



[FIGURE 0. Sostre de Flors installation, 10x15.]

Introduction

TGarden is a branching family of responsive playspace events and installations, with curious cousins and descendants:

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{tgarden0, tgarden1, tgarden2,
  {txoom1, txoom2,
    {tgvu1, tgvu2, tgvu3, {tmtl1, ...}
      txoom3, ... },
    { trg1, trg2, ...}
  }
}
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What I discuss in this essay, however, are not particular playspace installations and events like *trg* or *tg2001*, but some of the passionate critiques and questions motivating the *TGarden*, and the desired qualities of experimental experience that make some of the background and potential for such playspaces still so compelling with respect to that pre-history. Given all the heart, craft, knowledge and energy that have been poured into making and presenting these installation-events, it's natural to ask what's at stake? Why should we creators and participant players care about making these playspaces? I hope this essay will encourage some of you to, as Maja Kuzmanovic put it, grow your own worlds weedily and wildly.

My interest in these responsive media spaces stems from two intertwined conversations. The first is a series of conversations about agency, language, and hybrid ontology, going back to a seminar on interaction and media (IMG) with Niklas Damiris, Helga Wild, Ben Robinson, Ann Weinstone, Alice Rayner, and other humanist scholars affiliated with Stanford University in California. For three years, 1995-1997, we met every week, reading gem essays smuggled out from the heart of their disciplines, recasting what insights and arguments we found into ways to articulate and maybe work with the hybrid computational/physical "interactive" media that we saw emerging around us. But



[FIGURE 1. *trg*, FoAM, 2005.]



[FIGURE 2, *txOom*, FoAM, 2002.]



[FIGURE 3. tgardens, Sponge + FoAM, 2001.]

we put every label and concept like “interactive” and “media,” in play, and later from farther afield, “map,” “system,” “language,” “expression,” and “human” as well. I was engaged with the boundaries of language, especially with how we fleshy, mortal people could use non-linguistic writing and sketching to trace infinities like complete Riemannian manifolds, the profoundly immeasurable non-self, and the role and the power of the imaginary in our infinitely thick and dense world.

The second conversation is a specific set of challenges by two practitioners of experimental theater, Laura Farabough and Chris Salter. They came with 25 and 5 years, respectively, of experimental performance and contemporary theater, and challenged us with examples of avant-garde theatrical practice after Bertolt Brecht: guerilla theater like Farabough’s Beggar’s Theater and NightFire in San Francisco, Egypt and Mexico, and the bloody and complex works of Heiner Müller, William Forsythe, and Pina Bausch, in whose company they learned their craft. They challenged me to make palpable the ideas we were forging from what Ann Weinstone called the wild academy, to make events in which we and our participants could encounter and experiment bodily with these radicalized articulations of agency, self, desire, and action that we were so delightfully cooking up in the IMG.

This was a heady and daunting challenge, but nothing that a few tens of millions of dollars and a few dozen fearless artists and engineers couldn’t do in 10 years. We lacked the time, the capital, and the discipline. But we did find some fearless artists. So we grew our own networks of artists, from the art groups Sponge that we established in 1997 in San Francisco, and from FoAM, that Maja Kuzmanovic established with Nik Gaffney and Lina Kusaite in 2000 in Brussels.

Starting Questions

Most critically, how can we make events that are as compelling for the people who encounter them as the theater by Brecht, Müller, Bausch, Sankai Juku, and Dumb Type were in their day and for their audiences? In a sense, this is a technical challenge, in other words it is a challenge to the practice and craft of experimental performance (to what Peter Brook called Holy Theater, as opposed to Dead Theater of typical rote and commercial performance, and different from the Rough Theater of the street and Commedia dell’arte.) [NOTE: Peter Brook, *The Empty Space*.] One of the questions I refined from this very broad challenge was: How can we make a responsive space and event within which initially accidental, unmarked, unrehearsed, ordinary gestures could acquire great symbolic charge? These questions were practical questions of craft, and could only be answered or explored materially, bodily, in physical built spaces and peopled events. However, the way in which we explored them was not by producing commercial shows, but by doing performance research. We made installation-events that straddled the border between closed shop studio improvisation-experiments with special audiences, and open performances with a public. As it turns out, these questions, though they were forged in a precise context of experimental performance research, resonate far outside the world of digital media art and performance. They are informed by dance, movement, textiles, fabric, musical performance, and visual art, but they also are impelled by a desire to embed such work into public space and everyday space. This is part of the ethico-aesthetic adventure of the work that appeals so much to me.

Now the same questions about the event also have a radical, micro-textural inflection. Could technologies like computational media, real-time sound and video (re-)synthesis, cheap hobbyist sensors, and the like, be added to the *mise en scene*

of theater as Antonin Artaud dreamed to extend the theater of cruelty in a way that is relevant to us today? This theater of cruelty would create a theater that would not drop out of our consciousness as soon as we've finished consuming it but would transform those who encounter it as utterly as the plague. By cruelty, Artaud explicitly did not intend the meanness of human hurting human or animal, but the implacability and indifference of matter with respect to our human ego. Stone resists, and a tree greens, and software breaks regardless of what we say. If we desire matter to perform differently, we cannot simply legislate or script it by brandishing a pen alone, we must also manufacture a symbolic material substrate that behaves differently from ordinary matter.

Spiraling Concepts

The rest of this essay will spiral up through a set of concepts: the basic kind of events that I'm considering, a discussion about "representation," a question of performance, then the technologies of performance, then concepts embedded in those technologies, and finally a return of sorts to a transformed notion of event and representation (language).

