SENSING THE VIRTUAL, BUILDING THE INSENSIBLE

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The "virtual," it is hard not to notice, has been making a splash in architecture. Its full-blown entry into the discourse was somewhat belated by comparison to other fields. This has been to architecture's great advantage. For the poverty of prevailing conceptions of the virtual, in its popular compound with "reality," have become all too apparent: beginning with their inability to earn the name. "Virtual reality" has a short conceptual half-life, tending rapidly to degrade into a synonym for "artificial" or "simulation," used with tiresome predictability as antonyms for "reality." The phrase has shown a pronounced tendency to decompose into an oxymoron. It was in that decomposed state that it became a creature of the press, a death warrant on its usefulness as a conceptual tool.

There is a countervailing tendency to use "virtual" without the "reality" tag--not because the virtual is thought to have no reality but because its reality is assumed, the only question being what mode it takes. It is in the work of Gilles Deleuze and Félix Guattari that this current gains its most elaborated contemporary expression. The advantage of architecture is that the virtual has been introduced into its discourse by theorists and practitioners cognizant of the impasse of earlier appropriations of the concept in other domains, and conversant with the alternative Deleuze and Guattari's work represents.

Deleuze and Guattari, following Bergson, suggest that the virtual is the mode of reality implicated in the emergence of new potentials. In other words, its reality is the reality of change: the *event*. This immediately raises a number of problems for any domain of practice interested in seriously entertaining the concept. If the virtual is change as such, then in any actually given circumstance it can only figure as a mode of abstraction. For what is concretely given is what is--

which is not what it will be when it changes. The potential of a situation exceeds its actuality. Circumstances self-abstract to the precise extent to which they evolve. This means that the virtual is not contained in any actual form assumed by things or states of things. It runs in the transitions from one form to another.

The abstractness of the virtual has been a challenge to certain discourses, particularly in the interdisiplinary realm of cultural theory, which make a moral or political value of the concrete. This is not the case with architecture, even though its intimacy with the concrete is quite literal. Architecture has always involved, as an integral part of its creative process, the production of abstract spaces from which concretizable forms are drawn. The challenge that the virtual poses for architecture lies more in its unform nature than its abstractness. How can the run of the unform be integrated into a process whose end is still-standing form?

The answer for many has been: topology. Topology deals with continuity of transformation. It engulfs forms in their own variation. The variation is bounded by static forms that stand as its beginning and its end, and it can be stopped at any point to yield other still-standing forms. But it is what happens inbetween that is the special province of topology. The variation seamlessly interlinking forms takes precedence over their separation. Forms figure less as self-enclosures than as open co-dependencies of a shared deformational field. The continuity of that field of variation is inseparable from the forms populating it. Yet it exceeds any one of them, running across them all. When the focus shifts to continuity of variation, still-standing form appears as residue of a process of change, from which it stands out (in its stoppage). A still-standing form is then a *sign:* of the passing of a process. The sign does not in the first instance signify anything. But it does imply something. Or better, it implicates. It envelops in its stillness a deformational field of which it stands as the trace: at once a monument of its passing and a signpost of its potential to be repeated. The variation, as enveloped past and future in ceasing form, is the virtuality of that form's appearance (and of others with which it is deformationally interlinked).

Topology has exerted a fascination on certain contemporary architects because it renders form dynamic. This has important consequences for both the design process and the built form to which it leads.

The topological turn entails a shift in the very object of the architectural design process. Traditionally, form was thought of as both the raw material and end product of architecture, its origin and telos. Form bracketted design. Approached topologically, the architect's raw material is no longer form but *deformation*. The brackets swing open. Form falls to one side, still standing only at the end. Form *follows* the design process, far from enclosing it. Far from directing it, form *emerges* from the process, derivative of a movement that exceeds it. The formal origin is swept into transition. Followed by architect.

One thing swept away is the popular image of the architect as autonomous creative agent drawing forms from an abstract space of Platonic preexistence to which he or she has inspired access, and artfully dropping them into the concrete of everyday existence, which is thereby elevated. The architect's activity becomes altogether less heroic--and the abstract more palpable. For the architect must follow the same process that the form follows. The architect becomes a prospector of formative continuity, a tracker in an elusive field of generative deformation. The abstract field of variation takes on a certain post-Platonic thickness, in and by its very elusiveness, by becoming a field of hands-on exploration and experimentation. New form is not conceived. It is coaxed out, flushed from its virtuality. The architect's job is in a sense catalytic, no longer orchestrating. He or she is more a chemist (or perhaps alchemist) staging catalytic reactions in an abstract matter of variation, than a maestro pulling fully formed rabbits of genius from thin air with a masterful wave of the drafting pencil.

Le Corbusier outlines the antithetical position in an early manifesto: "The goal of art is to put the spectator ... in a state of an elevated order. To conceive, it is first necessary to know what one wishes to do and specify the proposed goal. ... Conception is, in effect, an operation of the mind which foreshadows the

general look of the art work. ... Possessed of a method whose elements are like the words of a language, the creator chooses among these words those that he will group together to create a symphony ... One comes logically to the necessity ... of a logical choice of themes, and the necessity of their association not by deformation, but by formation."[1] Here, creation consists in the masterful composition of aggregate forms, drawing on a preexisting vocabulary of combinable elementary forms. Creation is an individual expression of the artist at the same time as it accedes to universality. The "pure" artist possesses a superior combinatorial logic allowing "him" to articulate to "universality" of "man": a "capital point, a fixed point." Forms, in this account, are elementary, and elementary forms are "words" signifying "universal" principles of fixity. The completed forms are as far as could be from the asignifying signs, materially enveloping singular conditions of change and emergence, toward which hands-on topological experimentation moves.

