THE TEXTURE OF FOLIATED TIME

by

CHARLES JOHN PAETSCH

(Under the Direction of Otto B. Bassler)

ABSTRACT

Gilles Deleuze's "Riemannian geometry of sufficient reason" casts everything as a solution to a problem. John Cage's *4'33'*, soap films, herons—each is comprehensible only in terms of the problem that, once posed, occasioned its genesis. These problems are *virtual* problems. What is "the virtual"? It seems little more than a subtle form of transcendence. How can it be then so integral a part of Deleuze's "philosophy of radical *immanence*"? Deleuze derives his notion of "the virtual" from two sources: Leibniz and Bergson. Of course, this derivation is not without its aberrant deviations. Leibniz is dissatisfied with mechanics. It poses questions it cannot answer, such as: *Why is energy conserved? Why does light minimize* time *and not some other quantity*? It is not possible to answer these questions without appeal to virtual force. Bergson is dissatisfied with all extant philosophies of time: they "spatialize" time, casting its "parts" as mutually external to one another. But the parts of time are not mutually external to one another: they permeate one another so emphatically that each part is *virtually* present to every other. Leibniz and Bergson appeal to the virtual to overcome various blind-spots haunting the philosophy of nature. Deleuze, though agreeing that any adequate philosophy of nature must involve the virtual, does not think that they have

succeeded. Leibniz and Bergson each makes dogmatic decisions: Leibniz subordinates all difference to identity; Bergson conceives of organic wholes as unities rather than as multiplicities. The latter might sound minor, but it grounds Bergson's argument that mathematics and logic *necessarily* falsify time. Deleuze disagrees: there is a mathematical discourse that expresses something of time: topology.

INDEX WORDS: Gilles Deleuze, Henri Bergson, G.W. Leibniz, Continuity, the philosophy of nature, the philosophy of time

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CHAPTER 1

INTRODUCTION

> Dare he
> Write poetry
> Who has no taste of acid on his tongue
> Who carries his dreams on his back like a packet?
> Ghosts of other poets send him shame
> He will be alive (as they are dead)
> At the final picking.

> —Jack Spicer, "Intermissions III"

When I first read philosophy, I thought: *Nobody should be allowed to write like this.* Then I thought, *I could be that nobody....*

I.

Continuity inscribes itself in the heart of almost every system—philosophical, physical, mathematical, vital, perceptual. It is not unusual for both the domain and the "conceptual machinery" for surveying that domain to draw explicitly and implicitly upon continuity. But few of these systems have concerned themselves with the provenance of continuity, or evinced much of an appreciation for its (often) destabilizing effects. There might be a reason for this: those who have tried to bring continuity into focus—either by unifying its various instantiations in a single concept or by grounding its different instantiations in a logical or experiential invariant—have foundered on rather caustic shoals. It is no accident that Leibniz identified the composition of the continuum as

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the principal labyrinth palling philosophical praxis. And he would know: he could neither resolve it nor escape it, failing finally to "declare" himself upon it (Leibniz 1952: 55).

But why slip only deeper into its meshes? Why not ignore it? The labyrinth of the continuum is not Leibniz's personal *bête noir*. It is, he insists, the bequest of every possible philosophy of nature, posing it this challenge: if it is to be logically determinate, physical nature cannot be continuous, since it would then abide the indeterminacy inherent to continuity. And Leibniz's principle of sufficient reason demands nothing less than absolute logical determinacy: bodies must be exactly and exhaustively determined. If continuity is a property of nature, it would threaten the inquiry into nature. Yet the principle of sufficient reason demands also that natural processes be continuous: *natura non facit saltus*, nature does not make leaps. Thus, continuity at once supports and subverts the principle of sufficient reason! The physicist J.A. Wheeler poses quite succinctly Leibniz's problem: *Adopt rigor or adopt the continuum?* This question will reverberate throughout this dissertation. This tension between rigor and continuity is disserved as much by the *choice* of one over the other as by the *subordination* of one to the other.[1] What to do? The very announcement (by Deleuze) of a "Riemannian geometry of sufficient reason" that will "ground" everything in the curious continuity of virtual problems signals a refusal both of exclusionary choices and of conciliatory resolutions—and not only because, for Deleuze, a ground metamorphoses incessantly, both itself and whatever it grounds (Deleuze 1994: 162). Deleuze *affirms* the disjunction of rigor and continuity, situating his thought in the dynamic interface between two tendencies that differ in kind:

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[1] Wheeler is clear: "No continuum in mathematics and therefore no continuum in physics" (Wheeler 1989: 314).

