



THE ATELIER-LAB AS A TRANSVERSAL MACHINE

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The Atelier-Lab as a Transversal Machine

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mots-clés/key-words

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Le Topological Media Lab est à la fois un atelier et un centre de recherche ; il a pour objectif de procéder à l'étude expérimentale des modalités gestuelles, performatives et corporelles de l'expression dans un environnement numérique interactif. Fondé à Atlanta en 2001 et transféré à Montréal en 2005, il fédère divers types de pratiques collectives, dont un atelier de création artistique, une compagnie de théâtre et un laboratoire de recherche sur les nouvelles technologies. Depuis six ans, au prix de nombreux tâtonnements, le Topological Media Lab permet un échange fragile entre des disciplines très différentes qui évoque peut-être la conversation cosmopolitique chère à Isabelle Stengers. Les expériences qui y sont menées ont pour but d'aborder, sur le mode empirique, des questions éthico-esthétiques, par exemple les problématiques relatives au mouvement corporel (intentionnel ou accidentel, collectif ou individuel) ou encore les relations entre le mouvement et la mémoire du corps ou la mémoire de l'espace. L'un des soucis qui guident en permanence le travail du Topological Media Lab consiste à aborder la question de la nouveauté en termes topologiques, matériels et poétiques, dans une perspective éthique mais non anthropocentrique. Dans cet article, je m'attache à étudier quelques-unes des modalités d'une pratique conçue en termes de "recherche-création."

Two decades ago, Felix Guattari pointed to the heterogeneous machines around us: material, semiotic/diagrammatic/algorithmic, corporeal, mental/representational/informatic, libidinal/ affective. Guattari's Chaosmosis

asked how we could construct machines that act transversally across those machines. In the decade since 2001, the Topological Media Lab (TML) has been working as a university-based atelier-laboratory transversal to computer science, performing arts, architecture and the built environment, to generate insights and techniques in the domain of new media and responsive environments. The Topological Media Lab (TML) is an academic research center for gestural, performative, and embodied expression in responsive media environments. It was founded in 2001 by the author at the Graphics, Visualization, and Usability Center at Georgia Institute of Technology in Atlanta, and moved to Concordia University and the Hexagram research-creation network in Montreal in 2005 when the author was offered Canada Research Chair and Canadian Fund for Innovation funding to build a lab with a level of infrastructure more adequate to the hybrid of a collective art atelier, a theatre company, and an engineering research lab.

The TML's theoretical project concerns morphogenesis in performative event—how subjects and objects take shape in a continuous dynamical ontology. The critical inquiry starts from the limits of discrete representation, and seeks alternatives to linguistic-semiotic analysis in the form of non-metric topological, dynamical, potential-theoretic and other material patterning. An important aspiration is to discover non-anthropocentric ways to articulate improvisatory ethico-aesthetic gesture. Improvisation does not mean something willful or totally unpredictable. It is conditioned by past aspiration and heuristics, but not by a deterministic plan. The atelier was motivated by the question: How can ordinary actions in everyday environments acquire symbolic charge? What makes some environments enlivening and others deadening? Reflexively, we ask: To what extent can we instantiate labs or ateliers for the creation of apparatuses for ethico-aesthetic improvisation? This essay describes institutional, socio-technical, political, economic issues around running such an atelier-laboratory as an alternative social economy complementary to post-industrial, “knowledge-based” economies.

The big methodological moves are (1) avoiding a priori schema, (2) working with material, collective-environmental situations, and (3) moving from nouns to verbs, from things to transformations of things. This includes, by reflexivity, moving from working with fixed (i.e. transcendentalized) concepts, to putting concepts in play. It motivates an approach via morphogenesis. Staying close to the material, and collective-environmental implies making “thick” experiments in the “wild.”