Those hands, of course, are on the computer keyboard. In a most unCADlike way. The computer is not used to prefigure built form, in the sense of presenting an anticipatory image exactly resembling it. The whole point of the topological turn is to catalyze newness and emergence rather than articulating universalized fixation. Of course, topological transformations are just as formalizable, in their own way, as are classical geometric forms. Chance must be added to truly yield change. The computer becomes a tool of indeterminacy. Abstract spaces are no longer neutral screens for imaging what has already been seen in the mind's eye. They must be actively designed to integrate a measure of indeterminacy. As a consequence, the space of abstraction itself becomes active, no longer merely prefiguring. The abstract space of design is now populated by virtual *forces* of deformation, with which the architect must join forces, to which he or she must yield in order to yield newness. The design process takes on a certain autonomy, a life of its own.

From the "artful genius" perspective, this may seem like a cowardly abdication of creativity to autonomized machinic procedure. In fact, the arbitrary returns. Its first point of reentry is the way in which the activity of the abstract space is programmed. There is no such thing as pure indeterminacy, certainly not in a programmed environment. Indeterminacy must be designed to emerge from an interplay of constraints. What constraints are set to interact will be an arbitrary decision of the architect, working from a more or less explicitly developed aesthetic orientation, and taking into consideration the functional parameters of the desired end product as well as client preferences on a number of other levels (including cost). The manner in which such "analogue" traits are translated into topological terms informs the programming, but is not itself preprogrammed. It is the point of entry, into what is nevertheless still an autonomic process, for the architect's decision.

The process does not of itself generate a completed form. It generates a proliferation of forms. The continuity of the deformational variation can be cut at any point, any number of times. The constraints can be tweaked and set in motion again to experimentally generate whole new series of formal separations. The outcome of any given run cannot be predicted. But a choice must be made: a set of forms must be selected to provide the foundation of the actual design. The second area of arbitrariness is in the selection. The overall process is an *analogue* one. Such constraints as taste, function, preference, and cost are analogically translated into virtual forces, which are then set into variation, and analogically translated back into taste, function, preference, and cost *as embodied* in the final, composite sign-form. The movement is not from the simplicity of the elementary to the sophistication of the complex. Rather, it is from one arena of complexity to another. Complexes of complexity are analogically launched into interaction. Each complex is separated not by a self-enclosure, but by an analogical gap that the process must leap. The art of the architect is the art of the leap.

Integrating topological procedures involving indeterminacy does not replace creative freedom of expression with machinic necessity. To begin with, the absolutes of "freedom" and "necessity" are endemic to the "creative genius" approach of the Le Corbusier quote. They do not apply to the topological approach, which works instead with arbitrarity and constraint, dosed rather than absolute, and locally co-functioning rather than in Promethean struggle with one another as universal principles. The opposition between the absolutes of freedom and necessity was never, of course, itself absolute. The creative freedom enjoyed by the "purified" artist was predicated on allying himself with a higher necessity (unchanging, universal, "primary" order). His "elevated" activity consisted in giving that necessity formal expression in the "secondary" world of the dirty, ever-changing, individually varying, everyday. The artist separated himself from the everyday in order to return to it, reorder and re-form it. The world itself was his raw material, as if he himself could freely stand outside and against it as pure, formative activity. This elevating mission might be seen as typical of "high" modernist approaches to cultural production.

To the topologically inclined, things are very different. Arbitrariness and constraint are internal to the process. They are variables among others, in a process that is all variation, and which separates itself into phases, across analogical gaps, instead of separating the "artist" from the world, the better to impose order upon it. The "impurities" of the everyday--personal taste, dirty function, preference enforced in part by social convention, and most vulgar of all, cost--enter the process, across the analogic gaps. The translation into and out of virtual force lays everything out on a single, complex, deformational surface from which form emerges as a certain kind of stoppage. The architect's activity is swept up in that complexity, its triggering and stoppage. It works at a level with it. The architect yields dosed measures of his or her activity to the process. The "arbitrarity" of the decisions that enter and exit the process are more like donations to its autonomy than impositions upon it. Rather than being used to

claim freedom for the architect, decision is set free for the process. The architect lets decisions go, and the process runs with them.

"Arbitrarity" might not be the best term for the decisive activity of the architect as process tweaker and form-flusher, since that role requires "following" the process, and following the process requires having a certain "feel" for its elusiveness, for its running, for its changeability: a feeling for its virtuality. The old and abused term of "intuition" perhaps fits better than terms such as arbitrarity, freedom, inspiration, or genius. "Intuition" is the feeling for potential that comes of drawing close enough to the autonomous dynamic of a variational process to effectively donate a measure of one's activity to it. Intuition is a real interplay of activities. It is neither a touchy-feely dreamlike state nor an imposition from on high of form on matter, order on disorder. It is a pragmatic interplay of activities on a level. The "donation" involved should not be construed as an "alienation" of the architect's activity, because what is donated is returned in varied form, ready for insertion into a different process, or a different phase of the same process (building).

None of this has anything to do with purity. Everything is mixed together at the beginning and comes out just as mixed. Impure all the way. Constraint enters as conventional strictures and professional expectations, client preference, cost projections, etc. Each of these involves more or less static forms, as well as their own dedicated matters of variation. Arbitrarity or "freedom" enters in the way those constraints are set into interaction, and how an end-form is extracted from the interaction. That end-form must in some way accommodate itself to the constraints of conventional strictures and professional expectations, client preference, cost projections, or it will be "pure" in a very down-to-earth sense: not built. Everything that is present at the beginning comes out in the end of the actually built. Only different. The success of the exercise is not measure by any godlike abililty to create something from nothing. It is the more modest ability to extract a difference from a variation (a standing difference from a running

variation). It all depends on what happens in the middle. Cultural production becomes the art of the prevailing middle.