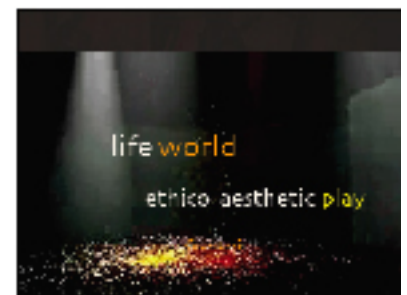
Some people say that ideas are cheap, that making is hard. But we know very well that humans create and rework concepts with just as much effort and rigor and material discipline as the making of a physical installation. It's just that the young domain of media arts and sciences has not enjoyed the luxury of alloying and hammering out concepts as thoroughly as say biotechnology or history of Renaissance Italian literature. Domains of practice that benefit from billions of dollars or centuries of investment can elaborate practices that exploit the making and composition of concepts based on antecedent literatures, intricate dependencies and interrelationships of publication and citation, the social networks that give meaning to concepts, and procedures of evidence and argument and generative logics indigenous to the epistemic culture.

[NOTE: I find it helpful to think in terms of inequality rather than equality or definition: concept \neq representation \neq abstraction \neq concept. Also, theory \neq philosophy \neq model \neq procedure (problem solving) \neq poetry \neq rhetoric \neq theory. I would shy away from abstraction, model, sophist rhetoric, and art "theory"'s word salad, but affirm that we need philosophy, poetry, and concepts if we want a life worth living. See Gilles Deleuze and Felix Guattari, What Is Philosophy?]

Events

The kind of events I'm talking about, the kind I'm interested in making are collective, co-present, embodied, and a-linguistic. These are situations to which people are invited to be physically together, face-to-face, in short, co-present. This is a basic condition of theater, too, and distinguishes theater from for example cinema or photography, in that the performer-actor-artist is in the same physical place as the spectator-visitor, so that the spectator can get up and physically lay a hand on the actor to interfere with the action if she or he wants to. This potential for physical contact is a condition for the collective embodied experiences needed to conduct experimental phenomenology, I believe. By design, these situations are collective, with three or more participants, three to destabilize dyadic pairing, with an eye to lowering the threshold for the improvisation of being in that space. I say embodied to mark that the fleshy bodies of the participants essentially move and act together in the co-construction of the event. The line between actor and spectator is dissolved, so any body may adopt the disposition of an actor as an agent of change in the event, or equally a spectator as a witness of the event.

The ambient environment will be thick with media, filled with thick sound, thick video, dense physical materials, so that people will live in a dense matter that responds and evolves in the course of their activity. All of this activity can be conducted a-linguistically without necessity for spoken language. On the other hand, speech is not



[FIGURE 4. <lifeworld, no caption>.]

prohibited; it's just dethroned with respect to the other modalities of coordination among the bodies and media in the space, again as way to estrange the speaking subject, and render more prominent the material dynamics of the lifeworld on the other side of the veil of the technologies of language.

By thickness, I refer not only to perceptual thickness -- density of video and sound textures, but also to the rich magma of social, imaginative, erotic fields within which people play even in ordinary situations, situations in which we perform without first analyzing, and cutting up our experiences into analytic layers: how did I smile? How did I rest my feet on the floor? Did my voice carry or resonate well? Did I stand too close or too far to other people? Did I interrupt or listen or talk over or under other speakers? Is the light too bright? I borrow the term from Clifford Geertz's notion of a sociological / anthropological responsibility to study culture in all of its rich social patterns and dynamics without orthogonalizing it a priori into categories that we would bring to bear on that culture. So this experience should be designed in a pre-orthogonalized way by the designers, and enjoyed by the participants without requiring that they make any cognitive model of their world in order to perform in it. Why? Engineering's power derives from the portability and extensibility of standardized schemas and methods that apply globally over phenomena and life. Our engineered systems are already built on taxonomies that must be navigated by grammars and operated according to rules that discipline our thought and action -- the action of power to discipline humans into docile bodies has radically evolved under the impact not only of the informatic technology but the epistemic matrix that encases our imaginary, for example. These taxonomies rest on fundamentalist distinctions such as signal vs. noise, functional versus aesthetic, and syntactical vs. non-syntactical (relative to a grammar). It's not enough to side with noise as the opposite of signal, however, or idleness (the vacation) as the opposite of wage-slavery because that still leaves in force the distinction made by the relevant schema in power.

[Representations of] lifeworld

Perhaps the principal (and only?) loci at which power grips us and with which we grip the world are the patterns and forms of the world. These regularized and normalized systematized patterns are what we call **representations**. And our most highly developed form of representation is language, which since Ferdinand de Saussure's semiotics has been axiomatically susceptible to regularization (and subsequent normalization) by linguistics. [NOTE: Saussure, Course In General Linguistics.] It is language to which most of us have been disciplined since childhood, thanks to the modern democratic impulse. That this generative power can turn to the benefit of non-elite agents is recognized as a threat by the counter-democratic forces that are dismantling the systems of public and higher education in the western nations.

It's for this reason that so much critical energy (Plato, Kant, Foucault, Deleuze, Derrida, Haraway, and so many others), has concentrated on the power of representation to constrain us to think and act in the world in certain ways but not others. I use "power" mindful of Foucault's studies of the genealogy of "madness," the "prisoner," and "sexuality" that put those categories back into play in the contingent currents of history. What's at stake is whether we can create conditions for events in which power is put in play, and its categorical fingers can be unclamped, if only provisionally from their grip upon our bodies. Power, as Foucault reminds us, is not always signed with the mark of evil (or good for that matter), it's the generative force,

“the force that through the green fuse drives the flower” (to borrow from Dylan Thomas) as well as the blasting cap. To put power in play also means to unclamp the hands and collectivities that wield it against life. And if representation is the grit and grip of power, then one core way to put power in play would be to test the limits of language.