The TML prototypes what I will call in this essay an “atelier-lab,” an open space in which affiliates can pursue art research without constantly having to defend individual projects in the institutional language of disciplines and granting agencies, or in terms of the market. Situated in the academy, the atelier-lab benefits and strengthens the considerable

institutional infrastructure including labs, technicians, as well as the flow of students, artists, researchers from many strata and disciplines. The atelier-lab's *raison d'être* is not to be a facility for the production of art, although it does produce media art and software.¹ Research projects include the continuous state-based media choreography apparatus (re-instantiated since 2000 as Oz, Oxygen, and Ozone); the TCostume Cambodian-style dress fitted with custom accelerometers linked with embroidered conductive thread (2002-2003); a series of video membranes (2004-2010); the Ouija experiments on improvisatory movement and collective intentionality (2007); the WYSIWYG wall-scale weaving with custom capacitive sensing mapping proximity and movement to a series of sound instruments; and the Memory, Place, Identity phenomenology experiments on memory, place, and identity (with philosopher David Morris). It is not a studio warehousing gear and technicians. It is a lab, building apparatuses impelled by certain streams of inquiry. But it is not an engineering research lab, even though it accesses the technical expertise necessary to invent solutions to any required technical and mathematical depth. Its engineering results are published in the relevant professional contexts. It can produce media/installation/movement art or techno-scientific work that are legible and valued in their home disciplines, which is different from asking that these artifacts be evaluated as "interdisciplinary" work according to some less rigorous standard.

Streams of Inquiry

Like other interdisciplinary "labs" the atelier-lab is a transversal machine for the production of knowledge. However, it differs from many in two respects: (1) it meets disciplines not in a point, but thickly; (2) it provides a place for its affiliates to *re-orient* their approach to their production of art and knowledge.

Although it adopts no homogeneous method or discipline, the TML in particular approaches process-based articulation from the perspective of continuous, material experience. Its methods generally sidestep models or representations because it is concerned with non-cognitivist experience (Descombes, 2001) and unbifurcated ontology (Whitehead, 1978). Its philosophy of technology draws on continuum; it processes intuitions rather than algebraic schema and discrete states.

Although the atelier-lab is not a production facility for works of art, it does create poetic installation-events as a side effect of its research. These projects coded as art include the series of TGarden responsive environments that was the ur-event for the atelier-lab (SIGGRAPH New Orleans, Medi@Terra Athens, Ars Electronica and DEAF, 1999-2001), Hubbub speech-sensitive projected typography installation (Brussels, Atlanta, San

Francisco 2001-2003), Cosmicomics responsive video installation (Elektra Festival Montreal 2007), *Il y a* twelve-channel audio and video membrane installation (San Francisco 2010), the Frankensteins Ghosts feature-length performance with analog plus computational media instrumentalists (funded as a research-creation project by the Social Sciences and Humanities Research Council [SSHRC]), and the Einsteins Dream time-conditioning installation.

People come to the atelier-lab adept in some technique, such as video editing, realtime sound programming, realtime video programming, physical computing, architecture, dance, or interpreting Gilles Simondon and Félix Guattari. The atelier-lab hosts apprentices and expert practitioners to realize experiments requiring collective effort, drawing from the practices of the art studio, the engineering laboratory, or the pre-industrial atelier. Two mottoes flexibly inform the work: (1) Minimax—maximum experiential impact for minimum technology inserted into a situation; and (2) Art all the way down—crossing the boundary between art and craft to open up blackboxed technology, expose and rework conceptual framing assumptions that are normally tacit when used “off-the-shelf” by artists, scholars or scientists. Even naturalized processes like physics of materials, computation, social structure may be put in play.

Art Research versus Art Practice: What Is Research in Contemporary Art?

Research in the arts is quite different from research in engineering, which in turn is different from scientific research. It is more akin to the humanities in its attention to the particular rather than the systemic. However, it creates knowledge via aesthetic as well as critical inquiry, and engages material and embodied experience as well as concepts.

Like other modes of research, art research generates portable knowledge: insights and how-to's, learned in the context of one art research project, can be applied in a different one by another artist. Like research in other domains, art research has its own archive; but whereas historians use textual archives and anthropologists materials gathered in fieldwork, art research's “body of literature” is the corpus of prior works and the critical commentaries surrounding them. Like other research, art research is open-ended: one cannot declare in advance what the “deliverable” will be. If one already knew the answer, one would not need to do the research.

Art research is not the same as art practice. Not every artist shares her working knowledge with her peers, nor need she. Art practices range widely. A large part of their vitality comes from their autonomous ways of making.

Ethics of art research vs. art practice. In art research, experienced artists mentor less experienced artists as potential peers, not just as hired

hands. Art research is reflection upon practice. Its fruits are not presented in galleries, theaters, or other exhibition venues, nor are they directly or necessarily for art production. Mentoring in art research has the quality of individual mentoring in the humanities. Art research generates questions, opens up frames of reference, and rigorously investigates questions concerning value (vs. fact), desire, and imagination, questions that transform or break genre and even the frame of art.