This is in not really a "low" modernism against Le Corbusier's "high" modernism, since it interactivates those categories as well. Neither is it exactly a postmodernism, since the sign-form is primarily a sign of a material differentiation rather than a citation, and it implicates a process rather then referring intertexually. The architectural activity associated with the topological turn is not unrelated to such modernist adventures as Cage's experiments with chance, or Burroughs' cut-up and fold-in. It might well be considered a neo-modernism, although it has become more accepted to refer to it, along with its modern antecedents, as neo-Baroque, defined by Deleuze in terms of the "fold to infinity" (the mutual processual envelopment, on a single abstract variational surface, of complexes of complexity). It mixes procedures evocative of the modern avant-garde with an admitted complicity with vulgar worldly constraints. It might be recalled that Baroque art was an art of patronage. Today's commercial constraints on architecture are different, but just as strong. Maintaining a stance of "purity" toward them is not a test of political mettle. It is a test of intellectual honesty. It goes without saying that no architect can build without being in complicity with commerce and industry. The choice is not between complicity and purity, but between a politics that maintains the relevance of the distinction and one that recognizes that creation in absolute freedom from constraint was only ever a self-aggrandizing myth. An architectural politics that admits "complicity"--the co-functioning of arbitrarity and constraint in the extraction of a standing difference from a running continuity of mixture--is what Deleuze would call an ethics, in distinction to the heroic moralism of the teleologically fixated.

Labels are of limited value. They tend to stereotype, as "high" modernism inevitably has been in this account for purposes of exposition. The stereotyping can easily extend to both "sides." It is just as important not to lump too hastily all architects using techniques akin to the ones described here as belonging to the

topological turn into one rubric, as if they constituted a school, as it is to recognize the simplifications abbreviated accounts like the present one visit upon the topologically challenged. The ways in which the analogical gaps described above are negotiated by architects who are topologically engaged with the virtual will vary widely. There are no constants. The signature engagement with computers is not even necessarily a constant, since allied processual effects may be produced by other means (as the Cage and Burroughs examples indicate). A fluid typology of post-heroic architecture could be delineated along multiple gap-leaping lines of variation, in what may be an expanding field of futurity already prospecting the architectural present (or what may, alternatively, be just a blip). Whatever the fate of contemporary currents, it is more important to multiply productive distinctions than lump camps.

Although the inherited antinomy of freedom and necessity ceases to be the central problem it once was, the topological turn produces ample problems of its own. The originality of a cultural process is measured by the complexity and productiveness of the new problems it creates, not the neatness of its creative solutions. For in complexity there is life. A good problem is a gift of life, the provision of an opening for others' activities, for uptake by other processual dynamisms, a contribution to the collective surface of continuing variation. By that standard, the topological turn in architecture is already a stunning success.

Foremost among the problems it produces is the nature of the actual relation between the built forms that emerge from its process and the process as it happened. In other words, if the idea is to yield to virtuality and bring it out, where is the virtuality in the final product? Precisely what trace of it is left in the concrete form it deposits as its residue? What of emergence is left in the emerged? If the end form is a sign that does not signify, then what does it do and how does it do it? What is the relation of the asignifying sign to its event?

The problem raised is a semiotic one that neither architecture nor current discourses in cultural theory are well equipped to handle. To be appropriate to its

field of application, this semiotic problem must be posed in terms of singular potential, material emergence, and event, rather than the tried-and-true terms of universal (or at least general) signifying structure and individual decodings or interpretations variously conforming to it.

The difficulty of the problem is that it points to the continuation of the architectural design process outside of itself, in another process. The outside of architectural design is in a very real sense its own product--the building itself: the life of the building. The building is the processual end of the architectural process, but since it is an end that animates the process all along, it is an immanent end. Its finality is that of a threshold that belongs integrally to the process, but whose crossing is also where the process ceases, to be taken up by other processes endowing the design with an afterlife. The most obvious after-processes are two: looking and dwelling. The exterior of the building takes its place as an object in the cultural landscape, becoming an unavoidable monument in the visual experience of all or most of the inhabitants of its locale. And the building becomes an experienced form of interiority for the minority of those people who live in it, work in it, or otherwise pass through it.

There is resistance from many quarters in architectural discourse to highlighting the experience of the built form. There are very good reasons for this reluctance. Talking about it in signifying semiotic terms of decoding and interpretation clamps the brackets closed again. It reemprisons the architectural process in preexisting formal structure, consigning it to intertextural referral, for those who are familiar enough with and care enough about the collective conventions, or to the banality of metaphorical "free" association on the part of those operating "below" the structural level of citation, on the local level of "individualized" variation. The latter is in fact entirely prepackaged, since all of the "individual" variations preexist as possible permutations of the general structure of signification. The variation is punctual. It does not emerge. It is "realized" (conceived) at structurally spaced intervals, at predictable "positions."

In the end, there really isn't so great a difference between the in-the-know structural irony of the citationalists and the heart-felt "personal" metaphors of "naive" associationists. How many times do we have to "read"/"discover" a face in a facade? The uptake has been into a process that assumes an opposition between the constant and the variable, and can therefore hope, at best, to achieve a sterile dialectical synthesis between imposed form and "freely" chosen pre-authorized variations ("discovery" deconstructively unmasked as "really" being a "reading"). Quite different is continual variation, in which everything enters the mix and in which there are no constants (even though things may occasionally stand still) and no structural preexistence (even if there is ample systemic feedback), and thus neither dialectic nor deconstruction (only deformation and emergence). This is the true alienation: when the immanent outside is not only taken up but is taken away by a process so legibly alien to it.