Now, mistrusting, examining, and interrogating the limits of language in fact has been one of Modernism’s central concerns [NOTE: One modern root would be Saussure’s canonical Course in General Linguistics, but of course we find antecedents in Leibniz’s search for a language of mathesis universalis, and Athanasius Kircher’s cabalistic formal languages.], so we are walking a path well trodden by many, which should assure us that this concern is not peripheral or hermetic, but vital to people whenever they wonder how life is worth living.

When Ludwig Wittgenstein wrote at the end of the Tractatus Logico-Philosophicus, “Wovon man nicht sprechen kann, darüber muß man schweigen,” (Whereof one cannot speak, thereof one must be silent), he was acknowledging the limits of what could be expressed by propositional language, of the machinery of statements with truth value that could be built with logic into the vast edifice of knowledge that could be articulated in statements like: “Creon, ruler of Thebes, forbids on pain of death anyone to bury Polyneices, who was a traitor to Thebes. Antigone has covered her brother Polyneices’ corpse. Therefore Antigone’s life is forfeit.” or “When the appropriate conditions are satisfied, power must be exercised. Iraq has been tyrannized by a dictator. My nation is founded on principles of self-determination and autonomy. Given the preeminent power of my nation, it follows that, in the name of freedom, it is imperative that my nation liberate Iraq from its dictatorship.” -- complexes of statements that are supposed to have the same epistemic weight as: “Suppose there are only a finite number of prime integers, $p_1 < p_2 < \dots < p_n$, where p_n is the largest prime. Then consider the integer $Z = 1 + p_1 * p_2 * \dots * p_n$, 1 added to the presumably enormous but finite product of all the prime integers. Z is not divisible by any of the primes, p_1, \dots, p_n , yet Z is bigger than p_n . But it is a prime bigger than p_n , which contradicts the assumption that p_n was the largest prime integer. Therefore there cannot be a largest prime integer, i.e. therefore, there are an infinite number of prime integers.”

It would be disingenuous of me to dismiss the tremendous constructive power of propositional knowledge. Propositional knowledge is in fact part of the social/legal/economic infrastructure that makes it possible for me to walk out of this door and down the street to buy a copy of the Economist or Libération. It is part of the technoscientific apparatus that allows me to type this essay without thinking about the galaxy of electronic and logical procedures that are being performed to stabilize and transmit my words to you. My purpose is not to diminish the scope and depth of propositional knowledge, which in effect is all we can state about ourselves and our experience, but to play at the limits of propositional language, of language, of sign in general, in fact at the meeting place of sign and matter, which is the symbolic. [NOTE: I thank Patrice Maniglier for teaching me this concept of the symbol.] That is what led me to consider creating playspaces of responsive media saturated with symbolic potential in distributions of desiring matter. That is why I thought of the TGarden and its precursor installation-events as phenomenological experiments.

Wittgenstein, who like A.N. Whitehead cut his teeth on logic and the foundations of mathematics, so he knew profoundly what he was talking about, also wrote in the Tractatus: “*Die Ethik nicht aussprechen lasst. (Die Ethik und Ästhetik sind Eins.)*” Ethics cannot be expressed. (Ethics and aesthetics are one.) With this, Wittgenstein expressed several deep insights with characteristic compactness. Even given the rich and ever more complex web of knowledge that can be expressed in propositional language, such as law and morality -- social norms -- and computer science, matters of ethics and aesthetics cannot be expressed in propositional language because such language cannot express value. Recognizing this, Wittgenstein closed his project on the logical foundation of knowledge, and wrote the Philosophical Investigations, surgically

deflating the illusions of the conventional theories of meaning one by one until we are left standing at the door to the only source of meaning, which is life, practice, the lifeworld. Meaning, Wittgenstein observed, cannot come from any set of rules, from correspondence to the world, or from appeal to transcendental objects. (That last observation is pretty obvious after Descartes and Kant.) Meaning comes from contingent use, meaning comes from practice in life. But the lifeworld is external to the span of what language can contain in itself.

Jacques Derrida wrote, in *Of Grammatology*: “*Il n’y a pas de hors-texte*” (There is no outside-text), meaning not that the world is entirely contained inside the semiotic, but that we cannot ground language’s meaning by having it represent faithfully something in a transcendental or exterior world. Context determining the meaning of a text can only be expressed in language itself, so it would be delusional to attempt to ground meaning by believing language homologously represents or faithfully points to some ultimate reality, whether that be the Bible, genes, memes, or bits.

So, after Wittgenstein and Derrida, it would be quixotic to try to simplify our lifeworld by reducing how we make meaning and symbolic charge to one thin layer of the world or another, so let’s skip by the monuments of cognitivism, and move into the lifeworld, the other to language.

Reality and the Imaginary

What can we do in the lifeworld, then? And what would it take to unmoor power-that-controls and put it in ethico-aesthetic play?

One of the basic distinctions we have to address here is the issue of Reality. There’s much talk about reality as if it were something pure that we could contaminate, and therefore save. But even if corporate and state power require the conceit that reality is pure and must be protected by opposing it to the virtual, we do not. As Jean Baudrillard observed in *Simulation and Simulacra*, it is exactly at the moment that our symbolic machines have become so powerful as to threaten to destabilize capitalistic power that power tries to distinguish reality from virtuality, and re-inscribe reality so ferociously. Why? The virtual is that which is not actual, but could be, and understood this way is identical to the potential, a mortal threat to the power that would control. In fact, reality, as Bruno Latour so thoroughly and persuasively argued in *We Have Never Been Modern*, is always and everywhere radically, inextricably mixed between society and nature, word and thing, symbol and substance. In fact, it’s useful to think of reality as everything that is not logically self-contradictory, like a 4-sided triangle, and include the virtual as part of this reality.