Art research can amplify social, cultural commentary but along aesthetic and poetic as well as critical dimensions. Art researchers can open up discourse about society or culture. Rather than promoting a particular methodology, it can draw general knowledge from the creation of things or events. An invaluable aspect of art research is that it rigorously investigates the cultural and human imaginary the way that philosophy investigates social and individual knowledge: by constructing precise and memorable questions about what may perhaps have been taken for granted.

What Is Practice in Contemporary Art?

The strength of contemporary art practice is how diversely art is made today. Contemporary art practice includes (1) object-making by artisans based on inherited folk knowledge, (2) commercial work in all media by professionals in global or globalizing markets, (3) objects and performances created for galleries, private collections, or venues sponsored largely by private wealth, (4) works subsidized by public money for public display, (5) non-reproducible events or objects made by collectives for particular places and situations... I focus here on North American art practices situated in contemporary economies. To practice art necessarily includes the question of how one makes a living doing such creative cultural work. The situation in Quebec and Canada has unique qualities.

Artists work as individuals, in collectives, or in institutions like universities. The academy brings both benefit and handicap. On the one hand, it provides shelter from the commodity market and the imperative of adhering to conventional forms of art or ways of making art; on the other hand, institutional funding norms and performance metrics based on publication and exhibition can leaden the work.

Some North American artists make a living by selling their own work; others by work related to craft expertise in service to the design of other creative projects; still others from work largely unrelated to the skills relevant to their art practice. Some more established artists incorporate and direct teams of executants or sub-contractors, and may not be engaged in material production themselves. Their work is largely conceptual, directorial, and managerial. Some of the more prominent artists work

essentially on the model of for-profit corporations. Some artists choose to work in collectives or networks outside the formal economy and often outside North American or Western European cultural spheres. These collectives exist in a hybrid of gift and public-subsidy economies. Some artists carry on a non-professional practice—i.e. they do not make the majority of their income from their art work. They may be employed in public cultural institutions, advertising, schools, or in service sector jobs. In every era, artists whose experimental practices do not fit into institutional categories of art do not expect to sustain themselves from their work.

Many artists in Montreal and Quebec show their work in conventional galleries, thanks to provincial and federal support and to an active community of curators and audiences. Academic artists also diffuse their work via their work with students, writing, and curating. They participate in an alternative cultural economy, reflecting on personal work and exchanging insights with academics and creative practitioners in neighboring disciplines.

A large portion of art is produced by people who may not identify themselves as artists.²

Public Institutional Context: Research Creation in Quebec, Canada

In 2000, Quebec province's Fund for Research in Society and Culture pioneered a program to fund research by university-based artists on an equal footing with sciences and humanities. The FQRSC called the activity that it intended to fund *recherche-cr ation*, which it characterized as:

les activit es ou d emarches de recherche favorisant la cr ation ou l'interpr tation d' uvres litt raires ou artistiques de quelque type que ce soit. Dans le cadre de ce programme, l'interpr tation est analogue   la cr ation et ne peut  tre comprise comme une d marche intellectuelle d'analyse d'une  uvre ou des r alisations d'un cr ateur.

(FQRSC, 2000, accessed 2009)

This program later inspired a national program (2004-2007) at the Canadian Social Sciences and Humanities Research Council (SSHRC). The SSHRC had a programmatic motivation for its research-creation fund:

Alternatives: An environmental scan was conducted to identify similar programs in Canada and abroad. Aside from initiatives by the Fonds qu b cois de la recherche sur la soci t  et la culture, there is no comparable program in terms of total investments in research/creation projects (\$13.4 million), size (an award value of up to \$250,000 per project), scope (nearly 100 individuals from a wide range of artistic disciplines funded during the five-year pilot phase), and tenure of funding (three years). Survey responses echoed the lack of comparables, but cited provincial government, university, and federal government sources as potential (though not equivalent) resources.

(SSHRC, 2007, p. 6)

People

TML in Montreal has become home to a rich nexus that over six years has sustained some sixty graduate students, artists and scholars working in creative research that may be described as transversal (in Deleuzian terms) or refractive (in Karen Barad's). The TML is unique in its equally strong emphasis on depth in three areas of practice: text-based experimental and speculative philosophy, artistic/poetic expression, technical/engineering craft. Most laboratories or studios still privilege either textual readings, engineering, or studio art.³

How do people affiliate with an atelier-lab? Not being part of any department, it does not offer courses. Students come by word of mouth from all disciplines: computational media arts, electro-acoustics, fibre arts, philosophy, cultural studies, communication, anthropology, architecture, design, French or English literature, computer science, electrical engineering. Affiliates enter at all levels: as undergraduate students, Masters students, PhDs, post-doctoral fellows, experienced scholars or artists.