Another receiving-end option is phenomenological. The way of phenomenology posits a "raw," unprepackaged substrate still perceptible, if only one knows how to "return" to it, beneath the structure of referral and association. The substrate is construed as "intentional," or as prefiguring subject-object relations. The experiential substrate, it turns out, is not so much unprepackaged as it is packaged by a structural pre-fit between the body and the world. This has the merits of avoiding emprisonment in signification, and of reconnecting with material processuality. But it consigns everything to function, hypostasized as the ontological ground of lived experience. "Intentionality" is another word for function, glorified as the ground of all experience. This transcendentalization of function encloses process in organic form. Another not-so-great-as-it-is-made-out-to-be difference: between "high" modernism and existential phenomenolgy. For both, experience is formally prefigured. The difference is that in first case the form is purely, otherworldly geometric, and in the second, rawly organic, "lived" and one with the world (the world made flesh). The great rallying cry of Deleuze's view of creativity, as a drawing on the virtuality of process by a yielding to it, is

the Spinozan slogan that "we do not know what a body can do." Phenomenology cannot yield (to) the virtual, whose "body" is emphatically "machinic": an autonomized processuality (if not necessarily a high-tech one). It cannot take the machinic indeterminacy of the virtual, even when it takes its own topological turn (as in Merleau-Ponty's last work on folding and gapping, or "chiasmus").[2] It cannot step over that threshold. It can only stand a "return" to the well-trod ground of possibilities for organic functioning. The divergence between Deleuze and phenomenology is summed up in another slogan: to the phenomenologists' "consciousness is always *of* something" (cognitive prefit)[3] Deleuze responds "consciousness always *is* something" (ontological emergence).

The topological turn in architecture must avoid both these directions, and does. But does it live up to the project of drawing on the virtual to draw out the new? The question remains: how could it if its end product is recognizably still standing-form? By virtual definition, the built form does not resemble its conditions of emergence. It does not resemble the virtual forces generating it, or the analogical gaps its generation leaps. Unlike a structure of constants and variable realizations of it, the asignifying sign-form does not conform to its own event: there can be no conformity between the product and its process, no one-to-one correspondence between end result's formal features and the steps of its deformational emergence. Virtuality cannot be seen in the form that emerges from it. The virtual gives form, but itself has none (being the unform of transition). The virtual is imperceptible. It is insensible. A building is anything but that. A building is most concrete.

This impasse has led to the frequent complaint that the architecture operating in the topological field is formally indistinguishable from modernism: that there is nothing so "original" about it, nothing to it but a lot of techno-tricks in the design process that leave no visible trace in the built form, at least none that anyone not directly involved in the design could be expected to notice or care about. Isn't it still a building, to which a style can be attributed, that is

recognizable as belonging to a particular category of building, that fulfills the typical functions of its kind? Where is the newness? In the computer gadgetry? In slight variations on existing architectural themes?

There is no way of effectively responding to this criticism as long the afterlife of the design process in the life of the building is not seriously attended to. Taking the looked-at, lived-in life of the building into account does not fatally entail a surrender to the structural reduction of the signifying sign, or to the phenomenological apotheosis of organic form and function. There is, perhaps, a way out of the impasse. But only if there is a willingness to reentertain questions about perception, experience, and even consciousness that have been anathema for some time now to many in architecture, as well as in other domains of cultural theory and production.

Although the virtual, Deleuze explains, cannot itself be seen or felt, it cannot not be seen or felt, as other than itself. What he means is that in addition to residue in static form, the formative process leaves traces still bearing the sign of its transitional nature. These are not virtualities, but populations of actual effects that more fully implicate changeability and the potential for further emergence than self-enclosed forms or ordered agglomerations of forms realizing a rigid combinatory logic to produce citations, associations, or most ubiquitously, stock functional cues--formal compositions following laws of perspective and resemblance designed to awaken habitual patterns of recognition and response. In even the most ordered formal composition there are accident zones where unplanned effects arise. Nonperspectival, unresembling, they are just glimpsed, in passing, as anomalies in the planned interrelation between actual forms. They are surprising, perhaps mildly disorienting, sometimes, just sometimes, shocking. They are less perceived than side-perceived; half-felt, like a barely palpable breeze; half-seen, on the periphery of habitual vision. They are *fogs* or *dopplerings*. Patches of vagueness or blurrings presenting to the senses an insensible plasiticity

of form. Flushes of freshness, arun in concretized convention and habit. Recalls of emergence, reminiscences of newness.

Fogs: actual traces of the virtual are often light effects. Although we tend to think of the perceptual dimensions of light as clearly distinguishable and almost boringly familiar, they are not so docile on closer inspection. Experimental psychology, even after decades of trying, is still at great pains to set even the most "obvious" boundaries between different light-related phenomena. What is the relation of white and black to lightness and darkness? Are the shades lying in a continuum between those extremes shadows or achromatic colors, intensities of light or gradations of gray? How can the distinction between chromatic and achromatic colors be maintained in the face of such everyday effects as the colored shadows so lovingly catalogued by Goethe? Is there a simple relation between color, light intensity, and illumination? Where for that matter is the boundary between one color of the familiar spectrum and another? What sets the boundary between glimmer, white and clear? How do reflectance and translucence enter into the equation?[4] The boundaries we set and distinctions we function by are habitual. According to many theorists of vision, they do not replace the infinitely complex perceptual fog that is our originary and abiding experience of light. They occur with them, alongside, in a parallel current or on a superposed abstract perceptual surface, in a perpetual state of emergence from the continuum of light-dimensions that one frustrated would-be tamer of visual anomaly termed "the brightness confound."[5]

The "brightness confound" can become a conscious percept, through a concerted effort of unlearning habits of seeing, or through a simple accident of attention. When it does, the confound is contagious. It strikes depth: three-dimensionality, argues the "ecological" school of perceptual theory [6], is an effect of complex differentials of surface lighting played out in ever-shifting proximities of shadow and color, reflectance and luminosity, illumination and translucence (it is not, as traditional theories of perception would have it, the

product of mysterious calculations of relative size and distance--as if the eyes could count).

