typewriter, this model operates by means of simple and gestural limit-functions that forestall solipsistic habits.1 In practice, four-tracking promotes the impulse to share in two simple steps, both bound to the receptive art of listening. First, the infinite potential for information proliferation and overlay afforded by multi-tracking "dislocates" and depatterns the authorial self. Second, gestural and repetition-based operability patterns this becoming-multiple effect, an effect endemic but not exclusive to multitracking. Actively listening via repeating and zero-returning tape on a spool closely resembles the reading and writing protocols wikis sprout into being. Wiki creates openings in fields of potential links, thereby turning and tuning complexity towards connectivity and interactivity. Cassette-based rhetorics of transduction, mixed with wiki, produce rhetorical softwares for the cultivation of intuitive receptivity. Such rhetorics can induce early-and-often "renderings," both as a regulatory technique, and, as a positive feedback mechanism, its own reward. By means of these rhetorics, wikis wind and unwind wyrd threads like so much tape on a spool, and "existing designs can be expanded into new forms," as in any tradition of troping, such as the tradition of "wyrding" described by Arlea Ædelwyrd Hunt-Anschütz in "What is Wyrd?" (http://www.wyrdwords.vispa.com/heathenry/whatwyrd.html). In the digital vocabulary built into digital multitracking softwares such as the proprietary ProTools and
similar open source digital audio workstations (DAWs) like Ardour and Audacity, such
"renderings" involve "bouncing" 24 bit multiple mono sound files into 16 bit stereo
interleaved files, which can be read by cd players, and can also, unlike 24 bit files, be
compressed into ever-controversial and high-velocity .mp3 objects breaking the
intellectual property barrier on the transmission of information, files that are much more
connect-able than 24 bit sound files. The rhetoric of these gestures and the history of
sound-recording technologies provides many narratives detailing diverse enterprises of
managing and making sense of information.

Psychedelic experience, as legions of sacramental users have found since, yes, the
beginning of time, both defy adequate experience and call forth a torrent of discourse
responding to it. Psychedelics acted as a kind of chemical weapon of the emerging
counter culture and have been treated as a weapon of mass illumination by the Drug War.
Can the inexhaustible, ineffable experience of rhetorical interaction summoned by a
blank page opening itself to rhetorical commons of a superorganism, Gaia, Earth, help
grow a cultural response to our current impasse in the *demos, ecos*?

While the filesharing subjects who enroll in our writing-intensive courses are
already connected in distributed networks, "moist pulsating patterns" of work and play,
the script they bring to class is nevertheless heavily imprinted by individuating and ego-
nourishing strategies of persuasion based on agency. A pedagogy tuned for individuated
writers on the verge of advanced communicative performance (advanced imprinting with
scripts and instructions for tuning writing behaviors to an evolutionary scale (that is,
rhetorical) looks for ways to collectively navigate the difficult leap from writing alone to
writing in rhythm.
Here, we begin, again, to weave an analogy to wiki at the nexus of two lines. Neurobiologists draw a spatial line; a longitudinal fissure between right/left hemispheres of the brain, rendering what Timothy and Joanna Leary call, in *Neurologics*, a prison writing put to paper in 1973 but finding wider distribution on the web today, the "dexterous" hemisphere and the "silent" hemisphere. The Learys effectively superpose an attractor/oscillator model over this bi-lateral physiology, arguing that "nature, while extravagant in experiment, is always parsimonious in structural efficiency and would hardly have designed the most complex of its biological constructions--the human brain--so that half of its neural potentialities remain unconscious and unused" (IV-4). When the Learys posit our ability to make new connections and mixtures across hemispheres, they introduce another bright line, this time, a passage in the evolutionary and temporal sequence of neurological development, the threshold between "space consciousness" and "time consciousness." It is important to note that many empirical neurological metamorphosis techniques (rhetorics, yogas, and other means for altering and sharing forms of consciousness) emerge at this nexus (point? intersection?), between the 4th and 5th degrees of difference on a scale of eight, a degree of difference that emerges between the physiological symmetry of the brain. Weaving the warp of these lines to the woof of writing: what a wiki does.

While "the first four imprints are concerned with the mastery of space," advanced imprinting develops a focus on "time imprints and time conditionings," which "involve new categories and dimensions." Likewise, from the perspective of the information adept with no direct experience and rehearsal with the metamorphoses concomitant to rhythmic production, the collective navigation of the space/time of writing (wiki infinity) will
necessarily introduce new categories and dimensions. Rhythmic traditions provide templates, code books, and scripts for learning new categories and navigating new dimensions of writing. Wikis, as pedagogical adjuncts, facilitate experimentation with these templates towards the cultivation, refinement, and sharing of rhetorical strategies, or, in the argot of *Neurologic*, "advanced imprints." These advanced imprints are both necessitated by and derived from the collective experimentation and navigation in the space between space consciousness and time consciousness that wiki makes available.

Here, the analogy between psychedelics and writing itself is subject to an advanced imprint, which, from the perspective of the spatial consciousness, involves the radical distribution of that consciousness. The "neurological metamorphosis" that "opens up the possibility of another more advanced series of imprints and new conditioning circuits not designed for physical and offspring survival in space" creates the conditions for the emergence of "a more complex form of consciousness and communication" (*Neurologic* IV-4) The Learys' examples of advanced imprinting, derived from psychedelic science and yoga, offer ways to orient spatial consciousness when we begin to overlay new "forms of consciousness and communication" over neuroscience's hemispherical fissure, and rhythmically entrain dexterous and silent spheres. In a similar way, teachers hoping to orchestrate collective composition in wikis can translate models of rhythmic entrainment into recipes, scripts, and rhetorical sequences for creative production.

Such rhythmic rhetorics, in principle, derive order from uncertainty, even though they freely mix the "polarities of space consciousness" with the nonsemantic play of forces sustaining time consciousness (Leary & Leary, 1973, p. 21). Between polarities,
signification and asignification, sense and nonsense alike are cut and mixed into pragmatic compositional units facilitating creative production with text, images, and sound. When the dimensions of shared compositional space become subject to complex time imprints such as those that mark the dimensions of experienced time within the nervous system, we find ourselves in a compositional ontology of rhythm, where the "intensity of signals, quality of signals (frequency and pattern), and the duration of signals (rate of change)" characterize the "noise" and mark the flux, and thereby induce our becoming transducer (Leary & Leary, p. 21). In order to describe this "turning about in the seat of consciousness" (Govinda), and emphasize the fundamentally energetic and nonsemantonic nature of the time dimensions of experience that nevertheless feedback with polarized consciousness, the Learys employ techniques of repetition and asignification derived from the Buddhist Paramita Sutras:

It must be stressed that time consciousness does not use the polarities and value categories of space consciousness. There is no right or wrong, no coercive or helpless; no competition, no words, no strivings, no fears, failures, successes, dangers; no incessant lusts, no inhibitions. There is simply energy in various intensities, durations, qualities, patterns: signals to be prolonged, changed, selected and then harmonized with and used to enrich the polarized experience of space consciousness. (Leary & Leary, p. 21).

*From Communication to Commons-formation*

In the liner notes to *Meditations*, John Coltrane (1965) said,

once you become aware of this force for unity in life, you can't ever forget it. It becomes part of everything you do. In that respect, *Meditations* is an extension of *A Love Supreme* since my conception of that force keeps changing shape.

During 1965, John Coltrane's musician collectives regularly and seemingly summarily summoned a spectacular resonance. Any recorded performance testifies to this, pick any one, dial zero, and listen. For example, listen to the performances of "Nature Boy"
transduced to tape during recording sessions that took place on February 17th and 18th, 1965, where Elvin Jones runs through tom-tom sequences, while simultaneously bringing a splash of cymbal in a different "laya" with McCoy Tyner's halting/lurching piano vamps, vamps that in turn seem to lead Jones' kick drum, meanwhile, bassists Jimmy Garrison and Art Davis play tag on bass, running busy circularities around each other in the higher registers of their heaviest strings and the lower registers of the lightest strings, peeling openings for Coltrane's sax to weave through, disappear, reappear, and radiate.

When Coltrane's ensembles sampled from Eastern sacred traditions, they remixed the jazz ensemble playback format, troping it towards one of the oldest genres of information compression, the mantra. *A Love Supreme*, "Evolution," "Cosmos," *Om*, and *Meditations* are at once information compression algorithms and, at the same time, a sequence of sonic snapshots that regulate and transduce Coltrane's cosmic "force of unity," which, nevertheless, like Shiva's dance, always changes--a force that sacred and shamanistic practices of rhythm have always emerged to manage and make share-able.

The rich harmonics and affective penumbra produced by mantric formula such as *Om* opens up more than...well, more than words can say, semantically speaking. This "irrational" quality provokes our deepest feelings and makes it necessary and possible to resonate with others: it solicits sonic intelligences into being, and calls for rhythm. Coltrane's technoshamanistic ensembles continue to provide a model for diverse media ecologies moving from communciation to commons-formation, and as such, can help us tune in on the role of rhythm in diverse aspects of technocultural production. Jazz has always mixed idioms; increasingly, the discontinuities of digital culture facilitate asignifying mixtures of sacred, secular, and profane technologies. At the same time,
Coltrane's sonic science, AfroFuturism, and other evolutionary discourses anticipate and emerge in digital attention economies to describe the evolutionary dynamics of these very rhythms of commons-formation and "becoming transducer."

Writing to each other is all we need to do to form a commons. Teaching causal argumentation used to be the hardest thing to teach, in my experience. Patterns run wild and counter explanations seem inexhaustible, inducing what sociologist of science Steve Woolgar (1988), in *Science the Very Idea*, calls “the methodological horrors, an inventory of the ways in which attempts to effect connections between representation and object can go wrong" (p. 32). The "mixmaster blog" exercise runs headlong into the representational funhouse: scattered causal blogs are gathered together on one wiki page. The resulting "salad" of claims breaks the negative feedback loops that haunt "strong" causal argumentation. In the disarray of the mix, students can nevertheless see gaps in the cuts and revisit the pages that brought each claim to the wiki, and this recursion prompts more writing and linking as the nested, broken, and the possible causes, compressed into one strand of the wiki *rhythmizomenon*, call writers to amplify the new patterns, and make the explicit. The “mix master blog” assignment reduced anxiety about possible causes and encouraged development of causal patterns because the mixed-up mess prompted the smallest acts of "fixing it in the mix," and these indirect movements, focused on one page, let students easily trace order out of similar but different claims that are usually spread across different segments of the class' wiki collective wiki presence. The coherence that emerges seems to come out of nowhere, at the same time, participants learn to the art of parsing causes by inhabiting and working with the redundancy in causal frequencies. This teaches structure and *topoi* of argument, but also, and this is more
important now than ever before, teaching the listening and restraint necessary to the timing, tempo, and even the rhythm—not just of causal arguments, but all manner of patterns of persuasion on the worldwide web. Basically, mixing together strands of argument brings writers together, and gives them the necessary to space to teach each other, in text, what peer-to-peer software makes plain: not only does writing happen online, it happens in common online.

In this way, wiki is a resonance technology like Napster or Limewire, but without the file swapping. Limewire makes it quite easy to tune into the real and ongoing material practice of filesharing. If you have never been there, go to Limewire and test the software. You will notice that you can see what is being downloaded from your computer, as it happens. This being-together defines the filesharing demographic, and shows you that your are in a commons. Recently, the You Tube phenomona has shown that the patterns and not the files are the more “compressed” protoi chronoi for rhetorical practice in the commons. You Tube has emerged as an unexpected commons phenomena. SlyckScratch provides this precising definition of You Tube at Slyk forums: " Riddle me this: what do you get when you combine a nifty little piece of Flash software, some backend mojo, an army of cellphone-toting teens, and one "Lazy Sunday" clip? The answer is, of course, the largest online video streaming service on the planet, YouTube." (http://www.slyck.com/forums/viewtopic.php?t=22190). Here, SlyckScratch is responding to an article considering the fair use possibilities You Tube avails to the just-in-time practice of teaching in wiki. Medicine Films, a smaller community of videographers also using the streaming and tagging model, have even built an
“assignment” feature into their flash interface as a way to solicit the sort of resonance that comes from aggregate attention, that is to say, the commons.

These “assignments” no doubt depend on more than the select/mix/render kernel of the commons, they require a rhetorical sensibility of movement, a knack for moving with and concatenating shifting technologies, the sort of training that bitorrent necessitates: clusters of users share what they know and decide how and where to go next. And they illustrate just one of the ways rhythm becomes necessary in a writing pedagogy that aims to get in sync with commons cultures of writing. In the 1930s, John Cage (1937) anticipated that

Methods of writing percussion music have as their goal the rhythmic structure of composition. As soon as these methods are crystallized into one or several widely accepted methods, the means will exist for group improvisations of unwritten but culturally important music. This has already taken place in Oriental cultures and hot jazz. (p. 5)

Of course, Collier and Burch's (1998) nonsemantic "any distinction takes hold” principle applies in the willy-nilly loosey-goosey spaces of You Tube and Medicine Films, which nonetheless operate according to the simplest of rhythmic gestures, sample, mix, and render. What we cannot forget, however, is that when teachers and students in institutional contexts attempt to transition from rubrics of “file sharing” and “piracy” to pattern sharing, a second order is sometimes required to make the initial connections between patterns. Indeed, these metacommunicative strategies often take place in text form. Writing is the glue, akin to what, in Science in Action, Bruno Latour (1987) called the “obligatory passage point” in scientific knowledge production (p. 245). Wiki is the resonance technology that allows clusters of writers to form a commons with words, images, and sound.
All of this creative practice takes place “just in time” and, as such, is rhythmic, not metered. For this creative practice to even have a chance, the patterns, again, must be available. Open not closed. In a recent article, "Citation Advantage of Open Access Articles," Gunther Eysenbach (2006) quantifies and explains how "articles published as an immediate OA article on the journal site have higher impact than self-archived or otherwise openly accessible OA articles. We found strong evidence that, even in a journal that is widely available in research libraries, OA articles are more immediately recognized and cited by peers than non-OA articles published in the same journal. OA is likely to benefit science by accelerating dissemination and uptake of research findings" (http://biology.plosjournals.org/perlserv/?request=get-document&doi=10%2E1371%2Fjournal%2Epbio%2E0040157 ). Put simply, it is easier, or “more compressed” to create timely and persuasive patterns with available means than with smaller units under lock and key. Forming into clusters by means of sharing and tagging (describing in a compressed way). The protoi chronoi of the infoquake are tags, and playing tag is rhetoric's new favorite game. No longer as concerned with the copyright status of file objects, students and teachers are free to write with the rhetorical practices and content that the commons generates continuously. In this way, the art of sampling once again appears as the fundamental gesture of the peer-to-peer rhetor. Those who seek to define sampling simply as promiscuity and piracy risk recapitualating the deleterious effects that stem from the historical tendency in the West to privilege the visual over the aural; namely, the unfortunate effect of not listening, and therefore not noticing all the rest of what happens when we try to communicate, in the flesh or online.
Mixmaster Blog, then, is really another freesound assignment, in that it is designed to find out about the rest, the energy and enthusiasm that writers often have trouble sharing in institutional contexts that seem to solicit a very specific and circumscribed subjectivity. In class, a chemistry student brought the image of "Newton's Grocer" to class the day we were orbiting around the very idea of invention in postnormal science. At first, the follow-up wiki thread showed no trace of the chemist's work-a-day metaphor, which crystalized the image the class was painting of today's scientists and technicians: anonymous, individuated. Discussion spilled onto a wiki space, which made space for another student to recall and reintroduced the chemist's trope:

Back then' these discoveries seemed to be more qualitative. 'The earth moves around the sun'. That I can understand. Now go to something like JAMA or Pubmed and just read some of the article titles. I can't even get through a lot of those without backtracking a few times. So maybe it is a more fair comparison to say Newton's grocer, or to give ourselves just a little more respect, his neighbor chemical engineer or clinical psychologist (http://uniwikis.la.psu.edu/englishcomp/lostbookofrhythm/DoesPurposeTimeEnergyLIFEfitInSomewhere).

Early in a wiki itinerary, when the weaving has just begun and the wiki's resonance is just beginning to register in the spheres of perception, students present a wide range of responses. Students write in response to each other as well toward problem-solving endeavors. Unlike the apriori scripting and writing for judgment by instructors, students write in response to each other, modeling likely workplace writing. But there's more to what makes wiki work....this space also becomes the scene of a discussion about the technology and reading, and revealed different assumptions about technology and history, and different ways to map out a causal claim. Quite unexpectedly, the question "Does technology make us lazy?" attracted attention and sparked debate. Very quickly, once the "intertwingling" hits a certain threshold, the responses become tuned towards the
uncanny wiki; responding to wiki resonance feels more like responding to the resonance summoned by a performance with a pronounced tone, like making an offering as John Coltrane does in his "Offering," a flute duet with Pharoah Sanders, and less like "submitting" your paper to a content management system drop-box. When students make this a daily practice, they make rediscover again and again that the resonance is the composer, and these discoveries are akin to what Philip K. Dick (1981), in the Cryptica Scriptura tractates appended to *Valis*, calls "salvation through gnosis" (238). The history of ideation in the arts informs these movements of technological and community development. We can continue to learn from these processes of discovery and invention in sound because sound and technology have intersected in ways that anticipate and participate in this expansion of rhetorical practice.

*Sacred Art of the dj*

Just as open source has pushed software development into a collaborative frenzy of cluster-forming and file-sharing, the production of and uses for music have shifted from the traditional composer genius to the unstructured, heterogeneous and very active hoard of listeners and “mash-up” composers. What does making music look like, today? Traditional repetitions in musical authorship, performance, listening, and technologies of instrument building have transformed in ways that distribute the production of music across diverse scenes of writing involving increasing numbers of participants. Forming a cluster, or letting a set of connections dissolve, in any medium, is, in a way literal in terms of gesture and process, musical. As these clusters compose themselves, what do they sound like? What else do these musical territories of production render?
Wiki makes it possible to experiment and write with sound (and multiple media), and out how the dj's rhetorical art of selecting and mixing might look like in writing. Emboldened, it became possible to ask: what musico-rhetorical tools have been cultivated as a way of tapping into the force of rhythm? The emergence of the sample as a fundamental writing practice, as the simplest kernel of repeatable rhetorical gesture, provides a narrative for the ways communities, many built on music, have cultivated rhythm, but higher education has yet to participate in this story of sampling, and therefore has yet to learn what the art of the sample itself has to teach us all. Rap, as Siva Vaidhyanathan rightly argues in *Copyrights and Copywrongs*, "revealed the gaping flaws in the premises of how copyright law gets applied to music and showed the law to be inadequate for emerging communication technologies, techniques, and aesthetics," the very tools for innovation that we in higher education promise our students (p. 133).

Music produces increasingly controversial examples of what sampling activates: communities build by means of sharing through rhythmic exchange of information. Even though music clients have pushed peer-to-peer and provoked the most legal controversy in the name of intellectual property, higher education has yet to ask why music pushes peer-to-peer activity to new extremes. Wiki allows clusters of writers in composition classes to learn the the history and aesthetics of gospel, reggae, jazz, hip-hop, skaldic, and all the poetic, bardic, and oratorical modes of commons formation that, in some way or another, are and have always been musical cultures of creativity and have always been part of important pedagogical practices. Sharing samples is a way to continue this most traditional approach to composition in emergent media. Sampling, the art of selecting information and placing it in new contexts and arrangements, is a practice common to
musical and textual domains now that they share the digital medium. If sampling has also become the fundamental gesture of writing in today’s rhythmic, networked intermedia, then performing and teaching the art of the sample is the simplest starting point and "bass line" for a pedagogy open to digital culture. As the most focused form and gesture of composition, the sample can focus an important pedagogical goal: to teach students ethical modes of appropriation and transformation, fair use, and participation in distributed networks of production. In this chapter, I have connected tags to the sample to emphasize the sample as a kernel gesture common to the global polyrhythmic archive. The embodied and precising chironomy of Hindustani classical music discussed in chapter 2, then, can be seen to relate specifically to the push-button sequentiality afforded by digital samplers and personal computers. Simple classroom experiments that tap into sampling consciousness create more space and delay/prolepsis rhetorics of sound teach us that making space is an ongoing practice of reading and writing. Although it might not be necessary to have students turn their computers into musical instruments so that they could learn how to write to each other, it is a simple way to do so, and it has so far yielded the complexity necessary to make further rhetorical performance necessary. Students working in common create new recipies, new mixtures of definitions, analogies, icons, evaluations, and sounds calibrated to the niche they now tune towards together. These experiments in communicative performance allowed students to take seriously the idea of resonance in technical communication, and show how resonance technologies help shift pedagogical energy from communication to commons-formation. Metagging, after all is really the sacred art of sampling.
In *The Recording Angel*, Evan Eisenberg (1987) claims that the phonograph brought sacred and secular music into the same medium, and brought traditionally partitioned modes of musical practice into a sort of mixture that I would argue describes the mixture of inertia, unbridled *ekstasis*, and emergent balance that we find in the digital commons.