Students come once their classroom studies are largely over. However, exceptional students have entered at the beginning of their undergraduate studies. For some, the atelier serves as an oasis in a program, discipline or world that seemingly has no place for them. Others⁴ come after a first career whose institutional or disciplinary bounds they wish to exceed, attracted by productions and documentation that demonstrate the aesthetic and genre-crossing productions of the atelier. Researchers with ethnographic interest in the TML's ecology of practices have taken up multi-year residencies. The observed regards the observer.⁵

Prospective affiliates are told that this is not a short affiliation. It takes a year to get to know people, to know oneself in the milieu, to understand not just *how* to but *why* to do things a certain way.

Modes of Understanding in Practice

Over time, different modes of understanding in practice have become important for the sort of art research that the atelier-lab sustains: unlearning, apprenticing, taking a leading role, directing, and writing. Not everyone experiences these modes of understanding in the same sequence. Unlearning involves relinquishing conceptual frames: letting go of cognitivism, the computational equivalence conceit (Wolfram), commodity and utility rationale, market logic predicated on scarcity calculus, or networks, as adequate models or *topoi*.⁶ It also implies unlearning practices: letting go of solipsistic habits, procedural programming, and ego-therapy or ego-announcement, as modes of art practice. Apprenticing means working as a

volunteer on experiments and projects defined by faculty or experienced affiliates. Some exercises may be defined as stand-alone projects on which no TML research or production depends critically. The atelier-lab assumes that people arrive with some expertise. After some preliminary orienting work, a person may act as an understudy to an experienced affiliate responsible for a particular aspect of a collective project (a “leading role”). Every core creator (developer in engineering ontology) in the atelier-lab should be able to cover for another via job rotation, and develop the capacity to work collectively in depth. Through their apprenticeship, affiliates learn how to move beyond single-ego expression, as they absorb the accumulated atelier-lab’s knowledge and technique. This does not always work in practice. The gap between talking about a work ethos and effective practice cannot be bridged by merely assembling sociologists and artists. The atelier-lab’s respect for expertise is coherent with a working ethos of not disciplining the apprentice to act in a trans-disciplinary way. What is required is mentoring, which must constantly adjust to varying research contexts, individual aspirations, and micro-social dynamics. This is an inefficient way to produce artifacts, but a good way to produce persons. An affiliate who has demonstrated commitment and reliability takes on a leading role in collective projects. Some become resident experts in techniques co-developed with the experimental apparatus. There is a significant jump to the responsibilities of directing and writing. Directing means inventing some research question or a vision that exceeds any one project, but also having some idea of how it might be realized. It is difficult to discover a vision that is not merely derivative, a permutation—what Georgina Born calls “decorative” art-science. It is even more challenging to find questions and voicings that evoke and warrant collective attention and energy. A director enrolls fellow creators to help realize his or her experiment or work. Discussions with experienced members of the atelier-lab and its Director determine whether a particular project constitutes an atelier-lab’s project drawing on collective energy, material and capital resources. Writing and publishing is another mode of understanding that fits uneasily with art practice and art-based graduate studies. There is no easy road leading from the invention, design and development of apparatus or experiment, to critical and theoretical discourse in writing.⁷

What Does an Atelier-Lab Produce?

Although the atelier-lab produces media works and software, it is not a production facility for individual art projects. Rather, it is a place for building sketches and experiments with larger ambition and impact, requiring the collective talent, expertise, and energy of a small team. Its

primary “products” are events or experiments, and more experienced people. It’s inadequate to think of the atelier-lab in terms of projects instead of areas of inquiry motivated by synthetic questions or visions. These areas of inquiry are patterned by seminar and reading groups and visitors.⁸

Organizing activities around evolving yet historically connected areas of inquiry rather than being driven by Calls for Proposals avoids Brownian motion jumps from application to application, or being herded toward the mediocre centers of the Gaussian distributions that reflect social, academic, industrial or cultural fashion. Projects like the TML’s WYSIYG sonic weaving, OUIJA intentional and collective movement experiment, and Memory+Place seminar/experiment exemplify what I call “thick transversality,” in which the intersection between the project and a given discipline on the one hand is a substantial constituent of the project and, on the other, represents a substantial contribution in the intersected disciplines. These projects often culminate in, or are punctuated by workshops⁹ with internal team members, the atelier-lab’s local constituency in the university and the city, practitioners and theorists from around the world.