Depth is a surface effect susceptible to the brightness confound. When it goes, so goes separable form. Not only do the relative size and distance of objects flutter, their boundaries blur. They cease to be separate figures, becoming not entirely localizable zones in a fuzzy continuum. In other words, they cease to be objects, becoming what they always were, in the beginning and in parallel: fluctuations.Visual runs. Experiential transition zones. The distinctions of habit fold back into the always accompanying level of the more-than- three-dimensioned light concurrence from which they emerged. The fixed boundaries and "constants" of our habitual perceptions are emergences from an experiential confound to which they can return, and must return. For they are not in the final analysis structural constants at all, but continually regenerated effects, predicated on the variation they follow and emerge from, as its perceptual arrest. They rest entirely on variation.

Architecture, Deleuze will say for this reason, is a distribution of light before it is a concretion of forms.[7] Its basic medium is light. It uses concrete and stone, metal and glass, to sculpt light in ways that either direct the fixations of attention steadfastly away from their confounded conditions of emergence, or on the contrary enable it sporadically to fold-back into them. The separation between "primary" sensations (i.e, depth and forms) and "secondary" sensations (in particular color and lighting) is untenable. Since perception is a matter of complexes of complexities played out in surface relations, the more useful distinctions are, again, topological (cuts and continua; boundaries and transitions; fold-outs and fold-backs) and processual (aflutter or stabilized; arun or still-standing; refreshed or habitual; functional or eventful). One of the direct implications for architectural practice is that color need not be dismissed as essentially decorative. As a dimension of the brightness confound, it is as primary an architectural element as the cube--if not more so.

Dopplerings: actual traces of the virtual are always effects of movement. When it was said that the separations between the perceptual dimensions of light were habitual, what that really meant is that they arise from movement. Depth perception is a habit of movement. When we see one object at a distance behind another, what we are seeing is in a very real sense our own body's potential to move between the objects or to touch them in succession. We are not using our eyes as organs of sight, if by sight is meant the cognitive operation of detecting and calculating forms at a distance. We are using ours eyes as proprioceptors and feelers. Seeing at a distance is a virtual proximity: a direct, unmediated experience of potential orientings and touches on an abstract surface combining pastness and futurity. Vision envelops proprioception and tactility, by virtue of past multi-sense conjunctions whose potential for future repetition our body immediately, habitually "knows," without having to calculate. Seeing is never separate from other sense modalities. It is by nature synesthetic, and synesthesia is by nature kinesthetic. Every look reactivates a many-dimensioned, shifting surface of experience from which cognitive functions habitually emerge but which is not reducible to them. It is on that abstract surface of movement that we "live" and locate. We cannot properly be said to see, or experience, three-dimensional space and the bounded forms filling it. Rather, it is they that emerge from the abstract surface of experience, as reductive concretions and relative stoppages of it. Our seeing *stops* with perspective and form. We do not see or experience perspectival forms from the outside: they occur to our experience and in it, as arrest events that befall it. We ourselves, as spatially located forms in regular interaction with other forms, as embodied subjects in reciprocity with objects--we ourselves must be co-occurrences with depth and boundary, co-emergences of concretion and stoppage, companion arrests, fall-out of the befallen. "We" ourselves are stoppage events in the flow of experience.

The relation between space and movement must be inverted, along with the relation between form and lighting. When the relation between space and

movement inverts, so does the relation between ourselves and our experience. Experience is no longer in us. We emerge from experience. We do not move through experience. The movement of experience stops with us. And no sooner folds back on itself. And continues, alongside us, in parallel: doubling, as a superposed abstract surface in repeated interaction or intersection with the stoppage we have been. Our existence is an ongoing topological transformation of a complexifying abstract ontological surface: separation, fold-back, doubling, intersection, re-separation, fold back over again, redoubling, resection .... confound it.

The confound of light envelops form, and with form it envelops space, at which point everything becomes movement. Didn't Bergson argue in *Matter and Memory* (chapter 1) that we are beings of light, effects of its differential movements? That our bodies, or for that matter all of matter, are interactions of light with surface dimensions of itself? That the "abstract surface" is light in itself, interacting infinitely and absolutely with itself, registering or "feeling" its own variations as form-effects? Contemporary physics would not disagree.[8]

All of which carries us rather far afield. To return: this essay began with the maxim that the virtuality or changeability of a form exceeds its actuality. The point of the detour through the existential brightness confound is that if we apply that maxim to our own life forms, our "experience" onto-topologically exceeds our being. In a word, experience is our virtual reality. It is not something we have. It is a transformability that has us, and keeps on running with us no matter how hard we try to stand still and no matter how concretely we build. It is our continual variation. Our becoming. Our event: the lightning whose thunder we are.

The suggestion here is that the philosophical correlate of the topological turn in architecture is the idea that the streaming of experience exceeds being. Or put another way, that feeling conveys potential and change (the corollary being that the feeling is absolute, or that it is immanent only to its own process: the feeling in and of itself of a matter of variation, emergent stabilities of form

effectively aside). This philosophical orientation was dubbed a "radical" empiricism by William James, and a "superior" empiricism by Deleuze. What it means for architecture and other plastic arts is it they can rejoin the virtual and take experience into account in the same move.

For architecture to rejoin the virtual and take experience into account in the same move would mean its apiring to *build the insensible*. If in any composition of forms, however rigid, an accident of attention can return experience to its confound, then it must be possible to make a project of building-in just such accidents of attention. In other words, built form could be designed to make the "accidental" a necessary part of the experience of looking at it or dwelling in it. The building would not be considered an end-form so much as a beginning of a new process. Stable forms can be designed to interact dynamically, as bodies moves past or through them singly or in crowds, or as sounds mute or reverberate, or as relations of surface and volume change with the time of day or season, or as materials change state with levels of moisture or temperature, or as the connection between inside and outside varies as an overall effect of these variations in concert with the rhythms of activity pulsing the city or countryside as a whole. Forms can be composed to operate as catalysts for perceptual events returning experience to its confound. A building can harbor foci of implicative vagueness, lucid blurs, dark shimmerings, not-quite things half-glimpsed like the passing of a shadow on the periphery of vision. Architecture can locally and sporadically return experience to that part of itself which can never be perceived as being (since it has only becoming) but cannot but be felt (in passing). Architecture can accept as part of its aim the form-bound catalysis of the unform (the deform).