So, Reality = Potential + Actual. The actual is what is in the here and now, what is the case, whether as configurations of physical matter, or as symbolic patterns like law, business, or systems of value like emotional relations, fashion and aesthetic tastes. The potential is what is not the case, but could be, and the imaginary is the collective or individual envisioning of that which is not the case, and of transforming the potential into the actual. So, reality is always already mixed. The challenge is not to define, brand, or package mixed reality, but to mix reality, just as the deepest challenge is not to define the human, or the citizen or the psychological or cognitive subject (as AI aspires to do), but to human (adapting from Ann Weinstone). Therefore, what I’ll do is not just putter around synchronic representations of mixed reality which can be much more than written language, of course, including any map, diagram, schema or any sign system whatsoever, but bracket the operation of

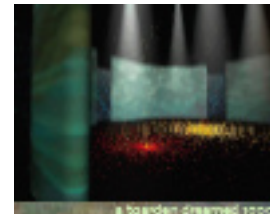
[Representation of], and move to the arena of improvising, performing, practicing in symbolic, desiring, embodying matter. What in the world could that possibly be like? How can we work not instrumentally but poetically with such material magmas and stay clear of formalizing, disembodying, and dessicating reductions to the informatic or cognitivist abstractions of the lifeworld?

Felix Guattari's decades of work with schizophrenics in his clinic La Borde, while deeply informed by the tradition of psychoanalysis of Freud and Lacan, parted from psychoanalysis in a most radical way. Guattari left behind psychoanalysis' aspiration to scientificity, to discovering the truth about the subject's world, and recognized instead that all forms of expression are actually also simultaneously forms of content, that every one of us co-creates the world and co-adapts to the world. Guattari recognized that the schizophrenic is as much a co-structuring agent as the doctors and nurses who ostensibly run the clinic. One of most illuminating examples in *Chaosmosis* tells about families who come as a group to sessions in which actors introduce extra characters in filmed events. The participants must revise, improvise, enact and re-enact their relations for each other and for later viewers. There are vocal and manual gestures or movements whose meanings are not pre-defined or evident but arise organically from being exfoliating in the world in a signifying process that Guattari (and Deleuze) called pathic subjectivation. The subjects later reviewed these events, and narrated for themselves what they saw themselves doing. This is radically different from the subjectivation imposed according to schema by an analyst who announces to his patient: "By the power invested in me from my training as an analyzed Analyst and interpreter of the DSM, [NOTE: The standard reference of psychiatric disorders.] I declare, 'You are schizophrenic.'" It's one of Guattari's clearest examples of ethico-aesthetic play in the magma of a-signifying semiologies, and of improvisation over rehearsal and experience sedimented over the lifetime and (acknowledging Lacan) beyond the lifetime of the ego. This is not theatrical role-playing, nor everyday activity observed in the wild behind a screen, nor purified laboratory interrogation. There are no blueprints or recipes for any of this kind of playful, rigorous work, and in fact it would be a terrible betrayal to make a method out of this.

Much of this articulation has come to me only after many years of working dumbly, so to speak, so I've enjoyed the pleasure of traces of recognition in these writers who wrote incandescently out of the crucible of their own experiences. Guattari and Artaud resonate well with how I've tried, in very preliminary and partial ways, working with autonomous people and the means at hand, to nurse art research in a studio-lab I established, called the Topological Media Lab (TML). [NOTE: <http://topologicalmedia.com/cordia.ca>]

Responsive Media Research at the TML

Given these concerns, as I've described them, what's interesting is not so much a matter of taxonomy, and schemas and classifications or standards and protocols, although those are necessarily part of the robust construction and operation of our playspaces, but the dynamics of processes that stir, up, shape and unshape the material patterns that constitute the lifeworld. The early exercises, studies, and installation-events by Sponge [NOTE: <http://sponge.org>] dealt with particular questions in performance research: How to make events that were experientially as powerful as works of avant-garde theater but without resorting to verbal/written language, erasing the distinction between actor and spectator, and relying on thick, physical/computational ambient media. TGarden: TG2001 as built by FoAM and Sponge was an installation-event that marked a transition and a bifurcation from performance research into a strand of public installation-events



[FIGURE 5: TGarden concept particle system, Sponge 1999.]



[FIGURE 7. Gestural sound, TML 2003.]

and a strand of studio-laboratory research in the Topological Media Lab. I started the TML after leaving Stanford for Georgia Tech in 2001 to take stock of, and strategically extend some of the technologies of performance according to a particular set of ethical-aesthetic heuristics inspired by continuity, human performance (e.g. the violin), human play (e.g. in water and sand), and non-electronic matter like clay, smoke, or rain. I wanted to make responsive media synthesis engines and gestural instruments, and choreography systems that would allow participants to experimentally co-structure, not interact (!), with co-evolving ambient life in the “real-time” of perceptually concurrent action and the specious present. [NOTE: Regarding the specious present, see William James, *Principles of Psychology*, p.573 in the Harvard edition; see discussion in Steven J. Meyer, *Irresistible Dictation*,] The media engines and instruments that we’ve developed fall naturally into the areas of calligraphic video, gestural sound, softwear (active materials made of fabric and other soft woven or non-woven matter), and audio-visual instruments (such as DMX-controlled theatrical instruments).

