

THE FORE-CAST

This is a story about the spontaneous eruption of Form, and about techniques for finding the unexpected in the ordinary. It is also a story about how creations in disparate scales, modes, and materials, can inform each other as an intertwined and linked series of subtle and unforeseen prototypes. This is only a small story, and includes only a few ways in which such things can happen, but the story may be interesting for restless makers, struggling with the confines of Habit.

Near the end of this story, we find techniques of forming reinforced concrete, freed from the confines of prismatic mold-making. Many techniques have been found for casting wet concrete in flexible fabric molds, where the materials themselves flexibly negotiate their final form within the gravitational field (figs. 1, 8, 9, 10, 11, 12) . In this flexible regime of building, certain boundary conditions are rigidly fixed - for example the locations and dimensions of edges, or maximum/minimum depths, etc. The fabric membrane, held to these fixed boundaries, is then left to its own devices to negotiate a precise geometry of stasis between these fixed points and edges while it holds its wet load. The results are a combination of pre-conceived control and uncontrolled (immaculate) natural events. This way of building runs counter to several deep traditions of architecture, engineering, and industrialized construction, yet without surrendering the simplicity and logic that these linked enterprises demand. But all this is near the end of the story, and lest we get too far ahead of ourselves, we must go back to a proper beginning.

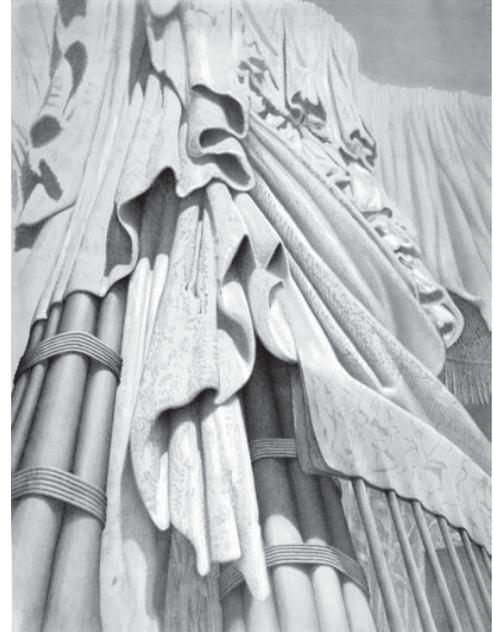
Blackout Drawings

This way of building that foregoes forms of rigid control was arrived at by a curious path, more or less unconscious of its own direction. The scent of this trail was picked up through a series of aberrant drawings begun in the early 1980's. Unlike conventional architectural drawings, these have nothing to do with conveying the visual likenesses of anything. In fact, strictly speaking, they are not visual things at all, but rather analogues for a kind of action that spontaneously produces unexpected Form.

After a long series of photo-collages (a venerable weapon for surprise attacks on the citadel of habit) I found a method of drawing that takes explicit action on habitual perception. These "Blackout" drawings start with a photograph or photo collage that is selectively and systematically 'blacked-out'



1. Fabric-formed thin-shell concrete "curtain wall" panel. Lafarge Precast Factory, Winnipeg. 2007



2. Graphite Drawing. 1995

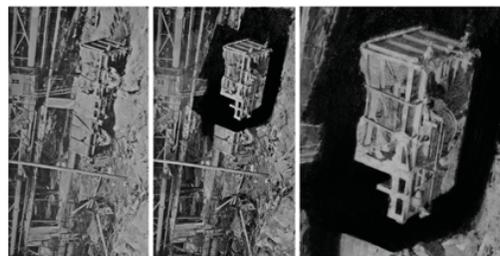


3. Blackout Drawing (Detail). 1983

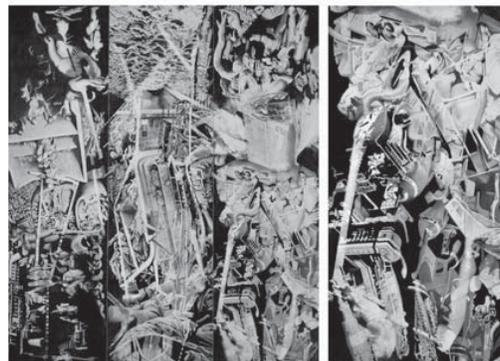
using a soft graphite pencil (fig. 4, fig. 5, fig. 3). The game is to remove the recognizable bits from the photographic reality until some other figure(s) spontaneously emerge to vision. So, for example, faces, hands, or anything else that insists on naming itself, must be removed first. By cutting the moorings to their names perception is set adrift. In this unnamed indeterminate state, emergent figures will spontaneously appear to vision inside the photographic 'reality' exactly as they do when we stare into clouds, and exactly as Leonardo describes in his *Advise to a Young Painter* to stare with similar intent at a stained wall. The figures that appear are then clarified by 'blacking out' the now extraneous portions of the photograph that 'are not them'. This is a game of systematic visual forgetting, an induced amnesia, a renunciation of the already-named and recognizable in favor of surprising, unexpected, and nameless figures and spaces that seemingly arrive of their own free will.