Political Economy, Knowledge and Reputation Capitals Work Ethos, Building Social Capital

The “N+1” Ethic. A small group of N peers aspires to create N+1 works, in each of which the collaborators are by turn the conceptual lead/responsible agent, and including at least one additional project that the collaborators would not have accomplished on their own.

Citation Practice. Scholarly communities have developed over the past seven hundred years a precise and refined citation practice to trace their flow of works and acts of imagination by name and moment in a non-Maussian gift economy. Knowledge circulates and grows in these small moments and denominations: the phrase, the paragraph, three lines of handy code, a fabric switch materializing a different thought about connection, the hypothesis of a theorem, one video segment providing the texture to seed a synthesis.¹⁰ Affiliates credit peers and mentors for the ideas they offer or the prototypes they demonstrate. Acknowledgments will be scaled to the significance of the contribution relative to the final work. I require practitioners to adopt the citation practice of the scholarly community. This is not an argument for or against the notion of originality; it is about rewarding and publicly acknowledging help and, conversely, being tangibly rewarded, in terms of social capital, for giving knowledge to a colleague.¹¹ Co-authoring papers simultaneously constitutes deeper critical engagement between mentor and student, and rewards all parties with public credit.

Dissonances and Assonances

Art Research Is Not Art Production. Atelier-lab research investigates phenomena and philosophical questions, in the mode of art “all the way down”—all layers of “craft” are subject to artistic interrogation. Experiments are installation-events to be encountered corporeally. They should be built not only to standards of engineering or scientific lab work, but to the much more stringent standard of the performing arts: when it is showtime, no one can wait for the computer to reboot. In-house installation-events that are regarded as experiments are not built for an art gallery or a theater. They are built neither for an audience (an epideixic relation) nor to determine an empirical truth (an apodeixic relation of sorts). This surfaces another ethical stance of the work of the atelier-lab: we creators should (wish to) inhabit what we create for others. The erasure of distinctions between composer, performer, and spectator as bodied agents is not only an academic, analytic or political issue but an ethical one as well.

Engineering Research Is Not Technology-development. Unlike many applied engineering or tech-art labs, the TML starts with art research questions and philosophical questions, and then tries to build the apparatus in which to explore those questions experimentally. Practical questions emerge out of making installations that in turn are inspired by conceptual and ethico-aesthetic aspirations. Some of those practical questions or problems yield conceptual and frame questions that exceed the particular event. These become themes that can motivate long-running research initiatives. The atelier-lab does not take a given piece of technology from the market, and then try to find artistic applications with the technology, as defined by commodity markets. Instead, it works more like a low-budget version of a high energy physics (HEP) lab, in which fundamental research questions motivate the improvisation of new technologies that in turn inflect theories and experiments.

Contrary to how many humanists and artists understand engineering as an academic discipline, this does not reduce to coding, or soldering sensors into microprocessors, any more than painting reduces simply to mixing pigments. Engineering research includes systematic familiarization with the literature and with contemporary disciplinary practice; finding new methods, new algorithms, new configurations of devices, theories; and finding skilled people to solve problems in their discipline. The sort of basic programming needed by other labs, can and should be done by exceptional undergraduate students, but the real work is to design the behavior of machines, to understand something.

Project ≠ Experiment ≠ Design ≠ Line of inquiry. Unlike a stream of inquiry, projects have definite scope, beginning and ending dates, audience, and deliverable. Projects are expected to succeed. Usually a project has a

team whose members are formally identified and charged with specific areas of responsibility. In an experiment, a negative or disconfirming result is just as useful as a positive one. Design does not have to have a hypothesis generating knowledge. A stream of inquiry may endure for as long as the question remains vitally unanswered: streams persist across generations of students. Projects define, periodize, chapterize the work, sometimes as an artifact of competitive funding programs and grant cycles. Sometimes what starts as a project may become a (set of) research line(s). There is no average case; no hard and fast category. They evolve as the atelier-lab evolves.¹²

“Accountability” and “Transparency”. As Born and Barry (2010) point out, the logic of accountability can often lead to less, not more innovation or creativity. A university that only a generation ago was structured as a teaching institution for the working class had a bureaucratic machinery inadequate to competing for and administering public grants. Its response to the logics of accountability and transparency led to a metastasis of internal micro-oversight and a highly inefficient distribution of book-keeping work to individual researchers, and even graduate students. Lacking experience with administration of research, the university did not keep an adequate amount of overhead for central services and infrastructure. Consequently, research staff and research dollars were squandered, when information was in fact centrally available and could have been managed centrally. This has led to unsustainable demands for hyper-documentation, in which for every dollar spent on a research grant, another dollar is spent on meta-documentation.