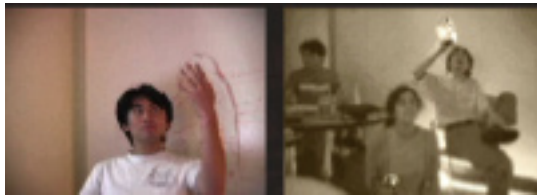
Media Choreography

Media Choreography names how, in the approach taken by the Topological Media Lab, the creators of a playspace put all the media together using continuous dynamics and quasi-physics, rather than rules, databases and procedural logic. This is both an aesthetic and an operational heuristic. Media choreography is a way to relate the synthesis of all the different streams of media in concert with the activities of the people in the common playspace, such that the behaviors (to use an overly anthropocentric term) of the media and the people co-structure one another, and evolve over time according to pre-arranged strategies and latent predilections, contingent activity, and memory of past activity. I appealed to continuous dynamical systems on several grounds:

- (1) People’s experience of the world is continuous.
- (2) People have sedimented huge amount of experience with the physical world, so we should leverage it by using quasi-physics models.
- (3) I wished to see how we could move away from the Judeo-Christian technology of ego-centrism and anthropocentrism.

A most important common feature of the media choreography of this family of playspaces, from tg2001 (TGarden) to trg, including Time’s Up’s A Balanced Act, is that the creators specified not a fixed, discrete set or sequence of media triggered by discrete visitor/player actions, but rather a potential range -- a field -- of possible responses to continuous ranges of player actions. But in this family, behavioral tempers, or to use less animistic terms, climates of response evolve over macroscopic periods of time (minutes), according to the history of continuous player activity.

A subtle difference between an information theoretic approach to scripting the behavior of a system and the TGarden’s quasi-physical approach is that the latter bets on a radically modest approach to computational media as dumb matter. By dumb I mean (1) free of language, even the formal procedural programming languages that are operationalizations of the logic that I relinquished early in this essay; (2) free of intelligence, the cognitivist approaches of symbolic artificial intelligence; and also



[FIGURE 6. Calligraphic video, TML 2003-2004.]



[FIGURE 8. Softwear: sensate, luminous, body-based soft materials, TML 2003-2004.]

(3) free of representations of abstract structures like hidden Markov statistical models or 3D polyhedral geometry.

One particular research strategy I'm exploring in the TML is to use continuous dynamics to sustain superposition of contingent and composed potential behavior, and expose these intertwined dynamic processes to the players not through words or discrete tokens, props, or characters, but via the richest available temporal textures of sound and visual imagery. The research heuristic is that this way we can leverage people's bodily intuition by having them play in the media, rather than look at representations of some squiggly shapes projected at some remove from their own flesh. (Representation would rear its head.) To let people play immersed in media, we could have them step into a warm pool of water laced with honey, so why use computational media? Computing the quasi-physics allows the creators to inject a physics that changes according to activity and local history, and respond in ways that resemble but are eerily unlike any ordinary matter. This is analogous to the alienation effect of theater but not at the level of whole bodies: characters, actors, spectators, plot. Instead, what continuous, dense, topological dynamical systems afford is a micro-fine alienation effect at the level of substrate media such as calligraphic video, gestural sound, and kinetic fabrics imbued with uncanny physics.

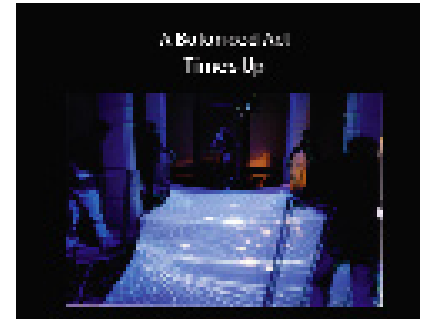
A word on method, design heuristic

Indeed it would take a lot of work to build up to macroscopic objects and actions from relatively homogeneous textures and simple dynamics. But I would say that it is not "hard" (the adjective used by Tim Boykett in Riga), but strange and un-idiomatic for all of us who have been trained to the aesthetics and logic of whole bodies and macroscopic human-scale objects like words, props, characters and conventional game action. After all, to render a character in a novel or play from the raw material of alphabetic text and grammar, takes an enormous amount of hard-earned psycho-social knowledge, literary apparatus and wordcraft.

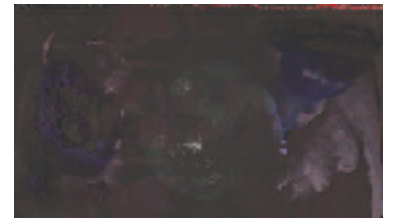
One significant difference between *trg* and the earlier *TGarden*, *txOom*, and *tgvu* experiments, is that in *TGarden* and *tgvu*, the metaphorical behavioral state topology is independent of media state topology, whereas in *trg*, what the player sees is identical to the behavioral topology. *TGarden*'s state engine evolves through a rather sparse topological landscape with few valleys and peaks, whereas the visual and sound fields are synthesized as densely and temporally finely as possible and as necessary to sustain a rich experience, with micro-dynamics of response that we do not attempt to trace using the state engine.

The reason for decoupling the dynamical metaphorical state engine from the media engines was in fact to decouple the evolution of the behavioral response "climate" from the dynamics of the visual and sonic textures, which has to be as rich and tangibly responsive to the players' actions as possible. It seems artistically and compositionally useful to keep these dynamics decoupled from one another.

My concern at least in the context of this essay is precisely with what possibilities a micro-phenomenology, free of ego and anthropocentrism and indeed of any fixed, a priori objects, can offer toward fresh and refreshing improvised play. Aesthetically, at least for *TGarden*, this play should take place immanently in as dense an ambient medium as that of ordinary life. So the best approach would be to start with ordinary matter and real fleshy people in common space, and judiciously augment the everyday matter with just enough computational matter to give the event a strange and marvelous cast. This approach, which I nickname "minimax" design: maximum experiential impact for minimum computational technology, resonates with the poor theater's choice of a minimalist technology of *mise en scene* relative to cinema, a minimalism which in fact is constitutive of its magic. [NOTE: See Jerzy Grotowski's [Towards a Poor Theater](#).]