These drawings were an explicit an attack on habitual perception, that abiding, steadfast, and unshakable enemy of seeing. All the works described here represent different attempts to find ways of making that might lift the veil of habit and reawaken direct perception. Of course, one can do this temporarily through novelty, but novel things are an entertainment, and like a drug wear off quickly, demanding constant replacements with the next and the next new thing. What I wish to describe here is something altogether different from novelty; these are ways to surprise perception through understanding and handling Matter as something alive. To clarify what I mean by "alive" we must take a brief detour into some novel and provocative physical theories.

Understanding all Matter as "living" is, in part, a game. It is a trick of the mind to see a "dead" material (graphite or concrete for instance) come alive, restless with its own desires and will-to-form or form-fate. But it is not simply a game of pretend. Putatively "dead" matter can be understood in an entirely objective sense as truly alive. For this we can refer to the ferocious empiricism of Tellard de Chardin's physics, where he observes that all matter is everywhere prodigiously active, organized as a kind of proto-life (and for Chardin, a proto-consciousness) . The truth of this is seen everyday in matter's chemical restlessness: the rusting of iron, the peeling of paint, the decanting of odors, all the result of restless and incessant material (molecular) action, though usually at size and time scales far different from our own. Further empirical support is given by contemporary energy flow ecologists who explicitly distinguish between Biotic Life and Non-biotic (or Pre-biotic) Life . This larger embrace of what constitutes Life is based on a broad definition that sees Life



4. Anatomy of a Blackout drawing - what is found inside photographic "reality".



5. Large Blackout drawing, *Everything Falls*, made from collaged photographs (left); an enlarged portion of this drawing (right) 1984

as the “neg-entropic ” flow of Energy. From this frame of reference, all Matter self-organized against entropy is a form of Life, biotic or otherwise.

But let us return to acts of drawing and making.

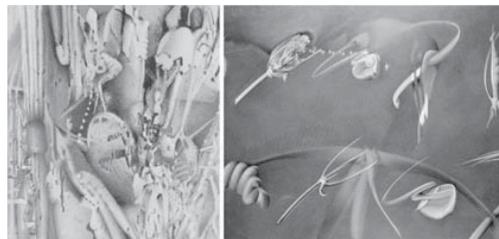
When I found the Blackout method nearly 30 years ago I was filled with an intense youthful euphoria. I felt I had fallen into a deep discovery, something with heavy implications I did not understand, but could only intuit. I drew incessantly, finding ways to eventually free myself of the photographic “canvas” as a starting point, yet keeping the hallucinatory/amnesic method of production. A long series of “free” graphite drawings followed, done on blank paper using various versions of collage and Blackout techniques (fig. 6).

But despite their compelling pleasures, these were only images. As an architect and a builder I wanted to make actual things, not illusions. Furthermore, these particular images were useless as guides to construction. Despite their compelling realism, they were not descriptions of anything, but rather the found results of a specific kind of action, an action of self-formation. The signal value of the drawing technique was it’s extreme simplicity – these things almost literally make themselves. Their ease was a hallmark, a temptation. Were there other analogously simple actions suitable to making/finding actual things in the world?

The Theatre of Amnesia

To answer this question I built a device called the Theatre of Amnesia (fig. 7). It was conceived to function as the inverse of the memory palaces and theatres of the classical Memory Arts , i.e. a construction that might assist the induction of an “artificial amnesia”, a way of forgetting the names of the things ones sees . Taking both collage and the Blackout drawings as prototypes of action, this puppet theatre-sized space had several incarnations. It was explicitly constructed and reconstructed over three years of work as a miniature prototype of action for an unknown and hoped-for architecture. In hindsight, the project seems absurdly ambitious, and yet it yielded a series of unique experiences and “findings” that in subtle and oblique ways taught me methods of making/building foreign to the established cultures of both architecture and construction.