With the phonograph, music of every description—sacred, secular, art, entertainment, scavenged from cultures present and past—is injected into everyday life. In terms of context nothing is sacred; all music is secular. But in its manner of performance all music is sacred, because the phonograph always plays it exactly the same way. So records bring music back into everyday life, where secular music once was, but in a manner appropriate to sacred music (p. 64)

However, here, where Eisenberg, echoing Attali, suggests that this admixture renders “stiff, slick and heiratic” what was “formerly...free, demotic, and participatory,” commons practitioners would have to disagree. First, the mixture of sacred/secular that Eisenberg’s phonograph, Attali’s repetitions, and Rose’s technologies of call-and-response each address in these different registers do not bring an utterly connected universe into being; it was already there as the “common element or medium of any possible dissociation,” as Derrida (1981) reminds us (p. 128). Second, records are files, and the common space that they help make palpable are not things; records are, in a way akin to any elements in a repetition-based practice of writing “*given as the sensible, the visible, spatial surrogate of the mneme*” that nonetheless help compose “the medium in which opposites are opposed, the movement and the play that links them among themselves, reverses them or makes one side cross over into the other” (p. 128)

As information overload produces habits of browsing, the critical reading skills encouraged by traditional curricula become even more important than ever before. To
teach students how to respond to texts with claims that they can also connect to proofs, reasoning and support for those claims, writing instructors need to engage in the ethics of file-sharing with their students. Music, while not the only territory of production that will bear out these claims about sampling and collaborative writing in networks will be instructive of the inherent value in pursuing the creative potentials of filesharing-based writing instruction, and prove to be pedagogically useful for those of us in charge of what has become an obligatory passage-point in the university setting—the undergraduate writing requirement—as writing itself expands into diverse multimedia practices. Wiki pedagogical space shifts attention to the particular transformations in the production of writing that musical practices of resonance in way enunciate, namely, how “writing” increasingly describes practices that are distributed, networked, collaborative, and worked out in relation to technologies in ways that are available to many, but at the same time are not yet practiced, theorized, and developed into educational tools and content for writing programs administered by universities. User-editable spaces that can be linked, that's all there is to wiki, at first glance, but once an entire class begins to program and reconfigure on the same wiki, under the same set of recent-changes, wiki rhetorics emerge as the spatial and visual analogue of musical rhythm, and sound only amplifies this rhythmizable set and setting. Writing, from this perspective, names a series of problems, arguments, concepts, and scenes of production related to how groups—including both artists and technicians, as well as students, teachers, and administrators, and all manner of communities who collaborate through various means to manage and produce value on/with/through information—engage in what professor of English and composition teacher Geoff Sirc (2002) would call “expanded composition.” In English
Composition as a Happening, Sirc proposes that “a new list of gerunds” could be added to David Bartholomae’s “knowing, selecting, evaluating, reporting, concluding, and arguing,” because “appropriating, sampling, copying, cataloguing, scanning, indexing, chatting, and audio/visual streaming” now describe compositional invention and elaboration just as well (Sirc, p. 19). There seems to be a need for immediate and diverse inquiry into the emergence of new modes of writing, and how to foster the same growth and development in university contexts. Such research will help link the heterogeneity of writing today to the economic and political forces recently and immediately working on writing instruction in higher education, which will certainly become interested in how to measure commons compositional practice. When we compare the innovations and democratic potential of the open source movement to the university’s various but generally nefarious responses to student activity in peer-to-peer networks, and take into consideration the pressure on English departments to produce more market-based deliverables in the form of innovative educational tools and content, especially online, it becomes easy to see the ways that we have traditionally judged and evaluated communicative performance will need some heavy remixing. But first, it will be necessary to enact the performances, starting with some sampling, and then a little mixing.

How should we teach composition and argumentation to students who grew up in digital culture, a culture devoted less to the practice of authorship than to sampling, filesharing and remixing? Sometimes, these are metaphors, and helpful ones at that. Other times, these practices must be taken literally, and must be performed in order to tune into what happens when the resonance becomes the composer. Filesharing softwares
like Napster, Kazaa, Limewire and BiTorrent have attracted so much attention because they enable illegal downloading, but rhetoric and composition must focus on the effects of filesharing on consumptive and creative practices of students today, who came of age in a digital culture and come to our universities as filesharing subjects; that is, they arrive already habituated to an attitude and treatment of information that exalts in the techne of the dj, and understand information from the perspective of the filesharer. Djs look for “original” units of information, select information, and employ techniques of mixing such as beatMatching, juggling, scratching, speed adjustment, and collage to transform the selected information into new arrangements suitable to the occasion and audience they intend to engage and entrain. Scratch, a recent documentary that focuses on the emergence of turntablism, a third wave of dj culture distinguished by its enormously elaborate and technical style of mixing, provides how-to-Dj segments that bring viewers and listeners under the hood by slowly demonstrating and describing techniques, and these experts, however passionate and obsessed with technique, hinge their pedagogy on a rhetorical premise: all Djing comes down to moving a crowd. Most writing programs still teach rhetorical performance as though such performances depend on adopting the attitude and mastering the skill-set of the romantic author rather than the Dj who depends on a creative commons and in turn shares the transformation of the elements she “downloads” from those commons. In the wake of old Napster’s demise at the hands of the RIAA, and the avalanche of individual lawsuits the RIAA handed down to students in universities nationwide, it is at first easy to see why writing programs shy away from filesharing, which became synecdoche for piracy in the wake of Napster’s demise. At the same time, however, if we bear in mind the law of unintended consequences, and follow
another thread in the post-Napster narrative—the network pedagogy saga that shows how participants in complex networks of shared information came together and wrote new open source filesharing clients in an overwhelming and global testimony to the fundamental compulsion to form a commons. Rhythm—connections and blockages of connections—allows us to get a handle on the rhetorical softwares borne out of the sort of complex emergence we find in such networks of exchange. And so rhythm presents itself as a way to diagram the tools and “politics of exergy” that emerge in these open systems out of disorder as order, in this case, in the form of peer-to-peer protocols, software, and communities. Specific writing skills and capacities for performance in these ecologies are variations on the basic, rhythmic, community-formation gestures of sampling, mixing, and sharing of information. In our techno-human post-Napster narrative, the connectivity, or what Michel Maffesoli (1993) calls the interlacing of social aggregates in “networks of networks,” can be measured, but not so much by degrees of separation between individual writers/performers but instead in the overall ambience between linked ecological aggregates and niches, the patterns of resonance that Maffesoli calls “areolar” or nonlinear space. Likewise, nonlinear thermodynamics finds in jazz improvisation the paradigm of rhythmic activity that helps us perceive the entrainment and dissipation of information systems external link. So it would seem that composition instructors can best teach students to connect up the fragments of discourse they find and produce on the web with a similar systematically rhythmic approach. This notion of using an “asignifying” practice to teach communication and writing skills seems odd at first, but it is also supporting by much recent cognitive science that suggests that cognition emerges from and is guided by affective and sensory processes. “Perfect parallelism of sound, rhythm,
and idea” make the best mantras, in Anarika Govinda’s depiction of the mantric practices of early Buddhism. Feeling is crucial, as well: “the efficacy” of mantric “formulae depends on the harmonious co-operation of form (sound and rhythm), feeling (devotional impulse) and idea, but it should be noted that ‘idea’ should not be understood as representing mere abstraction, but—as in the original Greek sense of ‘eidos’—a creative picture, or a form of experience in which reality is reflected and reproduced ever anew” (Govinda, p. 33). Sound-based practices of rhythm allow impulse, and discreet pulses to integrate and this process effectuates what is essentially a yoga, insofaras it dissolves ego. This is not a lapse into nihilism, but rather an attunement to the granularity and discontinuity of the digital commons. Here, productive ideation has not to do with preformed Ideas, but rather a capacity for stochastic processes that allow the dissolution and regeneration of Ideas, ever anew. Govinda’s templates his criteria for eidos from Tibetan Buddhist prescriptions for efficacious mantra, which are sacred words for creating and navigating vast spaces by means of repetition. According to the perspective on sound developed by Eisenberg (1987), where he distinguishes the sacred and secular according to their history but maintains a static binary of these modes even as they go into new mixtures by means of reduplication, information overload saps the spirit out of our rituals, and so it would seem that in practice, shabda (ordinary speech), which is more “noise” than “signal,” falls into entropy. However, under the aegis of rhythmic rhetorics, we can reapproach the noisy commons again and again, each passage between pharmakon as “suspect power” and pharmokon as “remedy” finds us “caught in the mixture” producing different links, different effects, different rhetorical choices—indeed, difference itself (Derrida pp. 98-99). As we engage in rhetorics of community-
formation with our students, we have more occasions to play with the sacred/secular binary Eisenberg introduces in his arguments about the effects of one resonance technology, the phonograph. Also, when our students are no longer figured as consumers (RIAA style) but as producers of value, they can participate in the Mix, as DJs who, to paraphrase Govinda, "reflect and reproduce reality ever anew" (p. 33).

Govinda's clarification of *eidos*, then, is really a troping to what Derrida (1981) calls *eidos' “other.”* The repetitions of the Heart Sutra: no thing, no perception

The pharmakon has no ideal identity; it is aneidetic, firstly because it is not modoeidetic...this “medicine” is not a simple thing. But neither is it a composite, a sensible or empirical sunthetion partaking of several simple essences. It is rather a prior medium in which differentiation is also produced, along with the opposition between eidos and its other; this medium is *analogous* to the one that will, subsequent to and according to the decision of philosophy, be reserved for transcendental imagination, that “art hidden in the depths of the soul,” which belongs neither simply to the sensible nor the intelligible, neither simply to passivity nor simply to activity. The element-medium will always be analogous to a mixed-medium. (p. 126)

In a the mixed-medium of the commons, new cultures of work and play will continue to create and revise novel ecologies of communication.

*Delay Tropes: Counterpoint, Ricochet, Amplification, Repetition*

The gestures of beatmatching common to DJing, collaging with tape, cutting and holding time in Tala percussion, the oratorical dexterity of rap and skaldic, and heterodyning high frequencies with analog circuits all depend on the art of *prolepsis* and the art of delay. Getting in front of and falling behind the beat is elemental for commons-formation.

Thermodynamicist Stanley Salthe (2003) theorizes a crucial role for delay, and "holding" (yoga's restraint, the *kala* of holding open) in the measurement and production and description of information in far-from-equilibrium systems. Salthe develops a
particular definition of information as a measure of exergy. “Information is any configuration that might have been different, providing that it delays energy dissipation so that the energy is dissipated more completely”

This calls to mind Derrida's (1981) emphasis on the impossibility of exhausting the pharmakon. Because delay forestalls the creation of new configurations, it can be effaciously deployed to create more shared space.

This reason alone should already suffice to prevent us from reconstituting the entire chain of significations of the pharmakon. No absolute privilege allows us to absolutely master its textual system. This limitation can and should nevertheless be displaced to a certain extent. The possibilities and powers of displacement are extremely diverse in nature, and, rather than enumerating here all their titles, let us attempt to produce some of their effects as we go along, as we continue our march through the Platonic problematic of writing. (p. 96)

Again, in infodynamic space, whether ye be pundit or Pandit, being right is less useful and persuasive than timing the dissipation of energy or information in a given context. Therefore, heuristics enter into the play of rhythmic participation. Such participation jams the over-parsing and all the dangers of answering only to the perfect alignment of what Danielou calls the comma. Like the pause in a sentence, a comma can also be said to take a breath for music: if, rather than try to "correct" the comma, we allowed the comma in music to let the noise in, musical writing would be recognized as a mode of receptivity that welcomed links as Lucretius welcomed the "clinamen," the irregular beat or generative deviation. Writing, when it proceeds according practices of linking, or, as Salthe would have it, by placing temporary restraints on connections to forestall force and maximize the negentropy of a given context (context, a system or entrainment of systems), will depend on a participatory listening practice, an ongoing persuasive practice
of metanoia mixed with the ability to let go, and exercise restraint. Tropes of anticipation and delay techniques create the dub-like space where we make and break links. Delay, as a device for tuning Derrida's “powers of displacement," creates space for writing together, for writing in rhythm, whether the media be phonograph, tape, wiki, or somewhere in between. Although a rigorous examination of the analog and digital electronics devoted to aural delay techniques is beyond the scope of this argument, subsequent research will report on these delay technologies in detail, and connect their emergence with the emergence of our awareness of what Vladimir Vernadsky and Teilhard de Chardin called the noosphere.

Of course, the analog synthesizer provides a powerful musical model for the attractor states of thermodynamics. Pauline Oliveros, in an interview with Trevor Pinch (2003) reports that turning the oscillators on her Buchla synthesizers into a delay technology, in her practice, created a time and space for her to respond to and work with her medium (sound) in "real time." Oliveros explains,

I devised my own way of using these oscillators....I wanted a way to be able to perform, to work in real time with sound because I wasn't patient enough to make all those splices and wait to see if I got it right! So, I used tape delay. I set the oscillators at super audio, above hearing, and generated difference tones....heterodyning [putting the two frequencies together to produce a beat frequency]....The dials on those generators, they were very large...but with difference tones you could make very minute changes of the dial and sweep the whole audio range. (Pinch, p. 160)

Shaivist theories of Vibration, as we will see in chapter 4, share an affinity for zero and infinity akin to the examples physics research provides on a regular basis. We can learn much about resonance and movement from the textual traditions that unwind the tightly compressed Shiva Sutras. Zero stopping in tape composition. Vary-speed gestures.

"Pauline composed her first tape piece at home, using all kinds of small objects that could
vibrate" (Pinch, p. 160). Oliveros patched together resonance technologies according to
their own principles. "Sometimes I'd clamp a sound source to the wall so the wall would
act as a resonator and then record it at 3 1/2 or 7 1/2 inches per second and use the hand
winding to vary the speed. I used a bathtub as a reverberation chamber" (Pinch, p. 160).
Oliveros “produced sonic compositions by cobbling together by cobbling together the
center's unused electronic equipment: sine tone and square wave generators connected to
an organ keyboard, amplifiers, a mixer, a Hammond spring-type reverb, stereo tape
recorders, a turntable with record, and two tape recorders in a delay setup" (Pinch, p.
160). All of these resonance technologies push compositional practice further into
exogeneity, where the body remains a part of the shared space of composing, performing,
and listening, even as the resonance compresses and distributes information with an
"efficiency" unique to the medium of sound.

Delay is often taken to imply and used to designate inefficient lag, and
procrastination. In these cases, delay tactics get a bad rap. Oliveros' practice shows us
how to "repatch" these premises to include the musical development of delay. The delay
effectuated by scratching a record also intervenes on time in a way that allows rhythm to
instruct us and enjoin us to follow patterns of organic energy and bear witness to their
effects. At the "same time," delay makes room to transformatively engage the dissipation
of patterns in our next moves; and so, our "just-in-time" response-ability is tuned up as
we tune down to a mode of listening solicited by delay patterns, which build infinite
variations on basic echo "locations." The delay modifications of a rhetorical space can
also produce a particularly generative stochasticism, a surprisingly memetic stuttering
that allows counterarguments (the very coefficients of slight difference that delay patterns
seem to chart) to coexist and even overlay into new patterns, new levels of pattern-matching in and across media. Even though the "noisy," stochastic time-space we create when we use prolepsis and delay to find each other's sequences brings us together, these practices continue to "jiggle" the connections, always looking for the "weak links" essential to premise-matching and pattern sharing. In fact, most neuroscientists will agree with Hans Christian von Baeyer (2004) when he argues that stochastic resonance plays a functional and indispensable role in our ability to become aroused, and to muster and allocate attention. Resonance technologies allow both hesitation mantras and anticipation mantras to constantly comingle with unpredictable results, even though these basic and acoustically palpable sample-and-hold durations, enabled by delay at its limit (where it merges with click-tracks and other "on the one" strategies of community formation), are basically predictable and repeatable gestures. As such, they become part of the pattern-sharing dance especially in small clusters of writers, whether they be Coltrane's quartet or a group of students researching alternative fuel options.

Delay, in other words, intervenes on habit structures in "almost real time," as Oliveros would say. Quintilian, for this same reason, valued the declamation exercises above all other rhetorical exercises. Delay, then suspends response at the kinematic level that Donald describes in his chapter on the "first hybrid mind," in just-in-time/space of gesture where "working memory, attention, and explicit recall are combined into a review routine that can evaluate the success of a self-initiated action in context, and modify it accordingly.....the most compelling example of this ability is our unique sensitivity to rhythm" (p. 272). Rich Doyle (2006), in LSDNA, describes the suspension of observation that Huxley reports in his mescaline writings, providing a precise illustration of how
noise, in this case, the depatterning effectuated by a plant adjunct, creates the conditions for a delay phenomenology. This suspension or delay, at the kinematic register described by Donald (rhythm), takes place in an n-dimensional cartography of links (the forging of connections and the blockages of connections). Govinda's rhetoric (in the handbook sense) is a guide for navigating the topologies of meditative space, and like Quinitilian's work, bundles the findings of long traditions for new "platforms." The select/mix/render handbook of Aristides discussed in chapter 2, by analogy, likewise compresses the rhythmic science of Greece to the degree that it can be transmitted in text. Delay causes time-slips, and so instantiates a focus on the nonlinear space where linking can happen, and distributed productivity can emerge. Doyle explains that when a subject in Heinrich Kluver's mescaline studies of the 1920s discovered that he and his friend, "Nissel" are indeed inseperable, part of the same "fretwork," he, in fact, "recapitulates Tat tvam Asi, an ecosystemic reality principle from the Upanishads that renders the separation of world and self into the optical and topological illusion that it is. the interactivity of the fretwork seemingly induced by writing on mescaline suggests that the forms sought by Kluver as "constants" are navigational aids for a non local psyche, 'Nissel as I.'" (LSDNA) First, "non verifiable information" learning to inhabit ecologies saturated in non verifiable information requires practices that the writing "I" both compresses response-time to the kinematic register described by Donald, and, at the same time, creates delay ontologies of recursive patterning, where, as Donald explains, humans can share attention/perception/memory space. In this interactive space, humans evolved pre-linguistic practices and developed "complex repertoire" and this repertoire of gestures "will regulate shared attention." The most crucial point Donald makes concerns the
necessity of clustering over fine-tuning commas into place. Because "these patterns of behavior are transmitted across cultural generations by repeating the same basic sequences in the context of a pedagogy." we must continue to find ways to play together in our compositional practices of teaching and learning (emphasis added) (Donald, p. 255).