[FIGURE 9. A Balanced Act.]



[FIGURE 10. Thick/N, Harry Smoak, Matthew Warne, K. Stamper, TML 2004.]

However, this apparent inefficiency is in fact endemic not only to “bottom-up” simulations but to all simulations and simulacra. As Humberto Maturana and Francisco Varela pointed out, to be as dense as life, a simulation of an autopoietic system can never operate any faster than that autopoietic system, and can at best run at the speed of life -- so much for the cybernetic fantasy of mastering and replacing the lifeworld by a transcendental, superior simulation of life.

As for theoretical approach, my long term interest in the TGarden and its sibling responsive playspaces extends beyond the actual events themselves to the mixing of ideas and conflicting ideological commitments from different epistemic cultures. I won't take the space here to pursue this sociologically or anthropologically, but it would be liberating to practice our arts and sciences in a more reflexive way. [NOTE: Isabelle Stengers has retold the stories of seven scientific disciplines in a way that presents the partial and provisional messiness of science as it is actually practiced. Telling science in this way has both cosmological and political implications, hence the title of her books: *Cosmopolitiques*.]

The week after the ‘Space and Perception’ conference at RIXC in Riga, I participated in a symposium focused on Deleuze, Whitehead and the Transformations of Metaphysics [NOTE: With Isabelle Stengers, James Williams, Mick Halewood, Steven Meyer and about 20 other philosophers, *Proceedings of the Royal Flemish Academy*.] There I realized how to articulate that one could use mathematics as poetry rather than as instrument or measure, or a replacement for God, or an intellectual battering ram. (I must confess, however, to deriving some pleasure from reading Alain Badiou's fearless and fierce polemic about mathematics = ontology.) I agree with Badiou that mathematics is substance, and not merely a description of substance. Shaping mathematics as poetic material in fact differs in kind from using mathematics to describe the universe as physicists see it. Part of trg's charm is its attempt to make palpable a concept of the world (recent quantum field theoretic cosmology) by forcibly identifying it with the perceptual field -- a cosmic ambition. The artists could only begin to approximate this by restricting trg to a very compact physical duration and place in Kibla, and by making allegorical simulations in software. Allegory makes the world of difference between depiction and enaction, perception and phenomenology.

As for experimental phenomenology, I'm trying to discover and mix together mathematics as materials that are adequate to life. It could be sharply different sorts of poetic matter: continuous topological dynamics, geometric measure theory, or even fancier stuff like non-commutative algebra and etale cohomology. But I choose to start with the simplest symbolic substances that respect the lifeworld's continuous dynamism, change, temporality, infinite transformation, morphogenesis, superposability, continuity, density, and value, and is free of or at least agnostic with respect to measure, metric, counting, finitude, formal logic, linguistics, (syntax, grammar), digitality, and computability, in short of all formal structures that would put a cage over all of the lifeworld. I call these substances topological media. Simplicity here is not a requirement of the theory (no Occam's razor here) but merely an acknowledgement that I do not understand enough about the lifeworld to bring out fancier stuff yet, of which there is so much more up the wizard sleeves. The fundamental difference in this approach is to use mathematics as substance in a workmanlike way, patching here and there to see what values ensue, as a trellis for play, rather than a carapace, but always sensitive to whether the poetic material accommodates transfinite, incommensurable, immanent passion. Totalizing carapaces like Wolfram's computational equivalence principle, which at bottom is a

transcendental atomic metaphysics founded on making counting sacred, would hammer us into a very sparse ontology. And to a hammer everything is a nail.

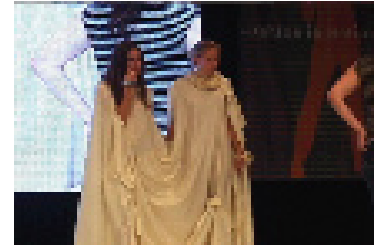
What's at stake?

I approached the branching family of playspaces represented by *tgarden*, *txoom*, *tgvu*, and *trg* as phenomenological experiments of a certain kind, as events based on gesture and movement, rather than language, for people face-to-face in a common place, playing and improvising meaningful micro-relations without language, in thick responsive media. I see these as opportunities for ethico-aesthetic play, to borrow and adapt Guattari's concept of the coming into formation of subjectivity, to engage in biopolitics, radically dispersed into tissue and molecular strata, and reaching far beyond the computational media arts, meeting with experimental impulses in dance, movement, textiles, musical performance, experimental theater, but also the most speculative initiatives in urban design, science studies, and philosophy. But the ambition here is to conduct even the most philosophical speculation by articulating matter in poetic motion, whose aesthetic meaning and symbolic power are felt as much as perceived. [NOTE: See Eugene Gendlin on felt meaning.] I shift the emphasis from spaces of representation to spaces of experience, hence the Topological Media Lab's emphasis on technologies of performance, and on live event.

If we grant ourselves the power and opportunity to experiment with the world at all scales, in all strata, and relinquishing all schemas for an object-oriented ontology, to what extent can the blackboxed modes of work, operation, representation themselves be continuous and transformable sans metric, i.e. topological?

Art all the way down?