About one year prior to starting the Theatre of Amnesia, while making a different sculptural project, I stumbled upon the trick of casting plaster in a thin flexible sheet. This trick was redeployed in various ways in the Theatre of Amnesia. The solid/fluid, soft/hard, wet/dry things that resulted were



6. Details from two ‘free’ graphite drawings combining collage and hallucinatory techniques c.1995

truly uncanny. Much like the illusory figures that spontaneously emerge from a Blackout drawing these were, in their own full-dimensional way, self-forming things - intricately defined figures that arrive with no assigned meaning. But unlike the figures that appear to us in clouds (or clouds of graphite), these forms were produced, or “hallucinated”, not by vision but by the materials themselves. Significantly, these objects arrived in full-dimensional material reality with the greatest of ease and, following a builder’s intuition, were evidently capable of being built large if the little modeling materials were scaled-up to tarps and concrete.

Self Formation

When the work of scaling-up these miniature self-forming casts began, I made a choice to limit the fabric membranes to flat sheets taken directly off the roll – no tailoring or cut patterns. This limitation was an overlay of a builder’s sensibility (the imperative of simplicity) mapped onto the Theatre of Amnesia’s free sculptural practice and its search for a particular state of mind.

While the simplicity of these constructions is assured by a reduction in means (flat sheets, simple tools and fasteners), the complexity of the results originates in the self-forming nature of the constructions. The final forms produced are found by the materials themselves through their own negotiations/struggles to reach a certain precise shape (figs. 1, 8, 9, 10, 11, 12). In every case this is a singular and inevitable form – a kind of fate. The precise curvatures as well as all the details of buckled folds and stretch marks are all calculated by the materials themselves to form the spatial trajectory of their own stability -- a one-to-one, automatic, three-dimensional drawing of their mutual equilibrium state.

Of course, concrete and fabric do not spontaneously self-organize themselves. A builder’s hand, attention, and energy are all required to contrive these events, implicating a builder’s will and craft in the process. But this goes without saying. The interesting part is not that craft is required to build these things, but rather that the most beautiful and intelligent bits take place between the controlled and crafted boundaries. In this case the builder’s deeper craft consists precisely in learning how and when to get out of the way, how to make a space of action in which the materials can self-organize their own shape of resistance unmolested by human will.

The immediacy of the thing

The beauty of these self-formed things, or the self-formed portions of these things, is striking. They are immediately recognizable as natural events rather than as designed form.



7. Theatre of Amnesia. 1987



8. Fabric-formed (Spandex) concrete column, before and after pouring concrete. Bar Harbor, Maine. 1990

As such they have a strange time about them that entwines their fluid (previous) and solid (current) states. Here are things that refuse to locate themselves in any time except for the moment of their creation which is held in an immaculate and permanent form. They may appear to be artifacts of some unknown ancient civilization that flourished briefly, or something entirely new -- some kind of science fiction perhaps? They refuse historic placement while the past of their moment creation is permanently present. Like something from Nature, they somehow remain permanently alive to perception .

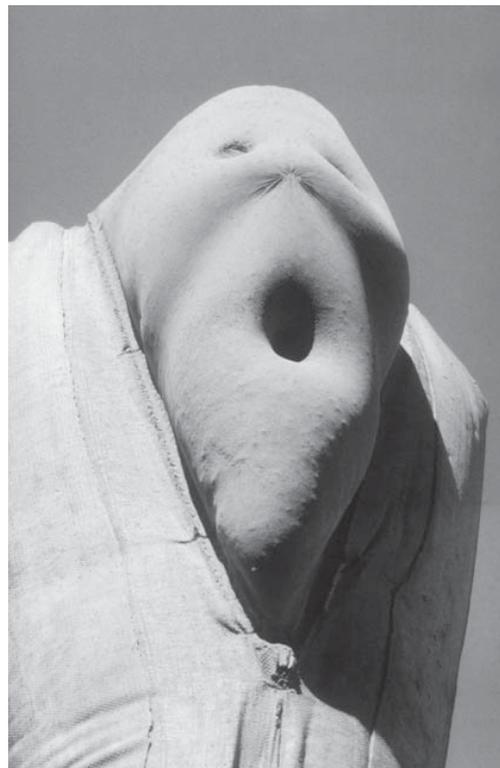
The Secretion of Meaning

This way of making results in things that are, to one extent or another without direct intention. As when you find some realistic form inside a cloud, there is no sense of authorship to its discovery; it is simply "there". This lack of intentional authorship changes the basis of meaning found in these forms, freeing them from any semiotic structure; there is no pre-established code, no conceptual key to meaning. Things that arrive by natural processes "represent" nothing but themselves in their suchness. In this case perceived meaning erupts spontaneously through the affect produced by their presence. Percept displaces concept - or perhaps more accurately, perception secretes meaning without intending to