*Playing the 4track in a Rhetorical Way: Notes on the March 22nd Task Force Meeting*

What happens when you put the echos of sonic delay effects into an oratorical platform? Delay patterns are, in effect, tropes. Sampling these tropes, moving them into a different discourse: What are we modeling and learning in this experiment? Could this mixing of oratory and asignification, which involves the sampling and repurposing of tropes—counterpoint, ricochet, amplification, repetition—open up to a more distributed enterprise? If so, why might we be willing to expect as much? To anticipate out how such an algorithm might proceed in a digital composition class and prepare recombinant sound exercises for a multimedia composition course, let the tracks bleed. For example, what happens when a selected signal, such as the composition director's address to the composition community is routed through a mixing device (in this case, an analog 4track tape machine) that also contains other selections. In this case, the tape used to capture voices in the room and overlay them over already held information taped during Peacefeather workshops and live performances on the Lion 90.7 FM, the campus radio station, and this delay between moments of capture fasciliate a connection between discrete spaces of composition, just as wiki can. Having added a new voice to three existing tracks of collective improvisation, it is much more possible to suggest new openings, new mixtures and spaces (of exchange, work, writing), simply by sitting back
and listening to the Left/Right output signal that results with this overlay, and subsequent interventions are only a matter of reconfiguring the signal flow or installing auxiliary pathways (the effects send/return). Send/return elements allow any number of participants, participating by various degrees, to render, in the argot of dub, a version, and such versioning allows for the redeployment of gestures and moves again and again, and as such facilitates rhythmic experimentation. Rehearsals organized as recursive explorations of select-mix-render tropes accrete into a habituation to writing machines (or, better yet, the emergence of collective territories of production) that are built according to rhythmic criteria. Commerical delay technologies that let performers alter the level, number of repetitions, the timing, and mode of sequencing of any sound by simply turning knobs show how the fundamental gaps that define a delayed signal (echoed, flanged, or phased so as to forestall the return of a particular set of frequencies) work on many scales and are built into the routines and gestures of writing. Digitech and other companies collate these potentials into cheap “stomp boxes” that are like technological equivalents to the cheap “am radio” consciousness that adds to the ambience of the commons. By analogy to the patterns available for free (order for free) on the web, these technologies are "leaky" and connected to multiple one could therefore say "diverse" practices of production, suggesting pedagogical uses for simple softwares such as wiki.

An interesting and haunting use of delay comes from a series of Miles Davis outtakes, a "Willie Nelson" sequence from the Jack Johnson sessions Davis ran during 1970. Guitarists during this session engaged in a literal call and response, in an asignifying register of pure sound, using an analog delay pedal. This technique even
echoes in the repetitions sequenced as multiple "takes" of "Willie Nelson" in the *Jack Johnson Sessions* playlist of 2005. Davis was by this stage in his recording career always thinking proleptically ahead, as well, based on his previous experiments with postproduction. When these repetitions were finally made available, years later, in digital media, we find select/mix/render techniques of naming: "inserts" and "takes" and "remakes" as different renderings of "Willie Nelson." These sessions suggest a "process of sampling" and a solicits participation in an unfoldment of events in which each event is, like the individual instantiations of echo that accrete into reverberative space that is always undergoing transmation. How does one read this text? Perhaps in the same way a multitude would read this text—rhythmically. The stream of "Willie Nelson" cut by the fragmentary nature of its performance, which anticipates postproduction "delays" and, essentially, remixes offers the listener opportunities to cut this flow. Rhythmicity manifests itself in the reading of a continually varying text. Such practices of amplification and aggressive transformation of signal flow have always been fundamental to jazz performance, and resonance technologies make variations of these modes of reading and writing available for further experimentation in diverse cultures of work and play.

In 1970, musicians assembled to record these proceedings, in 2005, the digital re-issue market has conditioned their first "official release." For composition studies today, the "Willie Nelson" text's pedagogy hinges on the overtly technological aspect of the compositional/improvisational software of this particular Miles Davis assemblage. Both Sonny Sharrock and John McLaughlin were invited to this gathering, analog delay and amplified guitar (Sharrock and McLaughlin specializations) were selected and mixed
prominently into the overall signal flow diagram of this particular recording event, and as they were mixed into the "Willie Nelson" ecology in this manner, they ushered in a particular rhythmicity that I would describe as a set of connections forging a rhetorical relationship between sound-troping devices and the tropes of collective composition and improvisation (jazz) that Davis and his collaborators draw upon, experiment with, and contribute to during the Jack Johnson sessions. In particular, Davis’ "Willie Nelson" ensemble produces numerous "takes" and "inserts" and "remakes," and these aggregate performances, being an overall "entrainment to itself," involves, therefore, the development of symmetries that incorporate machine-produced modifications of the space of performance. These pedals are noisy, too: the management of the symmetry-breaking effectuated by a common feature of analog-delay pedals, circa 1970. The "predictable unpredictability" of this effect in certain repeats/time configurations allows signal flow to run wild, which allows the performer to quickly introduce and take away stochastic elements, but the tactile gestures of these performances orient the body more towards a typewriter posture. In other words, knob twiddling, yes. But the tropes of knob twiddling, which are hardwired directly into most histories of sound engineering, and build a model of exchange that is dynamic and nonlinear; "Willie Nelson" galvanizes an extraordinary and powerful sonic space of mutual response patterns. Delay technologies, I argue here, amplify and draw attention to the importance of sampling for commons practice. Therefore, these easy-to-use technologies (turn the knob, listen) enter into the ecology already well-equipped for entrainment with the paradigms of jazz are also built on tropes of repetition and sampling. One of the specific pedagogies Miles Davis' "Willie Nelson" offers to composition studies hinges on the way these performances reveal ways
that the rhythmicity that is "built into" a delay technology. Defined as an analog sampling technology, the prominent use of delay in "Willie Nelson" invites the listener to engage in anticipatory and delayed modes of response. Such modes necessarily work through and celebrate asignifying but fundamentally productive select-and-mix and interruptive approach to information that is, today, both the paradigm of collective creativity and the primary agent in controversies that swirl in the wake of a university in flux: Penn State is in between moments in its regard for the future chances of an open-source inflected university. Penn State's Napster case marked a dubious gambit and estimation of the nature and value of filesharing, the LionShare saga illustrates fundamental differences between administrative value criteria and an impulse to form a commons that describes the desire to learn as much as it describes the desire to teach. Hasty top-down curricular injunctions provide an occasion to intervene on the story of a university hell-bent on making itself inhospitable to specific, widespread, and powerful learning practices, including practices that are emerging as essential to the teaching of composition.

Recent Changes: Sampling Noise

In an article published in Diseases of the Nervous System, Roland Fischer (1969) points out that with Descartes and rationality, consciousness came to mean "to know in oneself, alone" and lost the sense of "knowing with," which is to say "sharing knowledge with one another" in "The Perception-Hallucination Continuum" (p. 163). This sense of knowing with will inflect mind science in the 21st century, and so we must learn how to teach the distributed and rhythmic rhetorical practices that remix culture on the one hand, as well as most scientific inquiry and technological development and on the other hand, and use to compose and arrange communities of knowledge production and innovation.
In this section, I will suggest uses for the forms of dissonance, or noise, that practices of linking in wikis amplify in their use.

In wiki pilots, we found out that while some students arrive already interpellated as denizens of the digital infosphere, many incoming students, for various reasons, show up clinging to older models of writing. However, writing together on the common surface afforded by wiki, students were able to share knowledge and model rhetorical actions. The beauty of sharing heuristics is that it speeds up the learning process; a distributed mind learns faster than even the most electric intellect alone in the studio. When we opened up our classrooms with wikis, these same wikis quickly became Vygotskian scaffolds for peer-learning, a learning that operates according to the logics and dynamics of peer-to-peer networks; in this way p2p became an endless source of stigmergy, or "available order" for further group-experimentation, for projects. As hypothetical observation gave way to participation, the opening gambit “students today are filesharing subjects,” regardless of whether or not this observation was, at the time, in-formed and well-formed, had to give way as these network pedagogies began to grow and show us new ways to improve our practice. Wikis helped us make spaces for students to learn, grow, and write. In this way, students brought the updated models of rhetorical training that I was taking as our premise back into classroom—or rather, now, the shared laboratory space, where we slow down and talk about how to find new forms of address, and remix the analogies, evaluations, causal arguments and tropes we selected from the field. Rhetorical practice has expanded into the digital commons, and so when we began to let the fundamental pulse of remix culture—connectivity, sharing, linking, rhythm—back into the space we share with students, we not only found that on instructor and a few
savvy students could build a network of peer-to-peer rhetors in no time at all, but we also learned that a different sort of rhetorical training was then made possible and necessary. The case of PSU-Napster brought the myopic legal trends to our campus, but at the same time made it necessary to test the uses music and noise might have for rhetorical training. In this sense, "noise" as controversy is an easy link from the "personal" dissonance that registers when students learn to share premises, as they did in the Freesound assignment.

At the same time, wiki shows that noise—whether felt generally as "controversy," registering specifically as a perceived dissonance produced by cultural difference, or deployed scientifically to describe rampant and generative complexity and/or redundancy in information—is prerequisite to and essential for developing a sustainable writing process, and as this aspect of writing returns, writers learn that every time they consult the wiki’s “recent changes” page, the page that charts the activity of the shared wiki in real-time, the whole wiki might suddenly seem out of balance. Is this same effect, the recent-changes effect, the noise that solicits composing gestures in all techno-scientific production today?

Further research may answer this question in the affirmative, because noise, as both (contentless) content and (formless) form, seems to be at the crux of an enormous number of technosocial and scientific issues. Noise enables medical and communications technologies, drives cognitive science research, and synchronizes diverse computer programming communities. At first blush, the MGM v. Grokster case and the Authors Guild class-action suit against Google Print would seem to revolve around music and books, respectively; however, each case finds the same two competing and fundamentally different visions of intellectual property in acute dissonance. And so the rhythmic art of
composing such complexity into patterns of argument and inquiry that bring a commons into being—the art of the "peer-to-peer rhetor"—has become elemental to writing performance. In what Lawrence Lessig calls "remix culture," finding rhythm requires a rehearsed training in and capacity for working with unpredictable network effects. In other words, we need a “pilates of writing,” an informatic yoga, to cultivate the sort of flexibility suited to ecologies of continual and often sudden change. For our emerging wiki community of teachers here at Penn State, learning and modeling responses to pattern-breaking and noise has become just as important as helping students maintain "resonance" with an established audience and community. Bringing the attitude of "noiseician" to the classroom in this context amplified three different topoi for composition. First, music and the space of investment and unpredictable effects can be produced in the writing classroom. Second, wikis and the often affective participation can be facilitated. Third, the controversial cultural and intellectual property questions that our students, as arbiters and producers of information, can engage.

In an interview with Lawrence Lessig, John Seely Brown explains “to me, this is where education is going. This is how students who grow up digital think and want to learn. But we are building a legal system that completely suppresses the natural tendencies of today’s digital students” as discussed in The Future of Ideas (p. 235). Furthermore, as the post-Napster boom of P2P clients showed us, network pedagogies—communities of users and writers—emerge precisely to respond to constraints such as the Digital Millennium Copyright Act, which applies the proprietary logic of the Copyright Act of 1976 to digital and networked media (http://www.copyright.gov/title17/, http://www.arl.org/info/frn/copy/dmca.html). When centralizing mechanisms install locks
on connectivity and put blocks on the “natural tendencies” of decentralizing infodynamic flows, such measures end up functioning like thermodynamic gradients. Community-forming and ecstatic practices of music have always emerged to degrade these limits. Musical ethics of participation and entrainment translate into and expanded rhetorical practice that prevailing attitudes and infrastructures in higher education have not been able to hack, outside of the fearful lock-down approach exemplified by the case of Penn State Napster. While the installation of such gradients on dynamic and Dionysian technologies of knowledge-sharing and collective problem-solving does function in an almost elemental way in larger rhythmic cycles, policy does always not celebrate this joyful process.

*Pattern-breaking, Resonance, and Information*

Tricia Rose (1993), in *Black Noise*, argues persuasively that the often maligned repetition and circulation of recorded performance, the polyopia of mass-repetition, has long ago crossed a threshold from a mode of consumption to a mode of production, especially in African-American culture. Where economist Jacques Attali sees only homogenization, Rose genealogizes call-and-response and other community formation devices through their intensifications and articulations with technology, and in doing so, suggests a distributed and Dionysian vision of African-American musicking. The issue itself turns on a cut: between consumption and production. Rose interviews Sadler, Marley Marl, and cites James Brown and Parlia-funk-a-delic-ment to do crucial proleptic definitional work on the very idea of sampling, which our universities selectively define as piracy. In the process, we get to production. This shift in register already refigures the valence of "noise."
The distinction between "noise" and "not-noise," Rose shows us, depends on the listener's capacity to respond, and bring their schema-and-projection to the ordering processes that creates rhythm. When Alain Danielou brought his energy and inquiry to sound and the perception of sound, he scanned the global rhythmic archive for the largest space of this turning-about in listening. Danielou explains that the Hindu philosophers used the term *bhuta*, which roughly translates as "elements" to describe the "forms of existence" in a way that directs our attention to the "subjective elements by which we construct, for want of better information, the idea which we have of the external world," not elementary matter or substance discussed in his work, *The Influence of Sound Phenomena on Human Consciousnes*, " (p. 1). These "spheres of perception," when organized and correlated in a once-and-for-all way with various inputs (seeing-eyes, hearing-ears, etc.), can only scratch the surface of perception's more profound potentials. But the "ether, or the 'vibratory' state of things, represents the sphere of hearing, the most subtle since it escapes all other senses" (p. 21). Danielou's claims for sound in this issue of *Psychedelic Review*, published in 1967, seem to apply today to the entire spectrum of effects of our digital ecologies of information. Indeed, Brian Rotman (2002) organizes his manuscript on the inherent participatory nature of mathematics as an inquiry into gesture precisely because "the digitalization of information is reconfiguring the major sense modalities, resturcturing the media which store control and re-present them, and overhauling the ways we perceive and respond to the body's movements by means of speech-recognition and speech-synthesis technologies and the creation of gesture-based forms of human/machine interface" (pp. 92-104). According to Danielou, "the Hindus think that if we can orient the perceptual centers, to which our sense organs
are connected, toward the internal, we can escape the limitations of these sense organs and perceive aspects of the sensible world which are deeper and larger and more profound" (Danielou, p. 20). On Roland Fisher's (1969) hallucination-perception continuum, which we will examine fully in chapter 4, this action takes consciousness toward meditative states. When combined with techniques of depatterning and "distraction," these corporeal gestures of writing allow a greater capacity for "noise," and are "progymnasmatic" to collective substantiation of information, much in the same way that seeing red is more compressed than any other “calculation” of redness. The immersive medium of sound, and the active process of organizing it into “music” offers yet even more, different, potentials. "Music, therefore, plays an important role in the knowledge and perception we can have of the mechanisms of thought and of sensation, since it permits us to realize directly that thought and sensation are probably mathematical operations" (Danielou, p. 3). At the same time, we can see how the expansion of rhetorical and musical practice in digital communities shows us that the necessary noise of the commons can best be transduced by rhetorical operations in rhythm.

Danielou (1967) concludes his study of the effects of sound phenomena on human consciousness with a meditation on the perceptual effects of selection processes and the conditioning effects of repetition on mind and body:

The mechanism of auditory perception and of the analytic mental perception which corresponds to it, permits sounds to act through repetition upon our internal personality, to transform our sensibility, our way of thinking, the state of our soul, and even our moral character. (Danielou, p. 26)

This is precisely what did worry Aristotle, despite his modulations of tone and emphasis designed to (consciously or not) delay any sustained consideration of why strictures
regarding music required so much attention. With Andrew Ford (2005), I would like to suggest that "controlling these fundamental powers" inherent in rhythm "is at the heart of Aristotle's plans for civic culture, a specially trained sensibility and set of musical practices that will distinguish citizens from slaves on the one hand and from virtuoso performers on the other" as discussed in “The Power of Music in Aristotle's Politics" in *Music and the Muses* (p. 311).

Danielou (1967) does connect this art of perception to music's cousin, number. In making this connection, however, he is setting up another play whereby he illustrates the deleterious effects of a lacuna that gets stretched into a groove in Weheliye's sense (grooves of history), the so-called comma (Hegel's remainder?) that mathematical emphasis (at the expense of the phenomenological, the participation in music in it's sacred formulations. Music, as we have outlined here, merges with writing as we have known it in the rhetorical tradition, that is, the art of inventing, arranging, and sharing ideas according to the constraint of the particular occasion and media. Therefore, the lacunae in rhetoric and composition is this same gutter, around the force of rhythm, that Aristotle left for us, the denizens of a densely interconnected infosphere, to consider—and join. Affect in argument. Repetition, mantra. “This is true of music, where arithmetic (or rather, harmonic) frequency ratios, based on the combination of certain specific numbers, which our mental mechanism permits us to recognize and to analyze, produce considerable effects on our psycho-physiological condition." (p. 26) And language, even: "this is also true, although less directly, for language, where the repetition of certain syllables corresponding to specific ideas, produces a mental conditioning utilized as one of the fundamental methods of yoga" (p. 26).
Elsewhere, in *North Indian Music*, as part of a discussion on *shruti*, Danielou (1943) notes that while

> the number of theoretically possible intervals in relationship to a given note is obviously limitless...the number of intervals used in music ins comparatively small. This is due to the limitations of the mental mechanism through which we can distinguish sounds. (p. 28)

In “Sound’s Influence on Human Consciousness,” Danielou (1967) states:

> The fact that in practice we do not perceive external sounds except through vibrations of other elements, is merely a deficiency of our external organs and doesn't change the fact that, even thus limited, hearing remains the only direct perception we have of the pure vibratory state. (p. 2)

Next, Danielou takes us to the same point that J.J. Gibson makes: sound is the ultimate information compression algorithm, sound is the most simplified formal result of the process that Collier and Burch (1998) call rhythmic entrainment. "The result of rhythmic entrainment is a simplification of the entrained system, in the sense that the information required to describe it is reduced" (p. 1). So, for Danielou, while "the other senses produce perceptions of vibratory states which are more and more complex and therefore more difficult to understand and to analyze" (and so we have "staggering complexity" that Gibson describes, above), sound "even in its grossest, most limited form, is not only the vehicle of thought but the image of its intrinsic nature" (from “Sound”) (p. 2).

Trevor Pinch (2003), in *Analog Days*, draws attention to synthesizer pioneer Don Buchla's "Buchla boxes"--Buchla actually names a crucial component of his instrument the *source of uncertainty*.

White noise, as it is known, is analogous to white light in that it contains all sound frequencies. Because human hearing gives prominence to higher frequencies, we hear these slightly more in white noise—to us, it sounds like steam escaping from a radiator. Pink noise is white noise that has been filtered to boost the lower frequencies (formally, it has equal energy per octave). Rather than call his noise sources white or pink noise, which became the terms favored by most
manufacturers, Buchla on his System 200 (introduced in 1969), named them 'the source of uncertainty because Buchla wanted to assert the importance of randomness and uncertainty in the compositional process (p. 46).