The vagaries in question here have to do neither with trompe l'oeil, optical illusion, nor ambiguity. Trompe l'oeil is fully subordinated to formal resemblance. More distorted (anamorphic) or unanchored practices of simulation play on resemblance, but in needing it to play on, hold fast to it [9]. Optical illusion also

never leaves the formal level, being an oscillation between two forms, rather than a rhythm of recursion between form and the unform. Ambiguity, for its part, belongs to signifying structure. It is nothing new for architects to build-in ambiguity in order to make a event of standing form. But ambiguity still addresses the conventional function of the sign-form. It activates citation and association in order to push them toward a critical reappraisal. It operates on the level of conventional sign-form in order to deliver it to critique. Building-in ambiguity may succeed in catalyzing an event--but the event is still a meaning event.

The asignifying or processual sign-form of the onto-topological turn catalyzes experiential potential rather than meaning. It is a sign of material dynamics of variation, pointing in two directions at once. On the one hand, it recalls the elements of indeterminacy and chance of the design process itself. It is an echo of the experimentations of the architect. But it does not resemble or in any way conform to them. Rather than referring explicitly to them, it refers them to another process. The architect's processual engagement with the virtual is taken up in an alien process: the life of the building, the looking and dwelling of those who pass by it or through it. This process continues from the design process's point of cessation. The virtual is fed forward into the final form. But in final form, the way the potential is yielded (to) bears no resemblance to what befell during the design process, from which, it must be remembered, it is separated by analogical gaps. The feed-forward of virtuality delineates a continuity, but it is a leaping continuity of differentiation. The architect, who donated his or her activity to the autonomization of a process, now lets the product go, into another process. Architecture as a gift of product for process. The sign-form fundamentally means nothing. It is meant to stand at the threshold between processes. The middle prevails.

The aim of onto-topological architecture has no end. The aim may nevertheless involve many ends: critical, citational, associational, functional, profit-making. In fact, it necessarily involves all of these: it involves them with

each other. It adds them to the catalytic mix. Like stability of form, pre-operative conventional sign systems feature as constraints added to the complex mix out of whose interaction the new rearises in the design product. The aim of processual architecture doesn't stop at any end. It takes everything from the middle again. The intuitive aim is to middle the end-mix. The product is re-process.

Although there is no formal resemblance between the re-process in which the product is taken up and the process that produced it, there is a certain correspondence between them. Were there not, the leap across the processual gaps would not earn the name "analogical." The correspondence in question doesn't concern the nature of the forms in play, or even the qualities of the event they mix to make. The correspondence is a processual retake. It is the process of generating the new from an intuitive interplay of contraints and arbrirarity that keeps the continuity across the leaps. The correspondence pertains to the conditions of emergence rather than the actuality of the emerged. It other words, it is virtual. The identity analogically stretched across the gaps of differentiation is "machinic": what is repeated is autonomization, same process, different at every take.

Philosophy and architecture have always been on intimate terms, in a mutual embrace passed on from Plato's city of the republic to Augustine's city of god to Leibniz's monad-house to Heidegger's house of being to Virilio's bunkers (to name just a diverse few). Formalist modernism's high-moral attachment to purity and geometric harmony can only be understood as a concerted philosophical sortie waged through architectural means. Conversely, architectural achievements have often stood as exemplars for philosophy. Architecture flourishes with philosophical infusions; philosophy exemplifies in monuments. Architecture and philosophy are drawn toward abstract-concrete symbiosis with each other (which contributes more of the abstract, and which more of the concrete, is not as straightforward as it may seem--so long has the reciprocal exchange gone on).

The basic question of this essay has been: what philosophy can or might enter into a symbiosis with architectures engaging with the virtual, in particular by topological means? The answer seemed to lie in a "radical" or "superior" empiricism. What such a symbiosis would mean for architecture is a willingness to bring into even more pronounced expression its processual dimensions. That in turn means theoretically and experimentally reevaluating the separation between the "primaries" of form and depth and "secondaries" such as color and illumination. That further entails an inversion in what is traditionally assumed to be the relation of form and movement, subject-object structurings and experience, constancy and variation. Where it all leads is to a semiotic of singular potential, material emergence, and event: a semiotic for which the abstract is really material, and the sign-form's material appearance is not only seen. Vision, following this path, must be grasped as directly inhabited by the other senses, and the other senses by vision. In such an asignifying semiotic, all perception figures as synesthetic, and synesthesia is seen as a creature of movement. Perhaps most controversially, a distinction is maintained between movements in the actual world between fixed forms, and the absolute movement of process self-feeling, from which the world itself emerges. A tall order. A tall, autopoietic order. But the theory is not without precedents, and the experimentations have palpably begun.