If art puts the world in play, puts questions in motion via human and material experience, then art practice could be a mode of material and speculative philosophy. But working in a plenist, unbifurcated world (working with Whitehead's concept of nature recovered whole from the many dualist knives of modernism and postmodernism), I wonder to what extent we can truly suspend, float, and dissolve all distinctions that fracture our being in the world, including the distinction between art and craft. Under capitalism, modern art practice is well served by a distinction between the artist and the executant, the director and the designer, art and craft, theory and practice, and in exchange much commodity art pretends to nothing more than a clever permutation or anamorphic mirror of the actual. But art all the way down could put all relations in play, which implies that how it is produced is as important as what is produced. Therefore it must risk dissolving those distinctions of modern art. FoAM is a good example of an a-modern art organization that tries to work this way with limited access to knowledge and financial capital. However, with the rising star of engineering buoyed by a particularly crude version of pragmatism, there's been of course the counter-cultural revolution aimed to turn the tables on high art, but very often this threatens to merely flip the duality upside down, and manacle art to the categories and norms of engineering and design. [NOTE: There's a profound difference between discrete approximations to continuous things and things that are discrete from the get go. One example is the definition of flow by mean curvature, a project that Ken Brakke tried to carry out but could not complete due to deep technical lacunae that could not be patched until Tom Ilmanen's work 20 years later. Elevating the discrete and the computable to universality, via for example Wolfram's principle of computational equivalence or Newell and Simon's symbol processing hypothesis excludes more life than it includes.] Given that one of engineering's norms is modularity, I ask, can we alchemically open and



[FIGURE 11: Epiphany during rehearsal for CTIA Fashion Show, TML 2004.]



[FIGURE 12. The Mechanical Turk, 1770.]

critically transform all these blackboxes: “interaction,” “program,” “information,” “bit,” “sensor,” “cpu,” “linguistics,” “market,” “design,” “industry,” “body,” “ego,” “citizen,” “machine,” “human.” ...? Art all the way down means there is no layer below which the socio-technical magma becomes mere machine and craft, the level of the technician who executes the artist’s desire. But on the other hand, this means also that we do not reduce conceptual rigor and passionate dreams to a willfully dematerialized, a-historical, anti-intellectual naiveté. It means, for example, that to explore the erotics of the formation and dissolution of object from field has consequences not only at the level of co-present bodies but also at the level of programming language, drawing model, and graphics and dynamics engines.

Can the material process of making things collectively be radically non-denumerable, countless, non-computable, non-dimensional, infinite, and yet remain also immanent, embodied and continuous? Can we make playspaces that evoke not puzzle-solving behavior, but ethico-aesthetic-erotic play, and marvel, or vertigo, or elation? To respect the open, unbounded lifeworld, such a space should not be useful or therapeutic. In fact, that was Guattari’s point about psychoanalysis, too. The point would not be to help the participant construct a narrative analogous to the hermeneutic objective of classical psychoanalysis -- “This is what the patient’s phobias / psychoses / dreams mean,” nor to effect a cure -- therapy’s arrogant stance with respect to its patient: “You are sick. We will fix you.” In a playspace, a participant would not read, interpret or recount a dream -- a participant would be a dream. Why not just enclose a volume of ordinary space and repeat some experiments like the action art of 40 years ago? With our techniques, a playspace could be charged with latent magic, a heightened potential for charging gestures with symbolic power. A playspace could become a theater for the alchemical transformation of hybrid matter, but not a space for cognitive games, inducing puzzle-solving behavior, nor a bath of raw qualia. An alchemical theater would avoid having “users” and “system” building models of each other. (In the human, such models would be cognitive models.)

Our typical model of interaction has been of humans and their proxies engaging in an action-reaction ping-pong. And interaction design, even in its most enlightened mood has been centered on the human (viz. human-centered design), as if we knew what a human was, and where a human being ends and the rest of the world begins.

Since the beginning of the Enlightenment, the automaton has fascinated those members of our species who cannot themselves bear children. One of the most celebrated such automata was the Turk, a chess playing machine unveiled by Wolfgang von Kempelen in 1770, and toured through the courts of Europe. [NOTE: Tom Standage, *The Mechanical Turk*, 2002.] In fact, this chess playing automaton turned out to be powered by a human dwarf hidden inside the box. This piece of automata history is in fact emblematic of the genealogy of the concept of the software agent as a homunculus, from the ENIAC to the fictive Hal 9000 in “2001,” to the agents of Sim City and the customer call center program that can interpret telephoned speech as well as John Searle’s Chinese Box.

But this anthropocentrism is not confined to engineering, of course. Look at Bill Viola’s beautiful series of video works, *The Passions*. If we really take seriously the challenge to pursue art all the way down, and if we are willing to put in play, in suspension, all the putative atoms, objects, and subjects of the world, then I ask you

this question: to whom do you owe allegiance: Homo Sapiens Rex, or the world?

Apart from the the totalizing and dematerializing power of the Judeo-Christian God, and of informatic and logico-linguistic schemas, essentially the only ethico-aesthetic choice in the West is to start with the self, with Homo Sapiens. We witness the disastrous global ecological and economic consequences of this choice. However, given topology as a way, even a rigorous and precise way, to articulate living, non-denumerable, dense, non-dimensional, open, infinite, and continuous matter, one has the option of choosing the world instead. I use these adjectives precisely for their intertwined technical and poetic values. But this is not going to be a cure-all, a recipe for success. It's an approach to design, a way to think about living in the world, how to shape experience, a disposition with respect to the world, rather than a methodology or a technology. [NOTE: This will be the subject of a book on the genealogy of topological media. For a spirited and beautifully motivated introduction to the mathematical study of proto-metric substance, see Klaus Jänich's Topology, 1984.]

Enactment and Enchantment in Living Matter

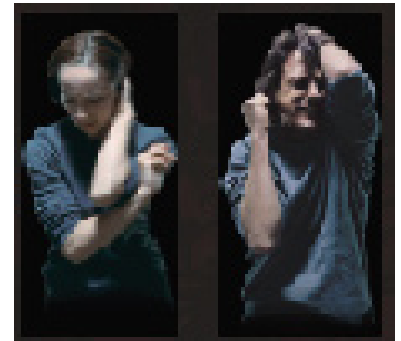
Dylan Thomas wrote (in 1938):

The force that through the green fuse drives the flower
Drives my green age; that blasts the roots of trees
Is my destroyer.
And I am dumb to tell the crooked rose
My youth is bent by the same wintry fever.