Play with and trouble the easy notion that Moog's "user-centered" approach was totally different from Buchla's focus on a specific instantiation of composer. Buchla gave name to his components that sound like depatterning tools for networked writing. Indeed, is multiple arbitrary function generator, kinesthetic input port, and random function were means for accepting and working with complexity in the composing process "in real time" (Pinch, p. 47). Pinch describes Buchla's "esthetic" and "vision," but such naming and framing operates as a pedagogy, as well. Buchla the instrument maker, provides a model for teachers and students seeking to treat wiki spaces as tunable instruments. In particular, Buchla's array of high-stochastic energy inputs suggest uses for digital pedagogy constrained by authorial expectations harbored by all of us—students, teachers, and administrators. The iconic exemplar comes from Benard cells, but Collier and Burch (1998) remind us that "there are many other cases of spontaneous entrainment in physics. One especially simple case is the formation of dissipative structures through the promotion of noise. Benard convection cells are the simplest of these, since they are so closely controlled” (p. 4). Here, we can also consider Brian Rotman's (2000) “going parallel” theme, especially his arguments about the effects of counting and the emergence of counting rhythms on the monoid subject. From Rotman’s observations about the monoid subject’s limited capacities for complexity, we can hypothesize that music is like a primal mathematical act, not having much to do with counting at all. Musical gesture, according to this formulation, is something entirely other than (or at least encompasses much more than) alphabetic writing.
When resonance runs rampant, it could be said to create “noise,” but this noise, often called feedback in cybernetics and related disciplines, has specific and generative functions. In *Expanded Cinema*, Youngblood (1970) points out that feedback (in particular evolutionary feedback, i.e., feedback between open systems, i.e, energy exchange that produces new information, or, as Collier and Burch would say, this process can simplify the information required to describe a system, thus compressing information, giving it more force) is the axis on which a selected system for measurement is, at that particular moment of motion capture, careening towards entropy or fashioning productive negentropy. Youngblood's vision of participatory drama and cinema, depends on a certain "synaesthesiast." Furthermore it defines noise as redundant information. "If the information is redundant, as it must be in commercial entertainment, nothing is learned and change becomes unlikely. The noted authority on communication theory, J. R. Pierce, has demonstrated that an increase in entropy means a decrease in the ability to change," and we have seen that the ability to change is the "most urgent need facing twentieth-century man" (pp. 31, & 55). This perspective is interesting in the context of the the divergent theories of repetition we find in cultural arguments on the one hand (Tricia Rose (2003)), and economic arguments on the other (Jacques Attali (1996)). In wikis, we test the pedagogical register of these competing definitions of noise and repetition, on the hunch that a pragmatic rhetorical training must train information adepts how to respond to the informational exigence at hand. In noisy dwellings, rhetors must engage in repetitive practices in participatory ecologies; in an active mode, writers engaging gift-economics of production in an age of information overload must act according to the requirements of the given rhetorical situation; in some cases, tuning
noise into resonance, in others, reducing the uncertainty of information, still at other times, when writing in parallel or clustered networks, pattern-breaking is the key to opening new inventionals pathways. Teachers must embrace the latter, because pattern-breaking (introducing noise into a system) is the only way to affirm prolepsis and delay, the rhetorical interventions on time that open up the between space required to explore rhetorics of rhythm in a classroom context.

Overcoming the authorial self only becomes possible by means of a practice. Dionysian techniques of distributed creativity and ideation, which unfold as a gift economics idealized by large gatherings such as the Burning Man Festival, create the conditions for negentropic feedback with the cosmic commons. While some techniques cost more than they save in terms of energy and work, the smaller rhetorical gestures wiki allows any writer to rehearse are immeasurably efficient, and moreover essential for reading and writing "in parallel." Forming clusters starts when we allow for and cultivate sharable depatterning tools. Noise promotes exchange, and the the exchange of information creates a sense of time, in the form of rhythms, that we can inhabit and in which we can develop ideas and form communities.

It's the Sharing, Stupid: NotesTowards an Ethnography

LionShare, a software development project working on a hybrid peer-to-peer/client server application that would "legitimize" student sharing, taught us that controlling, limiting, or otherwise attempting to enclose and own commons dynamics is fruitless. Students do not take to LionShare precisely because the LionShare project aims to cancel noise from the signal entirely. Higher education has yet to move beyond models that seek to control or harness the power of peer-to-peer. Perhaps in response to the bad
publicity generated by the Napster agreement, Penn State launched a beta-test version of “LionShare,” p2p/client-server hybrid as a way “to facilitate legitimate file-sharing among individuals and educational institutions around the world” (LionShare Homepage http://lionshare.its.psu.edu/main/). I attended focus-group meetings for LionShare, and freely exchanged ideas with the LionShare team. The developers took an interest in our department’s pilot wiki program, and invited us to participate as a “power user” during a beta test. I found a lot in common with developer Jim Frost, and we met frequently to discuss LionShare’s premise’s, potentials, and its problems. Jim intuited that wiki technology as a different sort of peer-to-peer model of network pedagogy useful for writing instruction, and throughout this dissertation I will reflect on our efforts to persuade LionShare and Penn State to allow actual students in an actual class to test the software. Because it took many months to get permission to even test the LionShare technology, Jim and I had ample time to consider Penn State’s peculiar policies and telling responses to peer-to-peer. I tell this story here to emphasize that the resonance, not the technology, is the composer. A technology designed to close off space, even if it is peer-to-peer in its design, will not likely take hold in a context where wiki is also an available means for sharing consciousness.

Lionshare, like wiki, promised to fundamentally retool faculty-student relations. We find exigence for experimenting with any serious attempts to try p2p if we agree that nature of this change in various instances will probably be percieved around a definitional axis: outcomes will be defined as either threats against or opportunities for the PSU brand. Also, like the wikis, LionShare can put a very basic idea into relief for students: when it comes to writing, you don't "own" anything, really. Although we cannot
predict long-term effects, simply testing a software modeled on p2p will teach us a lot about how to work through old/new practices of authorship in ways that addresses concerns, shared by the composition program and the college such as plagiarism and assessment/evaluation of student work in the world campus courses. Four things to remember when testing new software. First, the law of unintended consequences says you must run the program, “get off your ass and jam,” as George Clinton would have it. Second, rhythm is key because the nature of this rearrangement of classroom space and the redefined roles of faculty and students therein produces a network pedagogy, that is, a potentially danceable pedagogy. Third, to sample and trope that other Clinton, (Bill): It's the sharing, stupid. A Lionshare user test provides yet another opportunity to test the premise that says "the fundamental compulsion in sample-mix-burn (fileshare) is to form a commons” Finally, The emergent p2p network allows students to share and therefore shape course content, which opens up multiple possibilities and avenues for various learning scenarios and increases the chance that students will bring passion to their projects. Peer-to-peer teaches that multiplicity necessitates production, and reinvigorates the very idea of classroom collaboration. For writing instructors, its seemed especially important to ask, how rhythms achieve the integration of writing practice and community?

In time, I learned that the developers at LionShare had questions about student adoption, and that there were mixed opinions inhouse as to how and when a scaleable user test should run. One of the earliest surveys provided strong counter arguments to our notion that the student demographic has cultivated a fundamental compulsion to join and share. Some went so far as to recapitulate the consumer-student subject position the
administrators promoted during the PSU-Napster merger, suggesting that p2p was good for piracy and porn, and not much else. "Adoption" questions are interesting in the first place simply because we really can't know how new technologies get taken up until we "run the program," so to speak, and so "adoption" language feels like residue from another sort of paradigm...author-parent/ownership/copyright speak? I don't know, but in my response I felt like I had to dance between ownership speak and well, you know, open-source, rhythm-speak. Many researchers are beginning to focus on questions about motivation in p2p communities external link. Again, to thrive, Lionshare may have to distinguish itself from Creative Commons and other copyleft algorithms and leverage its position within the university to encourage free exchange of copyrighted materials for users who demonstrate facility with fair use definitions and techniques.

Our English department and Composition Program's experience with taking wikis from pilots to full digital migration of the freshman composition course to wikis would seem to suggest that an experiment like LionShare could get a big reaction out of students, precisely because LionShare harbors the potential for play. LionShare was an interesting proposition simply because it addressed, in a way PSU-Napster did not, the shifting student-teacher dynamics and issues related to interactivity and pedagogy. Based on what we had experienced during our pilot-phase wikis, we hoped translate wiki experience (often-times informed by the p2p topos) into LionShare. Many students quickly and energetically responded to the wiki because it provided space to form a commons, and this impulse (a) occurred uniformly across our wikis, despite emphatically different delivery modes (depending on the instructor), and (b) amplified into elaborate and diverse learning behaviors once students realized they could impact the direction of
the course by contributing content to the course commons. In other words, shared content on the wiki space seemed to "fill a customer need" that was not met in other courses. Like the wikis, and perhaps even more so, LionShare seemed at first ripe for adoption precisely because it extends opportunities for sharing, plain and simple.

For starters, I'll be wondering: will they actually use LionShare to share? And select and remix and beatmatch and listen and produce new forms of collectivity and new ideas, collaboratively? Or will they swap porn and RIAA MIAA owned materials for consumption purposes only, as some folks suggest? That suggestion is built into the PSU-Napster licensing agreement. Still, I tend to see Lionshare as a counterargument to the premises of that move, or at the very least, damage-control. To thrive, Lionshare may have to distinguish itself from Creative Commons and other copyleft algorithms and settle for some other, unexpected use. To be successful, experiments with p2p in higher education have to leverage the controversy and fuzziness around authorship, ownership, and fair use, into learning situations, and embrace the learning situations that arise by first defining them as a particular and important kind of "schooling," a schooling based on rehearsing and repeating the rhythms of an information-based workforce space divided unevenly, irregularly, and discontinuously into IP zones and commons zones. Fair-use, reconsidered and projected into the open-source inflected university by means of p2p software development, acquires new risks and new potential value.

To avoid falling back into CMS logic, the lens we should really consider is the disorder-into-order lens, because our pedagogy will be rhythmic to the degree that it can improvise responses in the form of gradients that order the complexity of expanded p2p classroom space. And that would require lots of uploading and sharing, first, and then
working through the content and what counts as fair-use, second. Clay Shirky works with students to develop "situated software," so-named to amplify the distinction between software that emerges with a specific set of practices and software designed for a generalized "user." This distinction at once calls to mind Bruno Latour's (1996) "scientifiction" *Aramis* (simply because it values incompleteness in a way that redefines the way we evaluate a software's efficacy in a way that defines innovation in terms of "small pieces" that sometimes fit together in a way perceived to be "innovative" or useful) and the ways that information-saturated space troubles older author/audience models of information exchange. Perhaps LionShare will be useful for scheduling courses or reporting grades. Developers will likely look for other flexible modes of delivery and assessment using peer-to-peer, but in flushing out the noise, there may be nothing to deliver, nothing to assess.

Still, with wiki, you can connect different technologies to create new uses. A plan, then, a test. First, we thought, we will assign project to a section of 202C, as a unit exercise on and experiment in copyright and fair use issues. Share links, blog, test the software, write a handful of alternate user guides. Prime the pump with an archive on p2p history, culture, the players and player haters in the news, IP versus the Commons, RIAA and higher education, sociology of emerging technologies, all the *topoi*. In other words, assign research baseline on copyright and fair use to the tune of education's response to p2p so far. Facilitate group emergence via forced entrainments on the software; in other words, make them share files and blog so they can break into different groups, each group working with a different telos for completing the revision. Trope the "commissioned assignment." Negotiate the creative commons alternative with the
students. ShareLimit function: Lionshare will freely select from the competing versions, group-composed utilizing/testing Lionshare. Prepare for the law of unintended consequences, immediate and proximate controversy, and the different ways we can find to for LionShare as we ideate. The area of preparation is the area of measurement.

Second: a new user's guide completed, delivered in time for Lionshare to tinker and then uploaded to coincide with first Lionshare installation and test of the important access control function. Many developers at Lionshare hope that the access control function, which separates Lionshare from p2p precedent but also makes it different from centralized networks like old Napster, will be the key to adoption and durability. In a worst-case scenario, the Lionshare project would die in September, 2006. But many members of the team would be encouraged by any notion derived from robust testing of the software, and any demonstrations that proved Lionshare to be a flexible and useful educational tool. Lionshare "after life."

These plans were not to be. Still, finally, Jim and I were granted permission to test the software with students. Almost uniformly, the students found LionShare to be unnecessarily segmented and unfriendly, and would only subscribe to use if it were forced, as with ANGEL, the content management system familiar from many other classes. How does this happen? Lockdown unnecessarily forestalling connections in the network dampens any potential resonance. Once you have access control, users (anyone who shares) will have the control necessary to comply with fair use. This would be a p2p version of controlling access to folders, and the first of its kind. But, again, the developers themselves are divided about how to even deal with IP and copyright. The job was assigned to one developer, who until now was going at the issue alone. Some
developers want to keep it close to the vest, because although the application has so far been designed to make individual users responsible for the files they share and the degree to which they share them (ACL communities), Lionshare technically can control content, and so could be potentially held responsible for content, and therefore risks the attention of the RIAA and the MIAA, who as we have seen bring unlimited funds to their ongoing litigation and campaign against almost everybody. Other Lionshare developers, encouraged by Penn State president Graham Spanier's positive response to Lionshare so far, wonder if the access control upgrade might be the time to robustly test software on the terrain of copyright issues. As it stands, when it comes to what happens when students share copyrighted materials, such as movies and songs, no plan is in place. A strong test might contribute to a durable Lionshare that would conduct initiatives beyond September, 2005, which would open up the possibility for future entrainments with the Composition program's curriculum and delivery. Access controls connects files shared with the user who introduced the file to a network on Lionshare, but not much has been done to test the limits of this purpose, which is to "prevent" copyright infringement or deflect developer or university responsibility for such activity. What if the file was already a pirate copy before entering the network? What if it immediately leaks regular (nonauthorized) p2p networks — who will trace the "original perpetrator?" Since we cannot prevent filesharing, what can we learn from filesharing? How to write in networks. Who, then, will "authorize" fair use in the open-sourced university? Produce a response in the user test, push for a recognized function or "product" that emerges when teachers and students work together between programs and departments and initiatives of all sorts on the common problem of intellectual property in the digital commons. For
some of us in composition, this problem is an opportunity to experiment with the role of rhythm in writing and writing instruction.

In this way, working under the belief that teachers and administrators can and should participate in building distinct relationships between technology and writing beyond the functional, this project proposes that higher education open itself up to disruptive forces and technologies in order to experiment with the political and pedagogical possibilities we might effect through those experiments; primarily tuning wiki spaces so that the filesharing culture our students bring to information and writing can alter traditional student-teacher dynamics. In this sense, this project focuses on the resources our students already produce and circulate, but at the same time seek ways to help groups of students really write together: then, we can orchestrate advanced rhetorical training for today’s information economy. In an “expanded composition” program, we can create a remarkably reciprocal circuit of learning and sharing of ideas and information.
CHAPTER 4: DRAW A STRAIGHT LINE AND FOLLOW IT?

When La Monte Young wrote *Composition 1960 #10* on a 3x5 filing card, he wrote what might be the most readily citational musical score in the history of Western music. In the midst of the Fluxus movement, a movement characterized by a melding of musical notation and event theatre, *Composition 1960 #10* established the foundational pattern for all of Young’s subsequent compositions, in which exhortatory instructions, which make no distinctions between performer and listener, replace standard musical notation and prompt a singular activity to be sustained for long durations. Indeed, *Composition 1960 #10* was a marked turning point for Young. Once you’ve considered “draw a line and follow it,” you are as prepared as you’ll ever be to grapple with the entirety of Young’s 1961 output. In 1961, Young, in his own words, became more and more interested in the idea of this sort of singular event, and “I decided to polish off my entire output for 1961 in a singular manner” (Kostelanetz, 1968, p. 204). And so, Composition #ers 1-29, 1961 all read, “Draw a straight line and follow it.” And although he used a yearly average of the number of pieces “completed,” and spaced that number equally throughout 1961 to date these compositions, Young proudly reports how he “performed [all 29 compositions] in March, long before many of them had ever been written according to their dates of composition” (Kostelanetz, p. 204). Already, *Composition 1960 #7* (two notes “to be held for a long time”) played with extended duration, but the 1961 “Draw a Line” series introduces a remarkably unorthodox concern with and approach to *time* and *space* in the medium of sound. In the aesthetic register, we say "minimalism" when we want to engage Young's refined focus on duration and repetition. But the amplified attention to perception it solicits encourages the production
of a practice: the rhythmic practices of *repetitio* common to both ergotrophic (ecstatic) and tropotrophic (meditative) states. As *repetitio* practice, Young's minimalism presents itself as a pedagogical and potentially interactive medium of dynamic composition. In "A Cartography of Ecstatic and Meditative States," Roland Fischer (1971) draws lines to show the similar effects of ergotrophic and tropotrophic repetitions. When measured by EEG technology, these effects score a consistency no different from La Monte Young's compositional gambit, "draw a straight line and follow it." Fisher shows that an increase in ergotrophic activity corresponds to a "decrease in variability of the EEG amplitude with increasing ergotropic arousal," or, in other words, long, sustained, repeating durations" (Fischer, 1971, p. 897). At the same time, on what Fisher calls the "perception-meditation continuum" another *repetitio* unfolds: alpha, beta, and theta EEG waves, measured in hz, draw a line, and the performer who develops this filament actively composes the tropotrophic conditions of meditation (Fischer, p. 897). Whereas repetitive dance moves and musical gestures dissolve ego boundaries and rhythmically entrain bodies into fluid and ecstatic communities of movement, introspective and yogic practices directly rhythmize the Mind, where consciousness, spirit, body, and many more subtle categories of vibratory space become increasingly configureable as they fall under common principles of movement for the performing listener, who becomes, in a sense, the composer. In what follows, Young's "Romantic Symmetries" offers itself as model for rhythmic composition in classroom contexts, because it draws a line on the very idea of a "composer," and, if we follow it, we find new connections between composer, performer, and listener, connections that promise a rhythmic mesh, but also pose pedagogically useful questions about rhythmic composition in classroom contexts.
Tension: Limit Machines, Turing Machines, and the Disavowal of Space

How long are these notes to be held? How long are these lines to be drawn? Optimally, it seems, *ad infinitum*. However, when Young describes how he himself performed all 29 of these pieces in a single night, he allows that difference and irruption are the product of this repetition: “I didn’t erase. I drew over the same line each time, and each time it invariably came out differently.” But then, he wryly adds, “The technique I was using at the time was not good enough” (Kostelanetz, 1968, p. 205). Young’s playfully ironic remark introduces a marked tension, one that characterizes all of Young’s subsequent work.

On the one hand, Young’s performances are limit machines, which focus on repetition’s sole effect: irruptive difference. “I’m going in this direction,” Young explained in response to questions about his all harmony, no melody aesthetic,

> There is still considerable variation in the piece, because variation is such an unavoidable factor of life that nothing exists without it. No matter how exact you try to be, no matter how many times you try to draw the line exactly the same, things will always be different. This is one of the inherent characteristics of my work. (Kostelanetz, p. 217)

And for Young, difference *itself* (which is to say, fluctuation, and its conditions) becomes a scientific "object" difficult to get a handle on. To my ears, *rhythm* is the best handle we have, and the exemplars come from musical practice: collective improvisation in jazz, apart-playing and like arts of interrupting and maintaining compositional connectivity, and the distribution of creative surface. Young’s program is sort of a boundary case for musical rhythmic practice. "Draw a straight line and follow it" does not prescribe practices that play the difference between this sequence and that one, nor does it ask performers to actively mix and overlay different *tempi* and sonic patterns--indeed, such
dynamics seem to be forbidden by this code. Young even eschews the intivallic organization of conceptual consistencies such as variation and theme (or row vs. line, figure vs. ground, serial and parallel). Instead, he defers these overtly rhythmic gestures and instead begins with gestures of introspection which discipline attention on variation itself—difference itself—a feat of attention made possible by extending sonic periodicities to create a sense of stasis on an immanent plane. Attempting to apprehend difference *qua* difference in this fashion provides a template for information adept in all rhythmizable media, where both the ability to apprehend difference (pay attention to rhythm) and the response-ability of inhabiting differentiation (forming a commons), as we will see, depend on refining attention (reading) and active, coordinated behaviors in a common space (writing).