Throwing money at academic artists without adequate understanding among faculty about what new modes of work are afforded by “research creation” yields only larger studios, and more hired hands doing work-for-hire work. More monitoring and reporting does not yield deeper, more innovative, or more life-changing or practice-changing work. Refining Born and Barry’s analysis of the logics of inter-disciplinarity, there is accountability to private sponsors, as well as accountability to the public in the guise of the state. These accountabilities have quite different form. Accounting measures as presently instituted can readily measure only formal features of the work, such as numbers of presentations at what venues or professional societies. The same limitation holds for measures of people. To be valued, every professor in an art school need not be a paragon studio artist and teacher and researcher. The ostensibly neutral administrative practice of adding to the criteria of teaching and learning a criterion called “research” encourages faculty to further divide their energies, and mimic alien modes of practice. Under perceived pressure when the administration declares that the strategic function of the university includes research, an artist acting according to some externalist conception of a “researcher”—whether modeled on cartoons of laboratory science or,

less commonly, on the humanities—may willfully detach a label for a concept from its scholarly context or genealogy but not recognize or respond to all the conceptual commitments and caveats attached to it because s/he is not familiar with the scholarly discourse associated with that concept.

To sum up, much institutional friction drags research activity into merely going through the mechanical motions of research activity—content-free “zombie research”—a mechanical permutation of dematerialized, evacuated concepts, together with a jumbling of technologies or technical works with no attention to epistemic frames and histories.

Institutional Program. A Masters involves mastering a field and its literature, not an extra year of programming. A PhD is not a longer, funded MFA. Nor should a PhD modeled on the humanities target narrow, technically bounded research assistantships or allow itself to be driven by grants. The lab should define its research agenda around areas of inquiry. It welcomes affiliates to an open space in which to develop and extend those areas, in co-ordination with their own growth. Projects and proposals for projects emerge out of this. Out of the projects we develop proposals to available funding bodies at the appropriate times. Hexagram, CIAM, and our home institution’s internal seed grants subsidize this most significant cambium of exploratory research.

Accountability to Private Sponsors. Premature attempts to convert research creation into intellectual property or even commodity, tend to muzzle the articulation of fresh ideas. Hexagram members who were entrepreneurial artists or had some training in engineering but no actual experience in industry at a strategic level, advocated “intellectual property” as a way to make the network successful in the eyes of its Board drawn from industry.¹³

However, naive expectations of generating income from “intellectual property” and patents ignored the lessons from the 1990s and 2000s that most academic research, even marked by patents, generated little profit for their host institutions.¹⁴

Authorship. There is a structural conflict between the need to establish oneself and the need for amplification of one’s work by recruiting collective strength. The basic disincentive to collective work is that institutions evaluate individuals on individual CV’s, not collectives.

The Thermodynamic Equilibrium Problem. The patient building up of a rich practice, thoughtful re-orientation, and multi-polar relations in a protected socio-technical space can be undone when the rate of diffusion between labs is high. When a student achieves some technical mastery, she also becomes employable by neighboring or copycat labs. Implementing a work-for-hire project for a research program with normalizing thought is easy to justify by the student and the poacher. This happens when the technically proficient student is just beginning to develop the judgment that informs the radical ethico-aesthetic work of the atelier-lab.