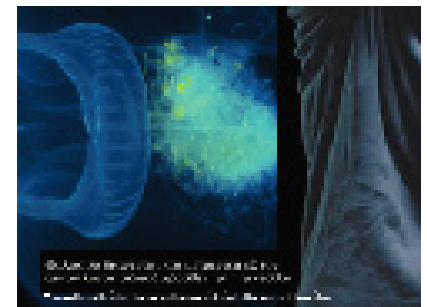
The force that drives the water through the rocks
Drives my red blood; that dries the mouthing streams
Turns mine to wax.
And I am dumb to mouth unto my veins
How at the mountain spring the same mouth sucks.

The hand that whirls the water in the pool
Stirs the quicksand; that ropes the blowing wind
Hauls my shroud sail.
And I am dumb to tell the hanging man
How of my clay is made the hangman's lime....

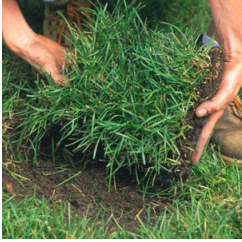
Allow me to suggest a reverse-allegory and use a piece of the world to stand in for some concepts. This is a patch of sod that I cut out of the earth under a tree outside the RIXC building. Representations, words, are like the blades of grass, individually well formed, discrete. I can pull up this piece of sod and turn it over to reveal the root structure underneath. Yes, there is a network of roots as we can plainly feel running our fingers through the dirt. However, I draw attention past the blades of grass and their contingently formed roots to the dirt and the moisture in between the roots. It's the continuous, nourishing, dark, loamy stuff in between the discrete structures that materially constitutes the Earth. This moist earth is always and everywhere in continuous transformation. Our discrete structures, our words, syntax, grammars and schemas and methodologies are the blades and at best the roots. And yes, they are our best ways to grip the earth. But though they are a common supra-individual resource, they are not transcendental. They can only take form in and draw meaning from the earth, and become earth when their life cycle is finished.



[FIGURE 13. The Passions, video, Bill Viola.]



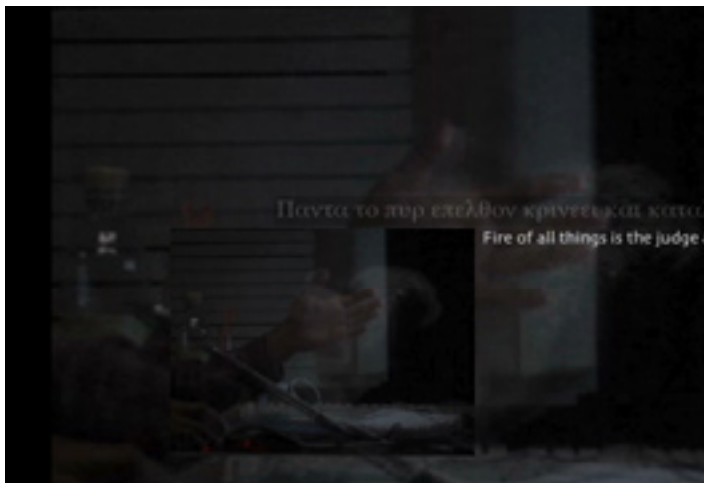
[FIGURE 14: Ocean matter.]



[FIGURE 15: Grass Sod
<IMAGE TO BE ACQUIRED
FROM RIXC VIDEO???.>.]

Archimedes said, "Give me a place to stand, and I shall move the World." But what if there is no place to stand inside a bubbling chaomotic soup of infinite inflation? To what extent can we alchemically open and critically transform all of modernity's blackboxes such as market, machine, or human if we do not have a place to stand in this age of globalized empire and permanent war?[NOTE: Hardt and Negri, *Empire*, 2000, and *Multitude*, 2004.] Is there any possibility for an immanent resistance for us not as non-docile bodies, but as resistive and desiring flesh? Yes, I believe, yes, if we take reality already as an amalgam of the potential and the actual, dematerializing, for example by becoming fictive, and rematerializing under the incessant quickening action of our imagination. This affords openings for life in the mud-filled interstices of our technology.

A most immanent mode of resistance and weedy generation in those muddy interstices of our technologies of representation is play. Play could be the make-belief, the as if, making fictive, becoming other than what is the case, the art that drives the green fuse all the way down and up again. But in recent years, play has been harried by many who would classify it, barely escaping the nets of those taxidermists who would like to stuff play into the carcass of game. What our playspaces could offer us are not allegories of other worlds, whether cosmological, or political, or religious, or psycho-fictive, but events affording playful processes that open life up to more life. Let me close by suggesting a few senses of play that may merit more careful consideration. There's the play of water lapping against the side of the boat, making the lazy slapping sound that evokes sunlight and fish in the clear water just beyond the reach of your fingers. There's the play, the empty space, between the teeth of interlocking gearwheels, without which the entire assembly of gears would lock up; the teeth guarantee discrete synchrony, but it's the gap that allows movement to be born. And yet, that gap is never a vacuum because the world's structures are always and everywhere part of the substrate magma of the world. There's play in the sense of continuous, infinite dimensional variation from any given trajectory, that invites arbitrary degrees of novelty. And there's play as the infinite deferral of definition, a passionate sense-making that develops ever more virtuosity re-enchanting the world.



[FIGURE 16. Navier-Stokes smoke, TML, 2005.]

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