On the other hand, Young’s performances seem to aspire to a Turing machine status. Indeed, by 1962 Young was well on his way to becoming modern-day Pythagoras of sorts. That same year, Young adopted a rational numbers-based tuning system known as just intonation, which is based on classical infinitist mathematics. In theory just intonation promises a panic-inducing interconnectivity in which, “every tone in the harmonic series could be considered a more or less distant consonance,” which Young seems to have taken as the ticket to infinite time and space” (McCroskey, 1971 p. 14). That year, Young formed his still-running ensemble, appropriately named *The Theatre of Eternal Music*, and gradually adopted a pronounced mystical philosophy. During this time, Young and his wife, light-sculptor Marian Zazeela announced their intention to commit the rest of their days to maintaining sound and light installations which would allow them to “study the effect (if any) of long-term exposure to pure intervals on the
human psyche and nervous system” (“The Outer Edge of Consonance,” p. 172). At first, Young refrained from meta-commentary, but more recently, it has become impossible to classify Young’s testimonials to and explanation of the power of his compositions as meta-commentary; instead, these testimonies, always exhortative and prescriptive, must be considered as part of the score itself. By 1989, Young has taken to promising ecstatic experience to those who enter his sound and light installations, or “Dream Houses,” and allow his sonic tapestries to alter their consciousness. Young seems to offer a rational numbers as a path to mystical ecstasy in his article “The Romantic Symmetry (over a 60 cycle base) in Prime Time from 112 to 144 with 119,” as he testifies to his Dream House installation of the same name. Notice how fluidly Young slides from a logical register to an ecstatic register:

The unique constellation for The Romantic Symmetry (over a 60 cycle base) in Prime Time from 112 to 144 with 119 is distributed over a range of seven octaves…the frequencies are also arranged to take advantage of the way the periodic composite waveform envelopes of the singular prime minor seconds sound, and, in some cases, translate into beat frequency patterns in particular bandwidths of the audio spectrum…this brings the total number of frequencies actually sounding up to twenty-two…the prime frequency identities set forth in this symmetry produce some of the most complex harmonic relationships I have ever worked with and yet the combination generates an immediately accessible composite waveform that is extraordinarily vibrant and creates an ecstatic paradisiacal state of primordial time…[the composer-listener] can attain the ultimate experience of ‘time standing still’ (The Romantic Symmetry (over a 60 cycle base) in Prime Time from 112 to 114 with 119, 1989, pp. 8, 15).

Young’s testimony to rational numbers, even though it is clearly a tactic designed to establish authority and “legitimacy” in the composer community, already has a mystic quality. More importantly, the idea of “time standing still” puts a different spin on the imperative “draw a line,” and raises the decibel level of the limit/unlimit tension to a deafening level.
The upshot of this limit/unlimit tension: in his quest for “timelessness,” Young is led to claim that his mathematical experiment with just intonation and his scientific experiments with standing wave patterns in the Dream House somehow take place both nowhere and everywhere. Theoretically, Young disavows the very space that he relies on in practice to create “ecstatic paradisiacal states of primordial time.” In what follows, I will focus on the limit/unlimit tension in Young and Zazella’s 1989 Dream House installation *The Romantic Symmetry (over a 60 cycle base) in Prime Time from 112 to 114 with 119 (1989-)* to draw a bead on the particular ways that this disavowed space returns to the Dream House. My aim is not to interpret Young’s evolution from creating conditions for difference to taking difference itself as scientific object, nor do I wish to expose the limit/unlimit tension in his practice as a “fault.” Rather, I’m merely suggesting that this very tension creates and sustains a “therapeutic” and pedagogical level of panic on an assemblage that does indeed hold tremendous ecstatic and experimental potential.

Mathematical certainty and iterative blockage *do* give way to spontaneity and itinerative flow. And we could stop at that. But we can go further and take the Dream House—with its composer-imposed strata and potential for composer-listener becomings—as a model for rhetorical practice in "noisy," dynamic ecologies of writing, where drawing and following lines become difficult and sudden change can produce panic. Practical rhetorics of rhythm must include practices for *finding rhythm once it has been lost* in this way: disaggregation and "pattern-breaking" allows rhetors to rehearse attention strategies and retune to the contingencies of any given audience or ecology. As teachers organizing groups of students working collaboratively in new media, we find many opportunities to ask: How can we find and rehearse losing and finding rhythm in our everyday ecologies

1. Composition as evaporating and precipitating space. Why do we want to follow space? Of course, space never really leaves the Dream House in the first place. But to assert as much, and render praedial the aeriform Dream House program, does not diminish its ecstatic potential. As we map the return routes of disavowed space, an experimental hothouse, no less ecstatic for its own disavowal of Young’s rational-mysticism, will take its place beside the nebulous (generative) exosphere made from mystical rationalism and classical infinitist mathematics. Spatiality “evaporates,” and spatiality “leaks back” into the Dream House assemblage. In the specific spatiality of *The Romantic Symmetry (over a 60 cycle base) in Prime Time from 112 to 144 with 119* (1989-), we find that this very precipitation pattern, the disavowal/blockage and leakage process itself, fertilizes the Dream House space, and renders it an arable assemblage for panic-tilling and the cultivation of ecstatic practices.

But first, let’s clear the air: if space obviously never really leaves the Dream House in the first place, *how* can we follow its departure and return? How can space haunt a space? Now that I’ve suggested a meteorological metaphor to help track the circulation of disavowed and returning spatiality in Young’s unorthodox Dream House compositions, I’d like to propose two more metaphors—one techno-corporeal, and one acoustic in nature. Together, these three frames will help us meter the traffic of disavowed and returning space in the Dream House assemblage.

2. Across the analytical divide: Techno-corporeal compositions. We can begin by first drawing a bead on two features common to each of Young’s unorthodox “scores”—
the body, and technology, which themselves are inscribed in a not-wholly textual or aural space—and then taking these features as the analytical nodes by which we can frame Dream House compositions as techno-corporeal phenomenon. Ironically, Young’s unflinching acceptance of all things technological, and his knack for collapsing organic and machinic phyla in practice, even as he theoretically disavows space like any good Platonist would, characterizes the technological node. Of course, in mixed-means theatre, the composer-listener distinction is usually attenuated, but in the Dream House, the body literally becomes the clef to Young’s “scores.” And precisely because the body is so patently involved in sonic spatiality, composer-listener bodies will resonate as the principal nodes in our precipitation model.

So, secondly, to better (and more systemically) parse the composer-listener node, we will borrow a thought experiment designed and deployed by Brian Rotman (1993) in his proposal for a secularized mathematics, *Ad Infinitum*. In fact, if we differentiate each composer-listener into the three agencies of Rotman’s tripartite semiotic model of mathematical activity (Subject, Person, Agent), we can do more than meter traffic, and reduce “space” to the four walls of the Dream House. Using Rotman’s model, we can correlate Young’s fanatical preoccupation with repetition, duration, and difference qua difference with the concomitant potential for asignificatory experimentation and becoming multiple in the Dream House, on the one hand, and ethical quandaries embedded in the seemingly axiomatic disavowal of space on the other. Doing so allows us to install, alongside Young’s testimony to an unlimited space made accessible by just intonation’s system of quantifiable (and mystical) rational numbers, some similarly flexible but more tangible spatial parameters, which we can measure qualitatively in terms of rhythmic
gestures that *compose* and order space and the hospitality generated by rhythmic gestures of hospitality, by which we *repose* in ecological space.

And although we must analytically separate body and technology to make our space-tracing manageable, we can borrow Leibniz’s term “monad” in a way similar to Merlin Donald’s appropriation of the term in his *Origins of the Modern Mind* to mitigate this analytical split. Donald’s monads operate in flexible external symbolic storage networks; likewise, Young’s compositions figure composer-listeners into a matrix of enfolding and unfolding interiority and exteriority, so the notion of a semiotic monad will also help us build descriptive language for both ecstatic and autopoetic perceptions and perspectives in the Dream House, and sustain the argument that Young’s vitalism factors as much as his rational-mysticism when drawing the straight-line strata of the Dream House assemblage. Rather than analytically oppose these practices, however, I will attempt to put them into intervallic relationships according to a compositional model of rhythm.

3. *Sonically speaking: composition as intervallic rhythm.* Sonically speaking, Young literally builds his compositions from scratch with sine waves, on the simple premise that sine waves have only one frequency component, and these singular events can be combined in precise intervallic relationships denoted by rational numbers. Here, rationalism and rhythm are not opposed, but themselves precisely "rhythmized." So, finally, the acoustic Ur-metaphor of an *interval* frames the Dream House as a between-space populated by composer-listener bodies with the potential to transform into an ecstatic commons in the between-space created by itinerant *rhythms*, sounding, between. We can also play different mathematical models as frequencies: on the one hand, the
formal codes of mathematical Platonism; on the other, the formal codes of realizable numbers (that is, numbers only brought into to being by), for example. Along these lines, we can generate many intervallic metaphors: on the one hand, voiced sounds (singing); on the other, electronic sounds (sine wave generators, and eventually, the Rayna Synthesizer). On the one hand, the virtualization of the real; on the other, the realization of the virtual, and so on...

So, because Young's practice is literally based on intervallic relationships between sustained frequencies, it resonates well with Deleuze and Guattari's (1987) notion of inter-milieu rhythm, in a way that grounds both treatments of rhythm. “Every milieu,” they explain, “is vibratory, in other words, a block of space-time constituted by the periodic repetition of the component,” and the periodic repetition is that milieu’s code (Deleuze & Guattari, p. 313). Young establishes coded milieus, both sonic (standing wave-forms) and exhortative (“draw a line…”), and then labors to sustain them for as long as possible; inevitably, these milieus transcode (or transduce) into and atop each other, producing images of difference which can be savored for long durations. Young’s minimalist aesthetic and composing practice of reposing goes no further, and instead allows the composer-listener to glimpse and perhaps become difference itself—this transduction between one singular sine and another dissolves the boundaries between composer-listeners who share this space as it allows rhythms to emerge. Likewise, the milieus (non-Euclidean/Euclidean, Aeon and Chronos times, scored instructions to sit/scored instructions to stand, autopoiesis and transformation) between heterogeneous practices in the Dream House assemblage, produce rhythms. “There is rhythm whenever there is a transcoded passage from one milieu to another, a communication of milieus,
coordination between heterogeneous space-times…rhythm is the Unequal or Incommensurable that is always undergoing transcoding” (Deleuze & Guattari, p. 313). As human monads—each one a potential transducer of collective consciousness and a singularity—populate the Dream House, ergotrophic and tropotrophic lines of flight intersect and form a common mesh of transcoded rhythmic space.

Symmetry and Pattern-Breaking in the Dream House

Young-composer agencies

Young has recently described his sound and light installations as “models of an algorithmic score” (“Notes on the Theatre of Eternal Music,” 2000). At first, Young tells us “written verbal instructions and rules in these pieces became the basis for my approach to structuring music with The Theatre of Eternal Music.” (Notes). However, as Young developed his brand of composition, he decided it was “no longer necessary to write out all of the rules for the musicians.” What’s more, Young gradually gave monad musician’s duties to analog oscillators, oscilloscopes, and, by 1984 a custom-designed Rayna interval synthesizer. Indeed, in a rare written “score” for The Romantic Symmetry published in 1/1 The Quarterly Journal of the Just Intonation Network, Young notes that “the listener’s position and movement in the [Dream House] space…[has] become an integral part of the sound composition” itself (“The Romantic Symmetry,” p. 8). Because the “Romantic Symmetry” essay-text, like the composer-listeners who inhabit the Dream House, is also part of The Romantic Symmetry score, we can use it as a touchstone for measure of this particular “model of an algorithmic score.” Specifically, we can read “The Romantic Symmetry” to apply Rotman’s model and differentiate Young the composer into Person, Subject, and Agent, and likewise differentiate composer-listeners
into Person, Subject, and Agent as we attend to the matter of spatiality in this model. The practices of these agencies can further be classified into two types of activity: autopoietic actions (Person/Subject/Agent 1), and asignifying actions (Person/Subject/Agent 2). We began with Young’s exhortation, “draw a line.” Here, we will elaborate the grammar of a La Monte Young composition as mathematical text. With Brian Rotman, we will rest on the premise that mathematical discourse is fundamentally “an exhortatory, command-giving formalism” (Ad Infinitum 71).

Young 1 dominates the first 15 paragraphs of the essay, and gives a detailed quantitative account of the 17 frequency ration identities that comprise The Romantic Symmetry. In these sections, Young-Person 1 gives inclusive commands, or commands addressed to Young-Subject 1 but including Young-Person 1. Young-Subject 1 is the subjectivity capable of “forgetting” indexicality and executing just intonation as a formal code that can achieve infinity in extensive space by manipulating rational numbers—and is therefore the subjectivity capable of disavowing space. Rotman (YEAR) explains how “the lack of indexical apparatus,” in an assigned formal code, “not only seems to entail the exteriority and irrelevance of the subject’s spatio-temporal presence to mathematical content but also has the effect of severing the constitution of [this code] from the context and circumstances of its practice” (p. 73). At this stage, The Romantic Symmetry not only remains a mathematical experiment, but one that disavows the space it creates by its practice. But when the mathematical experiment moves to the tangible Dream House space, it becomes a scientific, or applied experiment, which, by virtue of the work required to construct a coherent intensive sonic space, and requires a different subjectivity, which we can call Young-Subject 2.
Now, because inclusive commands include the speaker in the action, a Young-Person 2 emerges to give inclusive commands to Young-Subject 2. Together, the Young 2 unit specifically grapples with intensive space when he argues that a “pure” acoustical space is not only necessary, but only possible when we reckon with our constant everyday immersion in a mechanically-produced vibratory web. Testifying to the vitalism of the machinic phylum, Young 2 insists that

In order to achieve as pure an acoustic environment as possible all of the frequency ratios in *The Romantic Symmetry* are tuned such that they demonstrate whole number frequency ratios to the 60 Hertz AC power line frequency which functions as the underlying drone of the city and all AC powered equipment on the American continent. (p. 8)

But when Young-Person 2 hears the everyday electronic hum of power lines and AC appliances, he is not anticipating cyber-futurity. Rather, and like William S. Burroughs’ Captain Mission, Young-Subject 2 is instructed to tune in to panic, the *staccato* rhythmic echo of “primordial time” (p. 8). In Ghost of Chance, the narrator tells us that, “Captian Mission did not fear Panic, the sudden intolerable knowing that everything is alive. He was himself an emissary of Panic, of the knowledge that man fears above all else: the truth of his origin” (Ghost of Chance, p. 3). Young-Person 2 affirms the dissolution of borders when he tunes to vital ecology of machines, and it seems that becoming-aquarium motor is proviso to “the ultimate experience of ‘time standing still’” (p. 15). Indeed, when Young-Subject 2 sets the drone at “an assumed lowest fundamental frequency of 7.5 Hz which is three octaves below 60 Hz,” he acknowledges—by his practice—that the spatiality that he hopes to supersede truly matters, that a space is a set of practices comprising and composing an immanent ecology.
Significantly, both sets of inclusive commands issued by Young-Person—those designed for extensive space, and those designed for intensive space—attempt to persuade the corresponding Young-Subjects via an appeal to numbers, and quantitative descriptions of space. Indeed, so far, The Romantic Symmetry score is persuasive in aim and testimonial in form. Young’s claims reach their highest tenor when he suggests that “the Rayna Synthesizer has made it possible to realize intervals which are derived from such high primes that, not only is it unlikely that anyone has ever worked with these intervals before, its is also highly unlikely that anyone has ever heard them or perhaps even imagined the feelings they create” (Young, p. 6). And not only do these testimonies assert the efficacy of Young’s rigorous engagement with mathematics and his particular experiments with just intonation (mathematical proofs, “indirectly witnessed” by Subject 1), but they also testify to certain metaphysical beliefs (ecstatic proofs, or “directly witnessed” by Subject 2 if the Subject can commit to Young-Person’s implicit disposal of virtual/real boundary). The first set of proofs is predicated on the mathematical thought experiment of just intonation, the latter, the scientific thought experiment of the Dream House. But “one technology of persuasion,” Rotman reminds us, “is folded inside and inextricable from the other” (Ad Infinitum, p. 86). At bottom, both of the inclusive command technologies of persuasion are quantitative appeals.

But these in order for these inextricable proofs to hold up, the Agents who must run these experiments must also remain coconspirators for life—in the same space. But at this point in the Romantic Symmetry proof, Young-Subject 2, the subjectivity that follows codes designed to cultivate panic (dissolution of borders), falls silent, and both Agents receive commands from Young-Subject 1. And when Young-Subject 1 sends
what Rotman calls exclusive commands, commands that go “beyond the physical and
cognitive capacities of the Subject as embodied being,” the idea of same-space Agents
becomes a logical impossibility (p. 73). For starters, the exclusive commands of the
Romantic Symmetry proof qualitatively instruct some Agent (which can only be Agent 2)
to luxuriate “in an ecstatic state of primordial time.” Which, according to the strictures of
the text score, cannot happen unless some other Agent (which can only be Agent 1) stays
behind and does the dirty work of creating a quantifiable physical model of the divots
that The Romantic Symmetry’s elaborate code of exact phase-locked intervals carve out
of serial time, which is no small matter, as we shall see.

Basically, we have another denial of the practice that constructs the assemblage,
on the assemblage. And, again, at this point, spatiality returns, and haunts the Dream
House with a vengeance. And yet, ecstatic polyrhythmic potential lurks in the blind spots
of these exclusive commands. Indeed, if we figure silence as a condition for
transformation, perhaps Young-Subject 2 gives silent testimony to a space between cuts
in Turing time, a becoming-time. Or perhaps the splitting of the Young-Agency itself—
which results from the incommensurability of the qualitative and quantitative codes used
for the two exclusive commands—creates a crowd out of Young-Person 1 and Young-
Person 2; in our model, the latter agency already has the ability to stand beside itself, and
transform.

But what about the listener-composer? For the most part, the listener-composer
agencies mirror the Young-composer agencies, with two minor differences. First, in
persuasion loops involving listener-composers, both the inclusive and exclusive
commands rely much more heavily on qualitative codes. Second, the exclusive
commands come in the form of a rather problematic option between “sitting” or “moving,” Each option seems to encode a different sort of agency: the first depends on a stationary perspective, the second solicits a different way of mapping difference, a rhythmic capacity the exceeds the autopoetic "I" perspective. If we were to run the second of these two programs, what rhythmic compositions become possible? Before we can understand how listeners might become a distributed network of listener-composers in the Dream House, an explanation of the exclusive commands assigned to Young-Agent 1 is in order.

Young Agent 1 is the proxy that is most bound up with the Rayna Sythesizer, whose digital phase-locked oscillators do drift, but only at a rate of 1 beat per year. Agent 1 must also acquire physical and mathematical techne, such as the ability to apply Fourier analyses, to the enclosed space of the Dream House, and then do the actual work of creating quantifiable standing wave patterns in the space of the Dream House. Young-Subject 1 carefully describes how, “in an enclosed space, such as a room…standing wave patterns are created when a sine wave is reflected from a given plane (without absorption) and then travels back, superposing itself with the original wave. Adding the contributions from the components of the original wave and the reflected wave, we can create standing waves in space” (“Romantic Symmetry” 8, emphasis added). If this is clear, the proxy can receive coded instructions on how to build a parallel image of a serial time pocket, a “sound sculpture of air molecule oscillations and standing wave patterns” (p. 8). And because Subject 1 has already forgotten indexicality, Agent 1 will not interrogate this enclosed spatium of intensive energy at all, and will treat it as an unlimited space, according to the coded instructions. In the same gesture, Agent 1 constructs a limited
space that is nothing short of a parallel image of serial time: moments of time will be
transposed, so to speak, from moments of time to “moments” of space. These moments of
time are, of course stretched by sustained sine waves, which, as we now know, can be
superposed into standing waves, “which do not propagate, but remain anchored at certain
locations in the room, called nodes” (8, emphasis added). Erwin Schrödinger taught us
about how standing waves are electrons connected by nodes, which led Max Born to
conclude that these standing wave forms are probabilities. The art of rhetoric, which
traffics in probabilities, not certainties, approximates a science of rhythm at this scale and
resolution (Dancing Wu Li Masters 122-28) Now, the space where “time stands still”
begins to take shape. “We hear sounds near node points (sound minima) as softer. At an
exact node point there is no sound of the given frequency at all. Correspondingly, there
are also sound maxima (antinodes) in the standing wave pattern…at these places that
frequency sounds louder” (8, emphasis added). The exact soundless node is the
quantitative description of syncope between these moments of time, which have become
“moments of space.”