This kind of found meaning is pre-linguistic, or non-linguistic. It arrives unbidden, as in the presence of music, not through interpretation of a code but as a presence. And as with music, the fact that one cannot easily say what that meaning is does not in any way diminish the reality and immanence of what has been grasped. It occupies us with the force of an irrefutable argument devoid of language. It is not something one needs to get, but rather something that gets you. In this sense it is allied with and akin to surrealism's attack on the heartland of intentionality. Do I overstate the case? Perhaps. In any event, an author's testimony should never be trusted - though in this case one's sense of authorship, as such, is nearly disabled.

A Hybrid Method

In the case of flexibly formed concrete, a definite sense of authorship is felt in the craft that is required: choosing the fabric, determining the boundary and support conditions, the connection details and, perhaps, the pre-stress (pre-



9. Fabric-Formed Column Capital. Bar Harbor, Maine. 1990



10. Fabric-formed column being unwrapped. Bar Harbor, Maine. 1990

stretching) of the fabric. Getting these things right is no different, in essence, from any other act of building, except for the fact that these are merely preparations for an event that will shape the construction according to its own lights. Everything else that follows these preparations is determined by the materials themselves according to natural law. What emerges in the balance is a composite form of “design” where willful control and a surrender to natural events occur in the same space at the same time.

This hybrid methodology has proved to be extraordinarily fruitful. After more than twenty years of innumerable experiments, flat-sheet molds are still revealing surprising new forms and possibilities, many of which are both beautiful and materially efficient. This unexpected and unreasonable fecundity suggests that within the simplicity and pragmatic constraints of this operation lies something deeper and quite a bit more complex. Here pragmatism does not serve the ends of convention or reduction, but on the contrary induces a kind of constructive metabolism that, as with all natural events, produces complexity as a consequence of extreme simplicity.

The Fore-Cast

The work and research recounted here traces a linked series of retrospective “prototypes”, each one re-playing a slightly different and more complex version of a similar search; each one a subtle prototype of action suitable to its own materials, size and complexity; each one producing a surprise of its own, and each one subsequently nested within the next incarnation/trial. To recount: this Chain began with Collage, turning into Blackouts, leading to free hallucinatory graphite drawings (early 1980’s and onwards), followed by the Theatre of Amnesia (late 1980’s), reaching a kind of culmination in the first full-scale flexibly-formed concrete structures (1989-1992). The project of developing this new way of building has been ongoing since then. Having reached the point where a practical and economical building technology has been developed, one is tempted to start building – and indeed there is no reason not to! But what if the chain or web of linked prototypes is yet unfinished? What if the technical development of flexible molds is a subtle prototype of action for something more complex again, something with more dimensions than a mere set of building components – another



11. A flat sheet of fabric, loaded with a thin layer of concrete, self-forms itself into a funicular compression-shell mold (shown in fig. below). CAST Lab/Studio, University of Manitoba. 2009



12. Fabric-formed thin-shell mold and funicular compression thin-shell cast from this mold. The deep buckling-resistant “corrugations”, that are spontaneously formed along principle lines of tension stress in the fabric mold, provide buckling-resistant “corrugations” in the compression shell cast from this mold. CAST Lab/Studio, University of Manitoba. 2009

way of thinking about and doing architecture for instance.

Returning once more to the physics of energy flow, we recall that very bit of matter, caught as it is with us in a temporal flux, plays out its own actions and exchange of energy in the world according to its own time scale and physical/chemical/atomic engagement with everything else around it. These behaviours are not the kind of behaviours mimicked by robotics, “interactive” architecture, or so-called “intelligent materials” which are, after all, focused on stimulating (or simulating) our own senses and desires. These are instead, behaviours innate to the materials themselves according to their own more-than-human requirements, desires, and fates. This is the life of the pre-biotic and post-biotic more-than-human world, the actions of the world from which we come, in which we are enmeshed, of which we are made, and into which we will return. When we build we enclose ourselves in another kind of living “flesh”, non-biotic, yet very much alive nevertheless.

Having found all this through these last subtle prototypes of concrete and steel, a series of questions fall forwards: What if architecture was not made to be so strictly about us? What would life be like in an architecture acutely alive to the events of its own existence, quite apart from the rhythm and scale of our lives? Is there an architecture that might assist us in our own living by pointing us not towards ourselves, and what we, we, we, want, want, want, but rather an architecture that helps turn our attention towards the more-than-human world and our role in it?