Note on Tunneling to the Future. Most palpably, they have begun in the integration of digital technology into architecture. Although computerization is not a necessary condition for topological experimentation in design, its forecast integration into built form may bring us to a new threshold in the sensing of the virtual in built form or the building of the insensible. Proponents of "ubiquitous computing" look to the day when digital media become architectural: no longer furnishings or infrastructure, but an absolutely integral part of the building. When the digital display becomes as structural architecturally as a window, looking and dwelling will be transformed. But not as completely as when digital media learn to

forego the display and the analogy of the window and the interface is able to go anywhere, responding no longer only to mouse- or keystrokes anchored to the screen but to gestures, movements, and sounds, dedicated, roving or ambient, compounded or uncompounded with visions and information. Electronic media offer, in principle if not yet in practice, an infinite connectibility of spaces. It is crucial to be clear about this: it is not the abstract informational content of what the media might connectively deliver, or even the abstract space of the "infosphere" from which it is drawn, that is virtual. Although the virtual is a mode of abstraction, the converse is not true. Abstraction is not necessarily virtual. It was argued earlier that the possible (or the permuational: encompassing information no less than signification) and the simulated (of which trompe l'oeil and anamorphosis are the simplest examples) are abstract without being virtual: the first because it pertains to a generative matrix whose actual permutations pre-exist in it; the second because because it retains in one way or another a fundamental link to formal resemblance. What is virtual is the connect*ibility*: potential (the reality of change). It cannot be overemphasized that the virtual is less the connection itself than its *-ibility*. The assumption is often made that increasing the sheer number and variety of media connections between locations constitutes a virtualization. This is to confuse the virtual with the technological thing. If the virtual is not the informational content or its infosphere, neither is it the physical implantation of technology per se. The distinction between the virtual and technological actualization is paramount. Comparing two qualitatively different ways of digitally connecting spaces brings out the distinction. "Windowing" is one. Windowing provides a framed and tamed static perspective from one local space onto another that remains structurally distinct from it. The connection established is predominantly visual, or at most audio-visual. Features from or of one locale are "delivered" into another as information, pre-packaged for local understanding and use. Windowing is communicational. What characterizes communication is that it is designed to be "transparent": no

conversion is supposed to take place by virtue of the connection in and of itself. For the information to make a difference, the receiver must be primed to make it make a difference, to interpret or exploit it. Information is a feed. Neutral packets ("data") are consumed on one side of the window (or screen) to feed a process already understood and under way, with known effect and intent. Nothing new. What is on the other side of the window stays on the other side, and is not affected by the consumptive conversion operated the delivery-side. The "conversion" is not really a qualitative change because it just augments something already primed and in place there. The connection is segregated from the conversion. It is for this reason that communcation is termed a mediation or "transaction" (rather than an action). Whether communication ever really lives up to its transparent aspirations is doubtful. But that is not so much the issue here. The issue at hand is rather to think of another way of connecting spaces that doesn't even make the pretense. Call it "tunneling." Tunneling cuts directly into the fabric of local space, presenting perceptions originating at a distance. Not data pre-packagings: perceptions. The perceptual cut-ins irrupt locally, producing a fusional tension between the close at hand and the far removed. As the distant cuts in, the local folds out. This two-way dynamic produces interference, which tends to express itself synaesthetically, as the body returns vision and hearing to tactility and proprioception in an attempt to register and respond to a structural indeterminacy. "Returns vision and hearing to tactility and proprioception": vision and hearing are *transduced* into other bodily modes of activation. Tunneling is not communicational, but transductive. The connection is unmediatedly a conversion. As a consequence, it takes on a thickness of its own. It isn't just a transparent delivery. It *is* something, and its something is a doing: a direct conversion. A qualitative change. Something is happening here: action. But is it here? It is not only bodily modes that transduce. Space itself is converted, from the local-or-distant into a *nonlocal*. Distant cut-in, local fold-out: the irruptive perceptions retain as much "thereness" as they take on "hereness." Distance as such is directly

presented, embodied in local interference. Two-way movement, between near and far. Between: unplaceably in the midst. Architecturally speaking, tunneling builds-in the prevailing middle of the experiential confound. It makes structural the transductive irruption of the structurally indeterminate. The opposition between the structural or formal and the accidental is disabled. The "fogs" and "dopplerings" described above are no longer peripheral and adventitious. The periphery becomes central, the adventitious of the essence. Structure opens onto the potential of the not-yet known or intended. Melding connection with conversion, tunneling builds-in *-ibility*. The opening is not onto "the" new: like a new thing. It is onto new*ness:* the reality of transition, the being of the new, quite apart from any*thing* new. Tunneling may still yield information and function, interpretation and opportunity to exploit in the service of the augmentation of the already-here, or perhaps even its purposeful growth into some*thing* new. But it does so in a second phase. It ends up that way, after a second conversion: when its interfering stills and the newness settles into things. Settle it will. But first it stirs. Unforms. Any information-function or even invention that emerges, emerges from the unforming, singed or tinged by it, as by the lightning its thunder was. Since tunneling catalyzes unform conditions of actual emergence, it must be considered ontogenetic. The connection is an onto-topological cut-in/fold-out that builds-in a phase-space of indeterminate potential. The potentializing cut of the distant into the out-folding local can actually combine with communicational deliveries or in-foldings from the "infosphere," paradoxically expanding the confound itself to include information as such (if not function, which always follows the unform). The only proviso is that the materiality of the signs encoding the information stand out. In other words, that the signs be as insistently blips of light as they are letters, as insistently sound-wave as voice: forces of perception. When the communicational medium ceases to be transparent and perforce stands out in its materiality, information blends into perception. Information then precedes its understanding: it is *experienced* as a dimension of the confound before being understood and used

and perhaps lending itself to invention. The understanding, use, and invention are then already a repetition. Of something they were, but emerged from, diverged from, and do not resemble: transductive perceptual forces, forced *-ibility*, necessarily sensed virtuality. Information takes on a genetic relation to its confounded and *in situ* self. This is a far cry from communication. But it may still be considered citational. Tunneling information builds-in what might be called a vertical mode of citationality, in which the citation has a different ontological status from that which is cited, as emergent actuality to repotentializing confound. The relation of the citation to the cited is asignifying and direct, if divergent. The connection between them is processual, more fundamentally experiential than it is cognitive or functional (which are what the experience becomes when it self-diverges). This kind of self-differing citationality could do with a name to distinguish it from the "horizontal" postmodern version, in which everything has already been said (delivered) out there somewhere, and delivering it again over here only leads to the conclusion that nothing new has happened, only repetition (no matter how many new inventions have hit the market in the meantime). The name "self-referentiality" will do as well as any for the emergent or becoming version, in which something does occur. Or "recur." "Recursion" might be a better word than either "repetition" for what happens to information in the process (reemergence, renewal, tinging with potential). Information transductively "recurs," across a "vertical" or *in situ* distance from itself (a concretely abstract self-distance, or self-emergent nonlocality). A new arena of self-referential artistic activity calling itself "relational architecture," developing under the influence of figures like Stelarc who set up transductive linkages between the body and the Internet, experiments with this kind of recursive confounding of informed experience in the built environment. Much of what may come of these experimentations is still the province of science fiction, or at best futurism. But as digital technology develops and slowly integrates with architecture, it may be helpful to keep three points in mind: 1) No technology in