Vascular Surgeon Irving Dardik, puzzling over why low heart rate variation is
associated with many and diverse health disorders, argues that a disavowal of space is
built into our technology for measure cyclic heart patterns. "To measure HRV and heart
rates over linear time, each heart-beat cycle of systole and diastole is treated as a
dimensionless point. Medicine ignores Nature's cycles of systole and diastole in favor of
idealizing and then analyzing the cycles as serial points in a straight line to
mathematically measure beat-to-beat heart Rate variability. The patterns of natural
heartbeats are converted into numbers, points, and lines (as if there were gaps from point
to point with nothing going on in between). What is lost in this dematerialization of the
cyclic heart pattern into abstractions is the natural continuum of the heart beating as a
wave" (“The Origin of Disease” http://www.heartbeat2000.com/dardik.htm) Young-
Person’s qualitative account of this syncope is “time standing still,” but we can also
qualitatively name this syncope space the ecstatic between-space. Significantly, in
Rotman's non-Euclidean formulation, it is indeed a space, which is much different than
the Euclidean premise, which would have nodes serve as what Dardik might call
"dematerialized" vantage points between but somehow "beyond" two stretched moments
in space-time. It is precisely these syncopes that allow probabilities proliferate
exponentially--where individual listeners can become clusters of listener-composers, and
can begin to participate in ecstatic differentiation itself.

Again, we see the point at which the Subject in an infinitist mathematical
discourse is able to exclude—in a productive way, no doubt—empirical reality. And
what’s more, the very enclosure of the Dream House’s 4 parallel and “live”walls (without
absorption) localizes a Euclidean work space in which the numbers can actually
“work”—enclosure allows the Euclidean code to actually create and sustain a sonic
(virtual) plane, upon which we can find both planes of consistency and strata. So space is
again disavowed, even as it is constructed, but at the same time, the potential opens up
for a particularly important sort of transcoding, a transcoding that happens “when a code
is not content to take or receive components that are coded differently,” for example the
incommensurable qualitative and quantitative codes, “and [one code] instead takes or
receives fragments of a different code as such” (A Thousand Plateaus, p. 314). If
Subject 1 possesses the techne needed to hack Euclidean code to send Agent 1 on its
mission to build standing wave patterns, then Subject 2 represents the subjectivity that can experiment, and allow its corresponding itinerant Agent to spontaneously transcode fragments of Euclidean and non Euclidean consciousness, or transduce qualitative and quantitative frames—and perform other “following” tasks not amenable to formal code themselves.

*Compose/Repose: Listener-composer multiplicities*

Now it has become clear that The Romantic Symmetry “creates a sound environment in which the listener’s position in the space” affects the work itself (Young, p. 8). Young argues that “by slowly walking around in the space the listener can create sequential harmonic progression of different frequency components and melodic fragments, and, by moving one’s head even slightly, emphasize one frequency over another” (p. 8). However, Young equates this practice with a phenomenon he calls drift. Young’s ambivalence about drift shines bright lines between the two practices of difference mapping possible in the Dream House. And, similarly, Young’s ambivalence about drift stands in contrast to his unequivocal acceptance of all things technological. From Young’s perspective, the Rayna Synthesizer is to a laser-surgeon's scalpel as analog sine wave generator is to a butter knife.

Before the use of phase-locked oscillators in our work, drift was a feature of our sound and light environments. Before 1975, in spite of the great stability of the analog sine wave oscillators, the drift of the phase relationships of the individual sine waves would gradually change the algebraic sum or difference of the amplitude of the composite sound waveform to create audibly shifting permutations in standing wave patterns.
In other words, the carefully crafted sound sculpture of standing waves would start to droop and melt into dissonance and stochastic irregularity. Harkening back to “draw a line,” it would seem that this would be an “inherent characteristic” of Young’s study of difference. And the effect for the listener-composer seems, quite literally, “desire-able,” the way Young describes it: “at very loud levels one actually began to have the sensation that parts of the body were somehow locked in sync with the sine waves and were slowly drifting with them in space and time.” In the argot of Deleuze and Guattari: becoming sine-wave in order to let desire remain desire, and find one’s body without organs. However, Young delineates “three kinds of drift,” the third of which is no drift at all, but the “constant set of phase angle relationships” that triggers “the psychological effect we refer to as ‘time standing still.’” Thanks to the Rayna Synthesizer, “this effect is now continuous in the sound environment of The Romantic Symmetry” (p. 15). Young's language here seems to operate as an attempt to control the distribution of force in a way that emphasizes the stability of the Dream House--as cause and locus of the effect--instead of the inherent non-locality of "time-standing still.” According to Foucault's "disciplinary distribution" of force, the "three great methods--establish[ing] rhythms, impos[ing] particular occupations, [and] regulat[ing] cycles of repetition" organized schools, workshops, and hospitals (Discipline and Punish, p. 149). Although this is not the time and place to unpack such arguments, sound's uses for timing and regulating collective rhetorical processes has yet to be thoroughly examined.

At last, having dispensed with drift (despite its distinct efficacy) Young Person 1 issues the inclusive commands to the listener-composer Persons. According to philosopher and complexity theorist John Collier and musician Mark Burch, “rhythmic
entrainment can be either forced (driven) or spontaneous (self-organizing),” and while spontaneous entrainment “creates new symmetries via the dissipation of energy and/or information,” forced entrainments “always transfer pre-existing order” (Collier & Burch, 1998). While Young’s inclusive commands take the tone of what Collier and Burch here call a "forced entrainment," they also offer a lighter two-step, an easy algorithm and dance for rhythmic composition: compose the space, repose in space (Collier & Burch).

There are two distinct ways to listen to the tones in this sound and light environment. The first way is to sit quietly in one fixed place. The second way is to move or walk around the space to observe the points in the room where the different frequencies are louder and softer (Young, p.15).

So far, so good. At this point, the listener-composer Subjects probably cannot imagine an argument against this dance, as the choice is built into the code. But Young refines the instructions further, overcoding the tropotrophic line drawn into this score:

Note that if you practice the second method while someone else is practicing the first method, their listening will be affected because your movement will establish interference patterns which will alter the structure of the air molecule oscillations in the room. By practicing the first method and sitting quietly in one fixed place the listener can best experience the phenomenon of the different frequencies locked in their phase relationships to each other, and attain the ultimate experience of ‘time standing still.’ (Young, p. 15).

In a sense, hospitality, as a measure of space, seems built into these inclusive exhortations. But the listener-composer Subject 1, who can interpret this code, ironically sends out an Agent 1 who must retain enough “I” self to mechanically perform the action of either sitting or standing. Of course, space returns, because the Agent is corporeal. But in a parallel development, this listener-composer returns from the experience to autopoetic self, untransformed. Instructed to consider the Other as a danger, as one who
might “establish interference patterns,” Person 1 measures difference with an autopoetic reference tone, and cannot participate in the ecstatic register. While hospitality is essential, "interference patterns" are precisely the standing wave probabilities that we cannot know in advance: indeed, ecstatic experience does not depend on the seamlessness of the sine-wave mesh, as much as it depends on the cultivation of attention to the unstruck. Are we to think of the Dream House as a model of interiority, and a sonic algorithm for tropotrophic arousal? Perhaps. Even so, whether the installation is visited upon by one or many, those who enter are not dematerialized nodes in idealized standing wave patterns, they are corporeal beings with a will to live.

But the listener-composer 2 creates a subjectivity more willing to experiment with the inclusive command-choices. Of course, space still returns, but Subject 2 issues an exclusive command that only requires that Agent to tune to the entirety of the Dream House ecology by rhythmically mixing composing gestures and reposing gestures into an aware and hospitable process. Attunement, then, can be another qualitative measure of intensive space. Able to reckon with the Other, this pack of selves maps difference as it is produced in the itinerative leap from one singularity to another. For Person 2, the Dream House can be a space where—drift or no drift—becoming sine wave is becoming multiple.
CHAPTER 5: WYRD TO THE WIKI! LACUNAE TOWARD WIKI ONTOLOGIES

What is “wyrd?” In “What is Wyrd?,” Arlea Æðelwyrd Hunt-Anschütz (2001) states the following:

Another way of understanding wyrd is through a weaving analogy. In the Anglo-Saxon Riming Poem, the narrator says of his life circumstances Me þæt wyrd gewæf, ‘Wyrd wove this for me’. In the Icelandic Njal's Saga, valkyries weave out the course of a battle on a loom made of weapons and threaded with human entrails. Imagine a patterned piece of cloth being woven on a loom. The horizontal threads (the woof) are woven in in layers along the vertical threads (the warp). The horizontal threads represent layers of past actions. The vertical threads represent a time line. The colour of each horizontal thread as it is woven in will add to [the pattern] that is already established and influence the pattern that emerges. (http://www.wyrdwords.vispa.com/heathenry/whatwyrd.html)

Sometimes the image of the physical world is not so much a dance of gestures as a woven texture. Light, sound, touch, taste, and smell become a continuous warp, with the feeling that the whole dimension of sensation is a single continuum or field. Crossing the warp is a woof representing the dimension of meaning—moral and aesthetic values, personal or individual uniqueness, logical significance, and expressive form—and the two dimensions interpenetrate so as to make distinguishable shapes seem like ripples in the water of sensation. The warp and the woof stream together, for the weaving is neither flat nor static but a many-directioned cross-flow of impulses filling the whole volume of space. I feel that the world is on something in somewhat the same way that a color photograph is on a film, underlying and connecting the patches of color, though the film here is a dense rain of energy. I see that what it is on is my brain—"that enchanted loom," as Sherrington called it. Brain and world, warp of sense and woof of meaning, seem to interpenetrate inseparably. They hold their boundaries or limits in common in such a way as to define one another and to be impossible without each other.

Alan Watts, A Joyous Cosmology
The wiki imperative is "alter." In wiki, then, teaching is an ongoing practice of alteration. So, as Burroughes puts it in *Nova Express* (1964), "We first took our image and put it into code. A technical code developed by the information theorists. This code was written at the molecular level to save space, when it was found that the image material was not dead matter, but exhibited the same life cycle as the virus....To this end we invented variety in many forms, variety that is of information content in a molecule, which, enfin, is always [a permutation of the existing material]" (p. 49) Why? Because composers have worked this way for millenia. Ralph T. Griffiths, in his preface to his translations of the *Sama Veda* (1895), reminds us the we have always cut and rearranged the patterns in which we find ourselves, enmeshed. "The Collection is made up of hymns, portions of hymns, and detached verses, taken mainly from the Rgveda, transposed and re-arranged, without reference to their original order, to suit the religious ceremonies in which they were to be employed" (http://www.sacred-texts.com/hin/sv.htm).

Working with Ksemaraja's *Commentaries on the Shiva Sutra Vimarshini*, via a French translation, Danielou renders what sounds like early description of the rhythmicity and productivity that discontinuity brings to digital ontologies today. "The bindu, wanting to manifest the thought it has of all things, vibrates and is transformed into a [primordial] sound with the nature of a cry [*nada*]. It shouts out the universe, which is not distinct from itself; that is to say, it thinks it--hence the word *sabda* [word]. Meditation is the supreme 'word': it sounds, that is, it vibrates, submitting all things to the fragmentation of life; this is why it is *nada* [vibration]....Sound [*sabda*], which is of the nature of *nada*, resides in all living beings" (cited in *Music and the Power of Sound 3*). The bindu, the
zero-stop and focal point of meditation, is the most compressed expression of the most extreme form of sequentiality we can so far imagine.

From this starting point, every movement generates "vibration and therefore a sound" that is peculiar to it. Such a sound, of course, may not be audible to our rudimentary ears, but it does exist as pure sound. Since each element of matter produces a sound, the relation of elements can be expressed by a relation of sounds" (p. 4). Danielou continues, emphasizing the evolutionary plasticity of perception. Going parallel at the limit of our sense modalities happens by making links, and this sharing of the "spheres of perception" inherent in the concept bhuta, if it is to be translated in and across Word media, will required an embodied rhetoric, because "although those pure, absolute sounds that kabir calls 'inaudible music' cannot be perceived by our ears, they may be perceptible for more delicate instruments, and the perception of such sounds is one of the stages in the practice of yoga" (p. 4). Such delicate instruments are fashioned in remix culture according to the mash-up principle that brings cultures of rhythm together with the parallel processing built into each potential node of entrainment, each "personal" computer.

Here, in Chapter 5, we consider the yoga of anticipation and delay introduced in chapter 3 to imagine a "becoming transducer" effect that opens authorial subjectivity to the distributed space of commons ideation. Here, we will extend and unpack the category of resonance technology introduced in chapter 3. In *The Foundations of Tibetan Mysticism*, Anarika Govinda's is a theory of "creative sound" and "vibration," where receptivity, not expansion, is the starting point: listening. The lotus flower as the icon of sharing and unfoldment. "The sound of OM... is like the opening of the arms to embrace
all that lives. It is not an expression of self expansion, but rather of universal acceptance, devotion, and receptivity--comparable to that of a flower, that opens its petals to the light and to all who partake of its sweetness. It is a giving and a taking at the same time" (p. 47). Govinda's formulae for "intuitive receptivity" is, essentially, a "rhetoric" for the sacred technologies cultivated and transmitted over millenia of embodied practice. When immersed in a wiki ecology made of links, Foundations reads like a rhetoric for tuning, scanning, and working affirmatively with any immediate frequencies, like a receiver. Then, we think again about "beatmatching," and the compositional strategies we find in the commons. We recall the reading and writing protocols that emerge to program and tune the distributed perception, the fundamentally shared bhuta of the commons. Once immersed in wikidelic fields of wonder and connectivity, all of the claims we can muster to transduce the wonderment brought about by this phenomenology of learning seem at once obvious and ineffable. And so tracing the geneology of the void or the Greek demos makes it easy to see the ways disparate strands mind, spirit, and body research in the arts and sciences have come to coalesce around common problems. Now, using the same information and communication technologies, different cultures enact illocutionary forms and expressions of rhythm according to their different proximities to the creative forces they dance around.

The indirect communication of entymological stigmergy is a good way to understand the stochastic dimension of creative rhythmic action and the depatterning and distribution of what Rotman calls the monoid self into what Donald calls the hybrid mind, our consciousness. Mind science, in fact, is producing claims far more radical than the reductionist/antireductionist fits on either side of causality in emergent systems
diagrammed in Prigogine and Stengers' work. Consider the startling claims about the functionality of mirror neurons. Kohler et al recently reported that "many object-related actions can be recognized by their sound. We found neurons in monkey premotor cortex that discharge when the animal performs a specific action and when it hears the related sound. Most of the neurons also discharge when the monkey observes the same action. These audiovisual mirror neurons code actions independently of whether these actions are performed, heard, or seen. This discovery in the monkey homolog of Broca's area might shed light on the origin of language: audiovisual mirror neurons code abstract contents—the meaning of actions—and have the auditory access typical of human language to these contents" (p. 846). And yet, these claims don't seem to cause much ruckus, and as they would seem to clash with traditionally conceived western metaphysics, as it is bound up in the rhythm of Chronos, our history, they would seem to resonate with Danielou's (1943) acknowledgement of the auditory as the last station before beyond. "We may nonetheless be able to produce corresponding sounds within the range of vibrations we can perceive. We can establish relations between these partial sounds similar to the subtle relations of nature. They will be only gross relations, but they may approach the subtle relations of nature sufficiently to evoke images in our mind."

Here, we are reminded of the topoi of neurobiology today, which makes quite clear the non-visual nature of these "images." Recall that the art of accommodating the beholder's share in production is a development made possible by “running the program” on tagging, by trying it. This is the principle of active perception. Mantric practice is the rhythmic and embodied yoga, or practice, of active perception. Danielou (1943) selects language from Sir John Woodroffe's inquiries into Tantric metaphysics to introduce the function of
rhythm to the idea of producing vibrational correspondences across and even beyond spheres of perception. In order to do so, he invokes the origins of mantra. "There are, it is said, closely approximate natural names, combind according to natural laws of harmony [chandahs], forming mantras which are irresistibly connected with their esoteric arthas [forms] “ (p. 4).

Indeed, wyrding always entails a productive translation, albeit a lossy compression, according to the diverse traditions of the Logos. Danielou, in Music and the Power of Sound, continues to cite Woddroffe to introduce this Word thread. "If we were able to reproduce the exact relations that constitute the natural names, we should recreate beings, things, and phenomena, because this is the very process of creation, explained by the Vedas and also indicated in Genesis, or in the Gospel of John when the "creative Word" is spoken of. If, however, exact relations cannot be produced, approximate relations have a power, if not of creation, at least of evocation; sound 'works now in man's small magic, just as it first worked in the grand magical display of the World Creator'" (p. 4). Govinda refreshes the concept of resonance, the springboard for Danielou's proofs regarding metaphysical correspondences and the impersonal nature of these correspondences, which opens up a gutter, to revisit Scott McLoud's language for the gaps that bring rhythm into being, for all transhuman and evolutionary rhetorics. Differentiation of "hearers" according to "relative acuteness of their perceptions" (Music and the Power of Sound, p. 5)." By 'the mutual aiding and inhibiting of the sounds in the Chandas collocation.....the cumulative effect of the repetition of sounds and strings of sounds also may produce the aforesaid result" of rhythm. While living in India, Danielou corresponded with Rene Guenon, who in an article on the language of birds, explains that
the Vedic "hymns were given the name of *chandahs*, a word that properly means 'rhythm.' The same idea is contained also in the word *dhikr*, which in Islamic esotericism applies to rhythmic formulas exactly corresponding to the Hindu *mantras*. The purpose of the repetition of such formulas is to produce a harmonization of diverse elements of being and to establish vibrations able, by their repercussion across the series of stages in indefinite hierarchy, to open some communication with superior stages, which is, as a rule, the essential and primordial purpose of every rite" (Guenon, "La Langue des oiseaux," p. 670). Wyrding, in the sacred/secular mix of the commons, follows forth from these rhythmic traditions. In the more recently evolved traditions of writing instruction in university contexts, questions of writing have taken us back to the Greek archive. Aristozenexus and Aristides provide some rhetorics of rhythm. But the writing subject working with sound today is a distributed formation, and appears as swarm, a choir, a dance troupe. Today's "remix culture" most obviously calls for more inquiry into diverse archives of rhythmic practices rooted in sound: the techne of call and response, sampling, blues traditions, and african american commons practice share the same building blocks, sampling and repetition. We also can look to the North Indian Hindustani traditions of raga and tala for practices and theories of sound, time, and rhythmic composition rooted in core tropes of lepsis and repetitio. In this dissertation, so far, we have considered the ways a generalized *mousike* of compositional practice for the commons could grow under the aegis of any mixture of these select-mix-render idioms and histories. Wehiliye (2005) accurately describes the role of the sonic in future-anterior inflected creative practice. Another turn suggested by Wyrd is the turn *inward*. 
Author Alain Danielou concludes his study of the effects of sound phenomena on human consciousness with a meditation on the perceptual effects of selection processes and the conditioning effects of repetition on mind and body: "The mechanism of auditory perception and of the analytic mental perception which corresponds to it, permits sounds to act through repetition upon our internal personality, to transform our sensibility, our way of thinking, the state of our soul, and even our moral character." This is precisely what did worry Aristotle, despite his modulations of tone and emphasis designed to (consciously or not) delay any sustained consideration of why strictures regarding music required so much attention. With Andrew Ford, I'd like to suggest that "controlling these fundamental powers" inherent in rhythm "is at the heart of Aristotle's plans for civic culture, a specially trained sensibility and set of musical practices that will distinguish citizens from slaves on the one hand and from virtuoso performers on the other" (The Power of Music in Aristotle's Politics" in Music and the Muses, p. 311). Future, closer examinations of Aristotle's elision of mousike's fundamental power over the thymos will inform our efforts to write together as we continue to wake up to our global connectivity.

Danielou (1967) does connect this art of perception to music's cousin, number. In making this connection, however, he is setting up another play, whereby he illustrates the deleterious effects of a lacuna that gets stretched into a groover, in Weheliye’s sense (grooves of history), the so-called comma (the Heglian’s remainder) that mathematical emphasizes (at the expense of the phenomenological, the participation in music in its sacred formulations. Music, as we've outlined here, merges with writing as we've known it in the rhetorical tradition, that is, the art of inventing, arranging, and sharing ideas according to the constraint of the particular occasion and media. Therefore, the lacunae in
rhetoric and composition is this same gutter, around the force of rhythm, that Aristotle left for us, the denizens of a densely interconnected infosphere, not to consider but to follow and join. Affect in argument finds footing via repetition, as with mantric formulae. “This is true of music, where arithmetic (or rather, harmonic) frequency ratios, based on the combination of certain specific numbers, which our mental mechanism permits us to recognize and to analyze, produce considerable effects on our psycho-physiological condition.” And language, even: "this is also true, although less directly, for language, where the repetition of certain syllables corresponding to specific ideas" can produce attractor states and induce a state of intuitive receptivity.