The atelier-lab can avoid poaching by remaining under the radars of utility and techno-cultural fashion. But the very norms informing the institutional policies generous enough to sustain substantial art research sustains poachers, as well. Lateral migration to average labs gives average students good exposure to average practices and normalizing conventions. However, this leads to a fragmentation of attention and effort, making it almost impossible to realize substantial or substantially novel work. The exposure to Gaussian normalization/normatization yields what I call a “thermodynamic equilibrium problem”: too high a rate of diffusion of people and ideas across organism boundaries makes it proportionately difficult to create significant, novel forms that stand out against noise or uniformity.¹⁵

The conundrum is that in order to attract funding one needs to hew to the Gaussian mean and expose oneself to mass norms. Since its transplantation to Montreal, the TML was able to build—as a *planned side effect*—an apparatus for philosophically-motivated ethico-aesthetic experiment. This was validated in 2009 when a philosopher (David Morris) approached the TML to build on a collaborative basis a non-cognitivist experiment on memory, place, and identity, taking into account the substantial alternatives enabled by Merleau-Ponty and Husserl. Using the transversal techniques available in the lab, the memory-place group’s researchers from philosophy and computational media are building an experimental process more attuned to the phenomena and reflexively aware of how apparatus and protocol can pre-schematize observation. This work is extremely slow, and yields no glamour in the intersected disciplines.

When imitation leads to zombie work, or makes zombies of organisms-that-person (to borrow from Arakawa and Gins), when drones outnumber the dancing bees, perhaps it is time to swarm. But to what fields and ecosystems should we swarm? Perhaps we can ameliorate the thermodynamic diffusion problem by imagining and realizing weedier ecologies. There is little we can predict. So we may as well experiment and improvise in the maelstrom of intersecting ecologies, and discover what works for ourselves.

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1. The TML's two major application domains are movement-based events, and architectural installations. The TML's installation-events have been exhibited in technology art venues such as SIGGRAPH, Ars Electronica, DEAF, Media Terra, and Elektra.

2. For example, T. Lamarre et al. at McGill have documented the substantial popular "fan-based" creation and circulation of images and narratives surrounding Japanese animation.

3. Cf., respectively, SenseLab @ Concordia, Radical Empiricism group @ UdM; CIM, CIRMMT @ McGill; Interstices @ UQÀM.

4. For example, an executive from an internet communications company, a professor of English literature leaving a tenure-track job, a post-doc from the Harvard Graduate School of Design, a professor of architecture with over twenty years of experience as a licensed architect, a director of research at a music and digital instruments center.

5. To date, it seems easier for the lab to cultivate some of these anthropologist's theoretical interests in seminars, than for them to absorb the skills to participate in the collective experimental practices of the atelier. To a large extent this is not for lack of good will, quite the contrary. It is more because their programs of study are funded and timed to enforce the timely writing of a dissertation, and the host institution has no program and no long-term fund for apprenticing such advanced students wishing to cross laterally from a humanities discipline to art practice and research at the TML.

6. Of course, what is adequate means quite different things in science and literary theory.

7. **Synchronic Description of Roles.** Over the past ten years, four prototypical roles have evolved: apprentices (newbies), research assistants, research staff (researchers), and peer artists or scholars. *Apprentices* are often undergraduate students who volunteer in an existing project. Unlike other "labs" in fine arts, art research is not merely work-for-hire relations, but a knowledge, affective, and symbolic ecology. *Research Staff* are paid to maintain and build group knowledge across generations of students and projects. Graduate *Research Assistants* design, manage, and carry out research projects. Experienced affiliates take the initiative to deepen and extend specific research responding to the general themes of the atelier-lab. They work on each other's projects and take turns directing work. Mature artists or scholars propose projects to be hosted at the atelier-lab. They form an international network sharing an ethos, aesthetics, and philosophical inquiries that substantiate and extend the atelier-lab's research themes. The atelier-lab partly models theater production in which all the crafts combine for the purpose of making an event or in installation. The model includes heterogeneous practices and an explicit set of roles ranging from gofer and understudy, to master craftsman (eg. in costume or lighting design) and event designer (e.g. directors, composers, and choreographer).

Institutional Description of Roles. Since 2001 the TML has hosted more than eighty Highly Qualified Professionals (HQP), interdisciplinary PhD, Masters, MFA, and undergraduate students. However, institutional class does not correlate with an atelier-lab role. And whereas roles in projects are legible to funders, less project-oriented work—say, an MFA's poetic occupation of space using DIY electronics, or a doctoral collective's readings of philosophy—is hard to sustain, and perpetually distracted by funded projects or external commissions. What gets privileged is work that can be cast into problem, method, solution, rather than poetic or rigorous investigation.