itself is virtual or virtualizing. It is always possible to window new media, and there will be strong cultural and economic pressures to do so. Windowed, digital technology limits itself to the insufficiently-abstract of communication, falling short of its transductive capacity to concretize the abstract as such, to confoundedly actualize the virtual. Virtuality is a mode (*-ibility*). It is not in the "what" of the technology (its specifications and implantation) but in the "how" of its composition with other formations such as architecture (its modal conditioning). 2) The postmodernists were in a way right when they said that nothing ever happens here (or there). Because it all happens in the middle. Another way of making the point about the "how" is to say that newness and new things are not the same. No matter how many inventions there have been, it doesn't mean that an event or real transition has occurred. If invention grows from a communicational feed, and then gives itself over to communication, qualitative change is neither here nor there. The reality of change is transduction--which may occur with or without invention. And with or without, may be built. 3) What points one and two add up to is that technology, while not constituting change in itself, can be a powerful conditioner of change, depending on its composition or how it integrates into the built environment. Technically, the "tunnelings" somewhat futuristically evoked here as actualizations of the reality of change require fiber optics. It is no surprise to the Bergsonian that the actualization of the virtual in built form rides on waves of light. So what? The metaphysical assertion that our body and matter itself is constituted by light interacting infinitely with itself as its own hyperabstract surface, feeling absolutely its own variations, has little or no importance in itself. It can, however, act as a reminder: to bring it all back to perception. To perception, understood positively, as actually productive of existence, or as virtually preceding existing separations of form. To perception, in continuity with the world (unform). The reminder is: don't content yourself with all-too-easy negative formulations such as "distance has been abolished," or with structural descriptions of how already-constituted forms in already-separated

spaces technically, even inventively, communicate. Bring it all back. To the abstract concretely. Confound it: transduce it.

NOTES

1. Le Corbusier and Amadée Ozenfant, "Purism" (1920), *Modern Artists on Art*, ed. Robert L. Herbert (Englewood Cliffs, NJ: Prentice-Hall, 1964), pp. 65-67, 62.

2. Maurice Merleau-Ponty, *The Visible and the Invisible*, trans. Alphonso Lingis (Evanston, Ill.: Northwestern University Press, 1968).

3. "Things have an internal equivalent in me; they arouse in me a carnal formula of their presence." Maurice Merleau-Ponty, *The Primacy of Perception*, trans. James Edie (Evanston, Ill.: Northwestern University Press, 1964, p. 164.

4. The classic treatise on the perceptual vagaries of light is Johann Wolfgang von Goethe's *Theory of Colours*, trans. Charles Lock Eastlake (Cambridge, Mass.: MIT Press, 1970). For an appropriately confounding catalogue of relevant philosophical conundrums, see Ludwig Wittgenstein, *Remarks on Colour*, trans. Lindal L. McAlister and Margarate Schättle (Oxford: Basil Blackwell, 1978). See also Jonathan Westphal's gloss, *Colour: Some Philosophical Problems from Wittgenstein*, Aristotelian Society Series, vol. 7 (Oxford: Basil Blackwell, 1987).

5. Marc H. Bornstein, "Chromatic Vision in Infancy," *Advances in Child Development and Behavior*, vol. 12, ed. Hayne W. Reese and Lewis P. Lipsitt (New York: Academic Press, 1978), p. 132.

6. James J. Gibson, *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin, 1979.

7. Gilles Deleuze, *Foucault*, trans. Paul Bové (Minneapolis: University of Minnesota Press, 1986), p. 57.

8. In relativity theory, "it is the light figure that imposes its conditions on the rigid figure." Henri Bergson, *Durée et simultanéité* (Paris: PUF, 1968), p. 126. See the discussion in Deleuze, *Cinema 1: The Movement-Image*, trans. Hugh Tomlinson and Barbara Habberjam (Minneapolis: University of Minnesota Press, pages 58-61. Both

Deleuze and Bergson seem to be using "light" in an extended sense comprising the continuous or waviform aspects of all physical phenomena. "Einstein proposed that the particulate nature of matter may be explicable as concentrations and knots in a fundamental, continuous field," David Bohm and F. David Peat, *Science, Order and Creativity* (London: Routledge, 1987), p. 73. "Blocs of space-time [whose topological torsions constitute rigid bodies] are figures of light," Deleuze, p. 60. Leibniz may have been the first to explore this line of reasoning. Speaking of the "power of transition" from which determinate existences arise: "I called this 'light,' from which our phenomena result ... It could be called a possible quality ... light is in a way the matter of images ... which at the same time has a transition from image to image." "On the Principle of Indiscernibles," G.W. Leibniz, *Philosophical Writings* (London: Everyman, 1995), p. 134.

9. This is why Deleuze, whose earlier work championed the notion of the simulacrum in such well-known essays as "Plato and the Simulacrum," later dropped the concept. "I have totally abandoned the concept of simulation, which has very little recommend it." "Lettre-Préface," in Jean-Clet Martin, *Variations* (Paris: Payot, 1990), p. 8.