In his *The Self-Aware Universe*, physicist Amit Goswami (1993) brings the tenets of a "monist idealist" philosophy of science to bear on the (typically materialist) archetype of the scientific discovery and invention. In his concluding section, Goswami most succinctly sings his song, a remix of the "hero's journey." Here, he asks us to consider the magnitude and potential of the immeasurable commons bound by the mystical experience of joy, "beyond science, religion, and philosophy" (p. 271). Coupled with the connectivity facilitated by communications technology, Goswami argues, this commons can initiate a "renaissance" of interconnectivity and collective enchantment on global scale. When the integration of different planes takes the form of Wyrd (whether troped inward or outward) this process connects the projects of science, philosophy, and religion.

Goswami tropes the "hero's journey" from the singular to the collective: the wiki becomes a world-teacher. "The Bhagavad Gita portrays such events of renaissance as the coming of an avatara, or world-teacher. In the past such avatars have sometimes been
isolated, single individuals; at other times there have been collections of individuals. But the world is much bigger now and needs an unprecedented number of individuals to become avatars to lead the next renaissance" (The Self-Aware Universe, p. 271). What's important to any next renaissance of wyrd will go and come from beyond the numbers, and must manifest between individuals. In the space of collective avataras imagined by Goswami, the dynamic nature of our interconnectivity (the rhythm) sets the tempo. Hindustani musicians have always named this organic tempo, or rhythm, laya. Laya measures a rate of succession, not of iterative units, but of activity between gestures. Perhaps more precisely: laya keeps track of both the "ongoing stream of time" and the repeated actions deigned to divide "musical time into individual units" (Rowell, p.189).

Time is experienced both in its parallel and serial forms. With wiki, students build instruments for toggling parallel and serial modalities. Instrument-builder Harry Partch opens his chapter on basic monophonic concepts with a section titled "The Inner Ear: Music's Middle Man" in a way that speaks to the intrinsic connectivity of tone. "A tone, in music, is not a hermit, divorced from the society of its fellows. It is always a relation to another tone, heard or implied. In other words, it is a musical interval, the relation between two tones. This relation is mutable, to be sure, but it never ceases to exist....because the tiny bony snail inside the human head, with its tiny longitudinal partition, with some twenty-three thousand fibers stretching across it, and with at least twelve times twenty-three thousand tiny hair cilia to pick up the smallest displacement of the air and send that sensation via nerve conduits to the brain, makes it a relation. The acuity of this organ of hearing is relatively much greater than that of the human organ of vision, for with those musical intervals which the earhears with maximal perception it
performs lightning-like computations; it can determine almost immediately, exactly or approximately, the relationship in vibrations per second, or cycles, of two tones sounded simultaneously; it can say instantly whether the two tones are in correct ratio (in tune) or not in the correct ratio (out of tune)" (Genesis of a Music, p. 86). Our ears traffic in a lot of information, much more than our apparatus of seeing, the eyes, but this bandwidth often goes unnoticed in our efforts to communicate with each other.

The lightning computation of listening, the logic of gnosis, induces our refrain serial/parallel refrain, again and again. Wiki is a way of playing this game. Wiki, a visual and spatial analogue of sonic rhythm, is an instrument for tuning in on complexity, for weaving scattered threads of wyrd together, and for collectively composing in non-linear ecologies of information. In the freesound experiments in technical writing contexts, we learned that the dissonance we elide holds the secret to rhetorical invention in dynamic and information-rich ecologies. In the social bookmarking experiments, we revisit these experiments to build on the ways working with sound helps students refigure their computers into instruments for writing in clusters, and through recursive symmetry-breaking, learn new forms and patterns in argument, and develop new modes of rhetorical address.

These experiments embolden a proposal: to build practical and ethical space for allowing these computers, which are already “distributed” if by this we were simply acknowledging that they saturate the field of higher education, to operate in a more distributed and networked manner in their use. Networked by the information they share, computers are not simply different nodes that can connect to “each other,” they constantly write the potential for n-dimensional and differential connections of
information across the whole field, or network. This section will concern itself with particular transformations in the production of writing, namely how “writing” increasingly describes practices that are distributed, networked, collaborative, and worked out in relation to technologies in ways that are available to many, but at the same time, are not yet practiced, theorized, and developed into educational tools and content for writing programs administered by universities. In particular, it narrates a few ways student writers in wikis have turned their "desktops" into instruments for collective ideation and performance in writing.

Ancient sequential techniques, and their effects, were caught up in the same play of compression and resequencing. Because, "the effect produced by a group of sounds is practically the same whether their collocation is simultaneous (chords) or successive (modes), the numerical relation being identical in the two cases. (Music and the Power of Sound, p. 4). This capacity for moving fluidly from parallel to serial and parallel again is why makes sound an important medium for our consideration today. In "Going Parallel," Brian Rotman (2000) writes "understanding parallel computing as the inscription of the collective onto a site long assumed (implicitly and uncritically) as singular, makes the sequential/parallel opposition a fundamental crucible of cultural difference: one whose dynamics are as crucial to understanding technoscientific practice as the division of labor is to theorizing the social. The site in question--the computer--both as person and as machine, is where a form of parallelism ultimately disruptive of the very idea of an 'individual person' is emerging” (p. 64). Sound and music don't so much install the register or the aural or the oral where visual culture held sway over Western writing as much as they open up our capacities for noticing all the rest of what we can do
with words. Finding rhythm with words, at the same time, follows the same organizing principles of entrainment that turn up again and again in neuroscience, semiotics, and the physical sciences. Rhythm is the art of mixes serial and parallel modes to intervene on time itself, in time. In *Phonographies*, Alexander Weheliye (2005) finds this mixture in the writings and practices of W.E.B. DuBois, Ralph Ellison, and Walter Benjamin, who “rhythmify temporality via of syncopation, taking on variously the form of grooves, monadic shrapnel, and haunting echoes, of the past, present, and future. Time ceases to behave solely as meter only when these three forces coexist, even if unequally and in a fragmented manner” (p.105). Weheliye understands this fragmentation as a necessary condition for marginalized cultural practices to “unbolt altogether new and different versions of time...synonymous with the rhythms found in and sounding from the grooves of sonic Afro-modernity” (p.105). Wikis don't replicate or substitute for the experience that prompted the syncopative brilliance of DuBois, Ellison, Benjamin, or Scratch Perry. But wikis teach that even the smallest gestures of every day writing ask us to learn how to play a part, that is, to listen to the “ rests” and allow our words to become part of a larger syncopation. Lynn Margulis and Dorian Sagan ask us to listen to the “rest of life” in *What is Life?* where they consider *homo sapiens*, not for our unique characteristics as a species, but as part of an endless series of dissipative structures.

Homo sapiens tends to dissipate heat and accelerate organization. Like all other life forms, our kind cannot continue to expand limitlessly. Nor can we continue to destroy the other beings upon whom we ultimately depend. We must begin to listen to the rest of life. As just one melody in the living opera we are repetitious and persistent. We may think ourselves creative and original but in those talents we are not alone. Admit it or not,
we are only a single theme of the orchestrated life-form. With its glorious nonhuman past and its uncertain but provocative future, this life, our life, is embedded now, as it has always been, in the rest of Earth's sentient symphony (p. 246).

Life's syncopation depends not so much on a distinction between *homo sapiens* all the rest, but *homo sapien's* ability to listen to the rest of life, which means we must tune into the rests of life. The seemingly boundless infinity offered by wiki's open edit screens would seem to mean infinite expansion, but as Govinda makes clear, intuitive receptivity is the mode of the commons. Dub science teaches us rests (taking turns, basically) are elemental to life's syncopation, which depends on playing a part in the scattering and gathering of the refrains and patterns of Earth's "sentient symphony."

In the 19th century Korean musicians from Chulla Province "began to improvise melodies taken from folk tunes, calling them *sanjo*, which means "scattered melody." But sanjo cannot just be a scattering, it is also a gathering and bringing into rhythm. According to Johnathan Cott and David Lewiston's liner notes for *P'ansori: Korea's Epic Vocal Art and Instrumental Music*, sanjo generally refers to the organization and refinement of previously scattered materials" Musicians select from "various melodies, which are now assembled in certain shifting but fixed rhythmic patterns that are defined and accentuated by the changgo, the drum that engages in subtle feedback with the kayageum" (Cott and Lewiston). The rituals of scattering and gathering common to the global archive of rhythmic practice teach us to let go, and let the ideas flow. Boethius, who was also a rhetorician, describes dynamics and movement as the trace of that which exceeds words that is nonetheless present, because "presence gives to whatever may partake of it the quality of seeming to have being. But because it could not stay, it undertook an
infinite journey of time; and so it came to pass that, by going, it continued that life, whose plenitude it could not comprehend by staying" (cited in Huxley, p.185). The improvisational and syncopated work of skaldic and sanjo, which alternately scatter and gather source material in an ongoing process of creative production, dissipate new rhythmic structures readily apprehended by our senses and our whole being.

Crucially, laya also means "rest," and is etymologically linked "with the phase of creation in which primal matter exists in an undifferentiated, amorphous state," and therefore, to sunyata, the Buddhist notion that has been too quickly characterized as "void." (p. 202). In a sense, laya directs our attention to the thread-thin lacunae that generate musical time, according to these productive interstices' rate and sequence of unfoldment. The art of keeping time, then, seems to require that we beatmatch our sounding gestures and silent gestures while focusing on heirarchies of order, different laya. Best, then, to become a listener, and let the [resonance] do the composing.

The vacuum spaces produces by electronic delay technologies have always been a part of rhythmic practice.

In any field of links, holes suddenly emerge, a vortex of discourse elsewhere. The Secret Revelation of John, a text found in the Nag Hammadi desert, is riddled with holes in the papyrus, paradoxically increasing its capacity to inspire as a revelatory text. It is in these gutters that divination finds its work. The novelist Philip K. Dick, whose 1974 experience of VALIS - the Vast Active Living Intelligent System - found in the Nag Hammadi finds a template for his own apprehension of a lacuna, where the cosmos itself split open, leaking a powerful pink light that directly bathed Dick's noggin. Dick "goes sanjo" on his own unpublished "exegeisis," the writing he undertook daily to manage and
regulate the force of his VALIS experience, by sampling it into the appendix of "tractates" attributed to Horselover Fat in the novel *Valis*. Tractate 12 seems to gather Fat's sense of the way rhythm can be followed, but not had, as it is the force that creates, sustains, and destroys. "The Immortal One was known to the Greeks as Dionysos; to the Jews as Elijah; to the Christians as Jesus. He moves on when each human host dies, and thus is never killed or caught" (Valis, p. 230). *"I am come not to destroy, but to fulfill."*

The "wild", interconnected space of wiki does not introduce a strange capacity for interconnection that was previously foreign to it, but instead amplifies an oft forgotten capacity of language to form a commons. Daily wiki practice, with its emphasis on the imagination and actualization of linkages, is a teaching in composition's kinship with such spells of the commons, rhetorical softwares for student ecosystems!

The first principle of such ecosystems is that they must organize the attention of students, and they do so by continually becoming something else. Students in introductory and advanced rhetoric courses become digital rhetors for an information saturated planet. They learn to track of all this troping, turning, churning wyrding of the commons through writing and linking. While multimedia composition is where our pedagogy must move and is moving, writing, as a way of continually compressing information by interacting with it, turns out to be an obligatory passage point for all other media students need to compose with. Instant Messaging sessions become scripts for multimedia composition, written argument becomes the most effective way to transmit the goal of a video while it remains in production, a blog teaches a student how to listen to a remix.
The simple repetitions of remix cultures, both emergent and ancient, inform daily wiki practice. In the mid 1920s, musician Hazarat Inayat Khan brought Islamic mystical tradition to Western ears at the Summer School in Suresnes, France. "During these three months' sessions," Khan would focus on sound, color, music, dancing, and language "extensively and profoundly, so that they could easily be published afterwards in the form of books." Published for the first time in 1996, "The Power of the Word" opens with "a thought that can be pondered over for years, each time with fresh inspiration" (cited in The Mysticism of Sound and Music, p. 248). In the beginning was the word "teaches that the first sign of life that manifested was the audible expression, or sound: that is the word" (p. 248). Khan's formulation of wyrd reminds us of the simplest space maker, the place holder for the essential rests of musical laya. "When we study the science of breath, the first thing we notice is that breath is audible; it is a word in itself, for what we call a word is only a more pronounced utterance of breath fashioned by the mouth and tongue. In the capacity of the mouth breath becomes voice, and therefore the original condition of a word is breath. Therefore if we said: 'First was the breath,' it would be the same as saying: "In the beginning was the word" ("The Power of the Word," Hazrat Inayat Khan, p. 249). We can't help but spread the wyrd around. The instrumental embodiment of writing in digital ecologies proceeds by linking.

Later in the same text, Khan sketches a commons based on the repetition of specific words, drawing together diverse traditions, in the same manner that Govinda does in his chapter centered on OM, "The Magic of Words and the Power of Speech." Khan, too, directs our attention to the persistence of mantra across all traditions. The repetitious history of mantric formulae "shows that behind the repetition of words a secret
is hidden, and the day when man has fathomed it he will have discovered a great secret of life. Leaving all religions aside and coming to material science, a person who has really touched the great height of science will never deny for one moment that behind this whole manifestation...is movement. You may call that motion a vibration, or you may call it by a religious name" (p. 258). We call it wiki, and in the beginning was the word and the wyrd was wiki.

The Kannon Sutra, a chapter from the Lotus Sutra, which, along with the Shingyo (Heart Sutra), and the Kongkyoko (Diamond Sutra), are the "most read" texts in Japan's Zen sect, according to D.T. Suzuki's Manual of Zen Buddhism. These, the Paramita sutras, emphasize and utilize tropes of repetition to bring attention to all-pervading breath, the Logos, the wyrd. Here, in the Kannon Sutra, cited below, infinite variations of form are embedded in the rhythmic repetition of conditional statements. If-then, if-then, if-then.....ad infinitum. Reckoning with infinity requires rehearsal, and rehearsal [requires repetition]. Patterns of repetitio cut across the paramita sutras, whether the translations be in Sanskrit, Tibetan, Chinese, English, or any emerging pattern of wyrd.

"Words," Lama Anagarika Govinda tells us, "are the seals of the mind, results--or, more correctly, stations--of an infinite series of experiences, which reach from an unimaginably distant past into the present, and which feel their way into an equally unimaginable distant future." Beyond being means for meaning, words "are 'the audible that clings to the inaudible,' the forms and potentialities of thought, which grow from that which is beyond thought." (p. 17). Words, in all of their wyrdness, tap into a play of forces "neither exhausted by their present meaning, nor...confined to their usefulness as
transmitters of thoughts and ideas." Getting wikified means experimenting with words as characters exceeding our (limited) imagination of them as "transmitters" of pre-existant thoughts and ideas. Subject to sudden linkage elsewhere, words become the collective interfaces by which thoughts come into being. Like the ideas they connect and proliferate, wikis are hosted by humans but hardly mastered by them. Many who work intensely in the wiki realm report that wikis, as blank portals to the infinite, summon an uncanny liveliness and intelligence seemingly distinct from any of the participants. We call this effect "Wikidelia." After a few rounds of pilots, the Composition Office at Penn State initiated 27 freshman composition course wikis. The detailed story of this wiki-mergence will be rendered elsewhere, by many others, for the first-time teachers that experimented with wiki found that the passions that brought them to graduate school could be found in the composition classroom, with wiki.

The affective penumbra produced by wyrds opens up more than....well, more than wyrds can say, semantically speaking. This "irrational quality which stirs our deepest feelings, elevates our innermost being, and makes it vibrate with others" solicits rhythm. To say "rhythm" is to direct attention to the ways order emerges from chaos; to wyrd rhythm is to have us notice "how." Noticing how: attention to rhythm. Rhythm can be summoned by spells, sparked by scripts, and made manifest by the multitude of rhythmic formulae that have evolved with the Logos. Hence poetry, birdsong, music, rhetoric--and all other practices of rhythmically sequencing, weaving, and concatenating threads of difference--all of these practices hinge on a capacity for opening up to and transducing (or, becoming a transducer for) the irrational quality of information that Govinda describes as the magic power of words and sound. Hence, "the success of great speakers
is not only due to what they say, but how they say it" (p. 17). Rhetoricians throughout the ages have realized this, but have also realized that prescribed methods fail to deliver where good timing and placement do.

Playing with students in musical commons opens up space for an ongoing rehearsal of and refinement of the role of attention in dynamic creative enterprise. Paying close attention to tropes and forms has always helped us connect. In multimedia ecologies, such as wiki, where space consciousness freely mixes with time consciousness, rhetoric becomes that which can be identified as various take-up-able suites of rhythmic gestures, and the different variations users spin out of recognizable and repeatable information regulation methods. These rhythmic rhetorics coordinate two basic gestures: compose and repose. The rhythmic alternation of composing and reposing manages the flow of information as some links click, while other potentialities are forestalled. In Karnatic and Hindustani classical raga, each raga begins with a musical movement known as alapana or alap.

In a similar way, wiki necessarily directs students' attention to the important role the medium where we write plays when we write. Wiki, in turn, allows us to introduce students to a variety of media, which is especially important today, when new media and writing technologies emerge regularly. The medium itself is dynamic. Reading and writing coalesce in an ongoing calibration, or tuning in.

Music and rhetoric share practices of tuning. Due to the dynamic nature of their media, musicians and information adepts alike must tune at the beginning, the middle, and the end of a communicative performance. First: listening as tuning. Then, following, joining. Further, arranging. Setting the envelope, sharing. Rhetorical and musical
adjustments that cut and rearrange a swatch of information, that connect diverse strands and move them into and out of phase, until they are in accord, all manner of adapting, altering: tuning.

Let's compare the multiple sense and action of tuning described in the OED with most compressed definitions of rhetorical actions (Aristotle's available means, etc) that have been handed down to us from Greek rhetoricians, philosophers, and musicians. Then, drape examples of tuning action over this definitional trellis. If we consult OED, the most exhaustive English language sourcebook for definition and etymology, to tune is "to adapt (the voice, song, etc.) to a particular tone, or to the expression of a particular feeling or subject; to modify or modulate the tones of, according to the purpose in view." Also "To put into a proper condition for producing some effect; to adapt to a particular purpose" Tuning and...turning...troping and wyrding. In an infodynamic model of rhetoric, when we we say "tuning in" we are thinking of a "receiver," a tuning device that listens for patterns amidst complexity. For many of us, tuning a reciever, searching for a frequency, calls to mind the flutter of the knob and the torque of the dial. (image of kitchen radio, hear, .mp3 as well). This is what wiki taught us, as well, we must actually tune in to notice how "tuning in" organizes attention by becoming something else.

Rhetoric, as we've known it, has come down to the present age as "alphabetic writing's equivalent of prosody" in Brian Rotman's (2002) formulation, published in parallax as "The Alphabetic Body." Because "the gestures which accompany and determine the reception of alphabetic texts...are rhetorics, figurations, and styles," rhetoric becomes distributed and remixed in the digital commons, and these mixtures of speech and language and the various modes of perception rewrite writing continuously
Rotman even hints that rhetoric is a metalanguage that became necessary or at least increasingly useful as alphabetic writing separated prosody (rhythm, affect) from speech, and from the wyrd. The advent of biotelemetrics mixes pleasure and security in a way that anticipates as-of-yet unknown potentials and responsibilities for collective bodies conjoined by rhythmic entrainment. The open/close rhythms of artistic and scientific impulse (and their comixture) invites to do more than simply revisit ancient archives of rhythm, affect, and prosody (sonic and otherwise). These practices, too, must be tuned and put into new mixtures. As part of a rhetorical enterprise of timing and response, where writing means writing together, rhetors must constantly refashion anew the appropriate response, the timely mode of audience address. Organizing attention, then, involves a fair amount of writing, right on time: on-the-fly high velocity narratives, compressed descriptions, definitional frames and supporting examples. Description becomes an art of tuning in, necessary in order to participate the in regulatory mechanisms of composing/reposing. Clusters of writers, converging on a project, create positive feedback loops, and more importantly, they share consciousness.