8. Areas of inquiry include movement and gesture (epitomized by the Ouija experiment (Sha and Montanaro, 2007); non-anthropocentric phenomenology and the built environment, with two sub-areas: psychology and architecture (H. Wild, L. Tillett), and temporal textures (H. Smoak, P. Harrop); technologies of performance with sub-areas: realtime video, realtime sound, sensing / sensor feature extraction, pattern tracking, and software: wearable, active textiles and jewelry, and continuous state-based media choreography; memory, place, identity (D. Morris, Sha) and the technologies of memory; non-

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anthropocentric ecology and economics, which comprises a seminar on Spinoza, Bateson, and Guattari, and the Plant Life Support System project for semi-automating the watering and sensing of plants. Seminars include Topological Media 2005-2007, SenseLab 2005-2006 (Deleuze), Soft Architecture 2007-2009 (Alexander, Gins and Arakawa), Simondon 2008, Memory+Place+Identity (Merleau-Ponty, Casey) 2009-2010, Eco-economics and Vegetal Experience 2010-2011 (Spinoza, Bateson, Guattari), and Maths Group 2010-2011 (point set topology, differential geometry, measure theory, geometric measure theory). The TML has brought visitors to calibrate and stimulate discussion, such as Benoît Maubrey (Die Audio Gruppe / The Audio Ballerinas), Toni Dove (Spectropia and interactive cinema), and Niklas Damiris (Art Creation; Money and Quantum Mechanics, The Limits of Sustainability).

9. Workshop themes have included calligraphic video (2007), media choreography (2007), computationally activated lighting, pneumatics and kinetic sculpture, guided installation-events, and autopoietic systems.

10. Professional mathematicians customarily credit peers for even one expression, one turn of logic, one significant line in another article.

11. An affiliate may use any media or code from another affiliate on a TML-identified work. S/he is asked to keep the series of names of prior TML contributors, and append her own name to the chain of credits. Work may not be exhibited or cited outside TML until it has been published crediting the authors and TML in a peer reviewed journal, or used in a public, juried event of sufficiently international stature. TML technology—media, techniques, gear, space, resources—may not be used for any non-TML project, except by permission from the TML creators or authors. The object is to build reputation capital to help everyone who affiliates with the Topological Media Lab over the years. This process acts against the “thermodynamic equilibrium dilemma” in which too rapid diffusion of knowledge and skilled people kills the incentive for building up rich relationships and knowledge bases that can yield significant distinctions, and that instead diffuses energy and innovation to a uniform level of mediocrity. Compare this with the companion essay on the yeast cell model and Coase’s theory on why firms exist.

12. After the experience of producing the TGarden responsive environment in 2001, I planted the TML in the institution of the research university because the work needed to leverage institutional ecology—administrative support, space, access to innovation research funding, the opportunity to mitigate disciplinary education with talented students. However, accessing the research and programmatic infrastructure of the academy incurs institutional constraints.

13. The Hexagram research-creation network’s Funding Competition Evaluation Criteria (2007) explained the foundation’s context for research/creation in the following terms: “Hexagram’s mission is to support innovation in the field of digital content through research, creation, training, experimentation, production and dissemination activities based on original forms of communication and expression driven by new technologies. In short, the Institute’s mission is to stimulate and enhance research and creation artistic activities using new technologies [...] [pooling] a critical mass of university researchers. [...] Hexagram also serves as a bridge between university research and a variety of nonuniversity – related communities and sectors; it promotes the transfer of research in new media and technology at the local, national and international levels. [...] Hexagram’s objectives are:

- To foster the development of content in media arts and technologies through systematic exploration and experimentation using new technologies;
- To enable researcher/members and managers to [...] [discover] ways in which digital technology can be used to enhance communication and artistic expression.
- To encourage contemporary artistic practices based on [...] needs [...] in [...] film and digital television, interactive games, performing arts, and interactive multimedia (educational and cultural). [...]

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- To [...] train multidisciplinary professionals to understand [...] new media and manage innovative projects in order to contribute to the development of an industry in this field;

- To stimulate interdisciplinary research and [...] collaboration between people from [...] artistic, scientific, technological and engineering [fields] [...]" (Hexagram 2007, p. 1).

14. See Tim Lenoir's *Inventing the Entrepreneurial Region: Stanford and the Co-Evolution of Silicon Valley*, a collaborative book project with Nathan Rosenberg, Henry Rowen, Christoph Lecuyer, Jeannette Colyvas, and Brent Goldfarb. See also, Mowery et al.

15. I would not call this the Tall Poppy Syndrome since there is no concerted intent to average research to mediocrity.