Over time, and with practice, they tune into the corporeal and haptic (and shifting) technological assemblages that will distribute the body, and promote the development of as-of-yet-unforseen potentials out of discrete but captured (and therefore able to be recontextualized indexically, inexhaustibly) differentials of force. The fundamental exogeneity of musical practice, like the remix science of the Sama Veda Hymns, anticipates and enunciates further distributions of authorship that will bring about further rhetorics of gesture. For Rotman, focusing here on the very conditions of our mathematics (so far!), [Donald's "principle of exogeneity"] elaborated in his "account of
evolution can be extended from cognition to memory to systems of capture. In other words, yes, exogeneity of music, math, and all manner of writing happens via rhythm. Thus, just as "the human possession of something as basic as number sense is not, contrary to accepted views, an innate ability or 'faculty' or even an endogenously evolved skill, but a capacity assembled from different and independent brain activities each on their own having nothing to do with number, so captured gestures promise the construction of previously non-existent assemblages of bodily affect, of new neurophysiologies, new forms of corporeality, new subjectivities," which will "be assembled outside the individual via networks" (p. 103). Wikidelic rhetorics and wiki-inflected cultures of learning emerge in this dynamic, as part of its parallel construction: rhythmic rhetorics for commons practice.

Rhetorical practice in dynamic, shifting media necessarily can learn a lot from diverse traditions and technologies of information compression. Working with these templates, students produce on-the-fly solutions that can nevertheless yield sample-able techniques. In ecologies awash in ubiquitous information writers must constantly tune, and the search for the timely and resonant forms of audience address becomes and art of finding bandwidth matching frequencies. Wiki's infinite linking capacities compel writers to entrain itineraries in a process of ongoing learning and teaching, in a medium of writing (wiki) that allows writers to experiment with available patterns, and then share best practice. When working with wiki content, the imperative is to "make it better." At the same time, we remember we are working in a common medium, where we can also make our methods and exportable and available to be taken up and repeated again in the
commons, where writers are continuously engaged in creating anew the conditions of
information exchange and substantiation.

All of these evolving and dissolving universes, though, quickly beg for a
template. Wikidelia, if it is to be a land of linkages, paradoxically needs a template, just
as computational space previously was modeled mimetically on the "desktop" or the
"page." But page, we learned in our teaching and together is not what a wiki is. It is what
a wiki does. Losing the thread, finding it again: wikidelic rhetorics select from available
means of persuasion, which, in the stochastic and nested patterns where we write, arrive
as order if we can make space for it to explicate itself. So how to transduce these wiki
effects to the page? We picked some order, any order: A crashing Dub bassline refrain: In
the beginning was the Wyrd and the Wyrd was wiki. Then the Dub headed for the
Ganges, and we found ourselves sampling from the tradition of Tala, where the rhythm or
laya emerges from timed alternations of sounding gestures and silent gestures. The two
side s of *kala*, cutting, then holding, we summoned a "slight return" of the bass.
Rendering in wiki or about wiki both depend on a "decompositional knack" for
dissolving and integrating, for scattering and gathering.

Tala is the rhythmic art that teaches the coordination of simple gestures in space
and time. In "The Subconscious Language of Musical Time" (1979), Lewis Rowell
explains that Tal “derives from a physical metaphor: the Indo-European root *TEL means
a broad flat surface, and the Sanskrit tala signifies an action applied” to this
rhythmizomenon by physical actions called kriyas (p. 100). Practitioners trained in tala
coordinate gestures (kriyas) of dividing time (kalā), attunment to “becoming time” (kāla),
and the tempo maintaing by the time of rests (laya) produce visceral sonic effects through
flow and the cutting of flow, both “continuity and reticulation,” (p. 98). In other wyrs, laya is another word for rhythm. If a percussionist and a sitarist are to achieve laya, both artists must be able to rhythmically alternate and coordinate cutting/striking gestures with opening/flowing gestures. Compositional activity proceeds only by distributing and coordinating acts of sounding out and periods of rest. The art of combining sounding kriyas (compose) with silent kriyas (repose) renders, in percussion and dance, physical models of the distributed consciousness of avatar-awareness. In wiki, the repetitions of Greek compositional theory (Aristedes' “art of combining rhythmic patterns,” ) and the repetitions of Tal can be more dramatically distributed and create another order of "opening," where the individuated and the shared go into a mix. Rhythm's ability to distribute the complex interiority produced by dense information flows (in/out, open/close ) would seem to produce what Pierre Teilhard de Chardin has called a "crisis" of "psychic decomposition." (Future of Man, p.139). However, laya's etymology provides wyrd strands that suggest that this dissipation of ego has always been a dissolving, not into nihilism, but into a commons. Therefore, de Chardin reminds us, so-called ego-loss, "provided it be accompanied by a revival of the phyletic sense" is in fact the "true instrument" for the "collectivisation of Earth" (Future of Man,p.141). The entrainment of logos-centric patterns transforms writing classrooms into such instruments of commons-formation, which participants tune and retune constantly in an ongoing renewal of evolutionary practices of composition forged at the nexus of wryd and flesh. Such are the repetitions of the informatic revival meetings our expanded classrooms will host, and the "wildness" wikis will initiate.
In Leibniz and Huxley's repetitious history, we can trace the periodic and dynamic weaving of consciousness and body; individual and collective, sacred and secular, mundane and sublime all intertwine on this warp and woof. Lewis Rowell (1979) suggests that in Indian literature, cosmogenies also proceed cyclically: primal matter is split and differentiated, and, after distribution and arrangement, is maintained or held open in ordered time, then melted, or dissolved back into matter. “Kalā is connected with the first phase by its function as that which divides,” or cuts, “Kāla is similarly connected with the second phase, that of motion maintained” or held in balanced equipoise (samya) “in ordered time; and laya,” the space between the beats, the rests that determine the tempo and leave a sequence open for interruption, collaboration, and transformation through rhythm, involves “the dissolution back into elemental matter” (p.100). Similarly, Govinda tells us that adepts training in the art of Tibetan Buddhist meditation must weave the productive phase of meditation, sristi-krama, with "the process of dissolving, of integration" known as laya-krama (p.105). "The instrument of human consciousness, like a musical instrument has to be tuned anew continually, and this tuning depends on the knowledge of right vibrations, on the capacity of perceiving their relationship, which requires a high degree of sensitivity and devotion" (p. 107). The Kalachakra system, presents space as a supporting element, "not as total nothingness, but as a medium of 'empty particles,' or 'space particles," by The Fourteenth Dalai Lama's reading of Buddhist cosomology. "This space element is the basis for the evolution and dissolution of the four elements, which are generated from it and absorbed back into it" (The Universe in A Single Atom, p. 85). Even though "space, with its empty particles, is the basis for the whole process" of evolution and dissolution, The Dalai Lama allows that
"the term particle is perhaps not appropriate when referring to these phenomena, since it implies already formed material realities" in a description that posits the basic elements as potentialities (p. 86). "Unfortunately, there is little description in the texts to help define space particles further" (p. 86).

In *Om: Creative Meditations*, Alan Watts considers the reasons for this indirectly when he explains why it is impossible to describe music. "However, by writing certain instructions on paper, telling you certain things to do, those sounds can be reproduced. Musical notation is essentially a set of instructions (just like "scribe a circle" or "drop a perpendicular"). And so, if you follow the instructions, then you will understand the things that cannot be described. That is what yoga is all about" (p. 78). Watt's turn to instructions is a pragmatic one, it does not seek to own, but to make share-able the power of music. Composing with sound creates the conditions for making patterns of information share-able, because composing with sound requires gestures of sounding, and gestures of silence. Watt's emphasizes the role of "the rests" when he extends his discussion of musical-textual transduction to the long tradition of the Perennial Philosophy. "All mystical writing really is instructions. It is not an attempt to describe the universe, to describe God, to describe ultimate reality. Every mystic knows that cannot possibly be done. The very word *mysticism* is from the Greek word *myein* which means keeping silence" (Om, p. 78). Only in silence can we begin to let the silence build, and then, thinking like and (doing like) a drummer, we can write it down. In *raga* music, this phase of creative production is called the *alap*. 
Where the demonstration of Initial, Predominant, low register, high register, Final, Sub-
Final, infrequency, frequency, hexatonic and pentatonic is found, this is called the alapa of the raga

Sangita-ratnakara 2.2.23-4, written by Sarngadeva during the first half of the thirteenth century, translated by Richard Widdess.

Alap, often misunderstood as "un-metered" and "free-flowing," in fact provides listeners and performers alike ample time to entrain diverse and subtle rhythms on many levels. From ample time comes "amped time," and even no-time. The timelessness experienced during alap is achieved by means of ongoing and complex sequences and mixtures of the basic compose/repose algorithm. A careful study of alap, then, allows us to consider and experiment with the diverse rhythmic action and rhythmic theory of alap in detail. Doing so provides clues for wiki pedagogy. Lewis Rowell defines alapana as "an nonmetrical exposition of a raga at the beginning of a composition or a performance" (Music and Musical Thought in India, p. 381). Rowell understands alapana as mode of address, one with two distinct but reinforcing meanings: addressing the composition or performance and also perhaps addressing the audience. Also, etymologically, alapana interleaves semantic and asignifaction, bundling them in one term to describe the mixture that is alap. The approved way to initiate musical discourse and communication, thus bringing about out the strong implication of "motion toward" is built into the prefix (p. 239). The necessary stochastic aspects of creative production are etymologically encoded in the term, as well. As Rowell explains, "the second element, lap, suggests communication in sounds other than meaningful words: nonsensical sounds, repetitive sounds, playful expression, rhythmic phrases and intonations that may carry a nonverbal
message, and sounds that reveal the presence of human emotion" (p. 239). Alap, after silence, marks the integrative and distributed ideation that can emerge from a rhythmic practice. Compressed and yet in some sense "uncomposed," *alap* arrangement, and communicative performance today, where rhythms of microdialing "between the notes" bring writing to life. Through simple gestures, practioners can cultivate a capacity for attention to forms, figurations, and styles in dynamic and distributed ecologies of writing.

For millennia, Kal -ā Kāla -Laya has guided rhythmic arts in sound and dance, just as rhythmic crystalization and dissolution that unfold in the repetitions of mantra has directed the noospheric practice of countless generations. Today, this rhythmic compound can help us regulate the arses and theses of text-heavy information, as well. Placed alongside Quintilian's advice to the would be vir-boni of Rome, Govinda's musical and rhythmic vision of collective attunement resounds as a rhetorical sutra for the information age. "De-Composition" tropes the pragmatic decorum and delivery strategies of Cicero's *De Oratore* towards a playful but equally pragmatic principle of participation. Reading and writing rhetorically necessarily involves practices of laya “by which we combine the rhythms with one another,” but only according to kairos time, that is, only “if it should be necessesary in some degree" (Aristides "On Music," p.102). In logos-centric wiki collectives, where the alternations between composing and reposing provide the basis of rhythmic training (rhythmic entraining) and fine-tune our capacities for creating and inhabiting dynamic interconnected space, the network determines the tempo, or laya, of our rhetorical choices. Working cyclically, participants learn when to listen, where to listen, and for how long, and, then, again, what and how to select. Put another way, the resonance is the composer. Just as mantra is a "mind tool," rhythmic rhetorics work on
wikis, rendering them into learning tools. "The audience was in the same relationship to the film Valis that Fat had had to what he called Zebra: a transducer and percipient, totally receptive in nature" (Valis, p.158)

Becoming a transducer works according to what we might call the illogic of gnosis. Because wiki "windows" "bear the mark of the infinite" (Govinda, p. 24), learning to pay attention to how we wyrd in wiki cues wikidelic pedagogy. As teachers, we can begin with a performance. A how-to: how to become a search engine for rhetorics. While Gaian syllabi abound, everywhere, rhythmic traditions of the sacred provide clues as to how we might entrain everyday rhythms. These rhythmic recipes, these sacred scripts, at once both specific and timeless, open us up to asignification, and enable the navigatation of many degrees of asignificatory dynamics. They start with zero and proceed to One, via repetition. Repeatedly transitioning, reduplicating, chorusing, accelerating; but also decelerating, juxtaposing, jump-cutting, splitting, and also, perhaps most importantly, stopping and abiding in the lacunae of timelessness that perferate the dynamic mesh that wyrds weave when we affirm their irrational penumbra. Mantras, for example, have for millenia been a means for cultivating this capacity for alternating currents: for opening up consciousness, and for precisely tuning and stabilizing attention, as well. Boethius, forever dancing discursive around the infinite, steering between Providence and Fate, renders his vertigo vertical, into orderly strata. "All that is under Fate is also subject to Providence. But some things which are under Providence are above the course of Fate. For they are those things which, being stably fixed in virtue of their nearness to the first divinity, exceed the order of Fate's mobility" (cited in Huxley, p. 186). In order to narrate these degrees of difference, Boethius opens a space for us to suggest that sacred
technologies for attending to timelessness and infinity differ only by incremental degrees, not in kind, from the repetitious hacking and ordering we perform in the service of time. This principle of repetition does in fact occur throughout our history of rhythmizing and entraining different found orders of vibration which "exceed the order of Fate's mobility," and manifests across all technologies for "yoking" body, consciousness, and spirit: yoga. So, the world's sacred 'scripts, prescribed explicitly for stepping out of time, nevertheless crystalize of logic for transduction across different orders of vibration, different bodies, including the grosser skhanda, and all media, the interleaving rhythmizomena of our noosphere. Following Boethius, and taking into account his degrees of order rising out of "Fate's mobility," we seek rhetorics that transduce information up and down this stigmergic scale.

The transitive verb "to transduce" describes processes that "alter the physical nature or medium of (a signal)" and "convert variations in (a medium) into corresponding variations in another medium" (OED). When pressure or brightness is converted to voltage or position, you have transduction (OED). The Federal Telecommunications Standard 1037CA describes a transducer as a "device for converting energy from one form to another for the purpose of measurement of a physical quantity or for information transfer" With daily wiki practice, we become attuned to this dynamic nature of information. "At the same time I am caught up in experiencing certain patterns of wyrd, I am creating them" (What is Wyrd?) In this way, transduction becomes the translational mode for weaving wyrds in wiki. Merging with these energy gradients of information transfer, wiki welcomes technologies of writing with sound, image, and text. Suddenly, technological metaphors and analogies for the act of wyrding--antennae, phonographs,
tape heads, and cathode ray tubes--actualize as multimedia practice with sound, image, and text. These are repetition-based practices of rhythm, and the lightning computations they facilitate find their most crystalized form in the "logic of gnosis," through the sacred compressions of mantra, yantra, and mudra. These models come into play in the transmission of knowledge, for teaching; however, even in our teaching, they are in first and foremost models of transduction, rhetorics for commons-formation.

Govinda's *Foundations of Mysticism*, organized according to the syllables of the om mani padme hum mantra, elaborates one such model, and in doing so appears as a rhetoric for becoming a transducer. While the book attunes specifically to Buddhist mantric practices (towards the cultivation of prajna), the opening chapter, "The Magic of Words and the Power of Speech" necessarily connects numerous traditions according to the common element of their diverse practices of repetition: Om, and the association Om with the infinite. According to this argument, Om is the mantric bindu from which diverse traditions, each "expressing the experience of infinity," unfold: both Hindu and Buddhist Tantrism, Vaishnavism and Shaivaism, Jainism, Vedantism. And texts: The Vedas, the Upanishads, and Brahmanas. "This," Govinda states, "does not exhaust the different possibilities of expression, nor does it include their combination and mutual penetration" (p. 24). Wiki windows present themselves as an experience of the infinite. Learning from tradition (sampling from archaic technologies, including sacred technologies) and from experience (testing, translating, and remixing these rhetorics through empirical investigation), we can, in our teaching, facilitate fruitful itineraries in several directions. Govinda's code book, or, in the sense of manual or guide, rhetoric for
the visualization, actualization, and navigation of interconnectivity, is but one such rhetoric that, added to wiki, equals resonance.

Semantic and asignifying registers interleave in wiki space, and transduction is the translational mode of multimedia/multimodal/multiperson composition. Subsequent studies will narrate heroic journeys from percipent to participant: the path of integration that, as Govinda explains, is already compressed in the sacred syllable *Hum*, the syllable that, with *Om*, forms the envelope of the Buddhist's universal mantra.

We learn from The Sermon on the Mount according to Vedanta by Swami Prabhavanda that the theory of the logos found in John 1.1 was itself a repetition, a repeat of the logic of incarnation as understood in the Hindu tradition best comprehended as a linkage to the logos philosophy of Greeks. "The concept of the avatar evolved from the theory of the Logos in both Western and Eastern philosophy"(p. 41). The avatar--such as Krishna, Buddha, or Christ--is in this view a periodic actualization of the transcendental godhead, forging an interconnection between a transcendent consciousness--an awareness which includes both this world, along with its serene apprehension--and flesh. This transcendental consciousness that becomes immanent through the Avatar is hence no longer simply transcendental, and it is not G*d in the usual monotheist sense. In this repetitious history (or "Perennial Philosophy", as Aldous Huxley called it), the sacred, the individuated, and the everyday are densely interconnected, "Atman = Brahman." It is in this sense--as of a spell or script that would create an interconnected and dynamic gathering,--that wikis are logos-centric.

In our teaching we watch, amazed, as the blankness of a wiki page summons an interconnectivity, contagious, back into the classroom and beyond. Wyrd!
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Vita

Trey Conner was born in Tallahassee, Florida, and grew up in St. Petersburg, Florida. After cooking and clerking in restaurants and record stores (and recording tons of music) in Gainesville, Florida, for nearly a decade, he earned his bachelor’s degree in English with honors at the University of Florida. Trey has been married to Angie Childers-Conner for 14 years. Angie is currently finishing a dual B.S. and M.S. in Labor Studies and Industrial Relations/Human Resources at Penn State. Together, Trey and Angie celebrate their days with their daughter, Odessa, age 9, and their son, Aeden, age 5. Trey’s primary interests converge on questions about distributed and collective writing, and he has gained much of his own compositional experience in networks of musical collaboration. Group improvising, engineering, filesharing, rehearsing and performing in sound directly informs and grows his research. Trey’s long-distance musical project, Leels, grew out a “geophysically bound” Florida-based projects, including Meringue and Weinix. Separated by many states (NY, PA, FL, MD), Leels depends on the technologies of filesharing to rehearse and train their sensus communis; the goal of this compositional practice is to share, arrange, and order sound in a way that creates further opportunities to pursue common ideas as this ideation converges in song structures. While teaching and completing his Master’s degree and Doctorate at Penn State, Trey enjoyed working closely with Pennsylvania-based sound projects including Peacefeather, the Warmingtons, and the Order of the Silver Cosmonauts, who recruit new participants in the midst of live mixing and overdub performances at ice skating pavilions, radio stations, record stores, libraries, and art galleries. These musical projects inform and learn from Trey’s academic projects at the Leonhard Center Technical Writing Initiative, his capacities as tutor at the Writing Center at Penn State, as a fellow of the Science, Medicine, Technology and Culture Group, and as a consultant for the Lionshare peer-to-peer software development project at Penn State. Trey has shared his research at the Computers and Writing Conference, the Sweetland Writing Center, and the Julian Woods Zendo, and has enjoyed National Science Foundation support while writing this dissertation. In the fall of 2006, he will take a position as Assistant Professor of English at the University of South Florida, St. Petersburg, Florida.