full quick as lightning

deluge of mind,

entirely absorbed by nature

—Ark 75, Arches IX

A Riemannian geometry of sufficient reason will have to skirt the Scylla of Leibniz and the

Charybdis of Bergson.[2] Deleuze confronts a turbulent strait: on the one side, Leibniz's arguments

against affirming any continuity in the plenum; on the other, Bergson's arguments against

conceiving of continuity by intellectual means, whether those means be logical or mathematical. If

Leibniz expels continuity from logic, and Bergson logic from continuity, Deleuze knits them into a

tempestuous whole—one that will not resolve differences so much as unleash them.[3] But continuity

must be liberated first from the dogmatic strictures of identity, quantity, and geometry: a continuous

process will be nowhere self-identical, never uniform, and only derivatively metrical. If Deleuze

reveals new aspects of the labyrinth of the continuum, it is to dispel the subtle dogmas infecting the

work of Leibniz, Bergson, Kant, and others.[4] Only with this critical correction can Deleuze construct

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[2] If fated to trace a new labyrinth, so be it: it will be a cocoon for impetuous metamorphoses.

[3] A logically determinate domain (nature, for Leibniz) resists continuity, while a preeminently durative domain (nature, for Bergson) resists logic. Leibniz prioritizes logical determinacy, and so excises continuity from nature; Bergson prioritizes duration, and so excises logic. Deleuze refuses the choice between the two, arguing that we can affirm continuity and logic so long as we forgo certain "postulates" of the dogmatic image of thought—preeminently, the subordination of difference to identity and of being-whole to being-one (not every whole is a unity—there is organization beyond identity, unity, and aggregate). It is not because of their "illusory being" but because of the subtle, dogmatic subordination of difference to identity and time to space that time and becoming have long been exiled from philosophy. Becoming appears illogical only to the lenses of classical logic, a logic adequate to actuality. There might be a qualitative, virtual, continuous multiplicity rumbling beneath actuality that secretes a "logic of continuity" that neither suppresses becoming, excises continuity, nor spatializes time. It is the wager of this dissertation that this new logic should be central to phosphorescent philosophical excurses through disciplines as disparate as analytical mechanics, categorial logic, contemporary poetics, and collective politics.

[4] These "postulates" have sabotaged every attempt to conceptualize time, continuity, and becoming. It should be no surprise that Deleuze catalyzes novel philosophical developments that illuminate a notoriously intractable problem, that of time and becoming, which has foundered on the reef of the one and the many. The critique of logical identity, the dissolution of the self, the refusal of a transcendent being—these are requisites for a philosophy adequate at last to time and nature.

an adequately fluent sufficient reason. Deleuze's famous "speculative excesses" are impelled, paradoxically, by his radical commitment to critique. If he praises Leibniz, Kant, and Bergson for exploring, respectively, the dynamical, the transcendental, and the temporal, he condemns them for shrinking from their discoveries—clouding them with all manner of homely curios.[5] Subtle dogmas, occasional losses of critical nerve—these are symptoms of a more profound failure to confront fully the labyrinth of the continuum.[6] Yet, at least for Leibniz and Bergson, it is not for lack of effort. Leibniz, Bergson, and Deleuze each cast a prominent continuous process—respectively, corporeal movement, durative evolution, and problematic actualization—as irreducibly heterogeneous.[7] Each process's apparently turbulent visage is really so: it never resolves into homogeneous elements, never unfolds by the juxtaposition of simple elements. We will accompany each philosopher in their attempt to grapple with heterogeneous continuity.

II. Triptych with Large Center Panel

> I feel that I am Bergsonian—when Bergson says that modern science has not found its metaphysics, the metaphysics it needs. It is that metaphysics that interests me.
> —Deleuze, "Responses to a Series of Questions"

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[5] Witness Kant's covert reliance on empirical experience, his use of classical logic, his aversion to genetic thought, his attribution of a homogeneous continuity to Space and Time, the two forms of intuition. Elsewhere, the continuum itself undermines Bergson's dogmatic prohibition upon inquiring mathematically into duration. That the continuum is a pure multiplicity, coherent without reference to the categories of the one or of the many, indicates that there is coherency beyond the aporias of the one and the many.

[6] Immanent, meaning historicist and materialist *in spirit*. I will not say that Deleuze is a materialist, if only because few know what matter is: "No inquiry has been surrounded, for the philosophers of every age, by so much darkness as that concerning the nature of matter. And yet insight into this question is necessary for all true philosophy, just as all false systems are shipwrecked from the very outset on this reef. Matter is the general seed of the universe, in which is concealed everything that evolves in later developments" (Grant 2006: 26, quoting Schelling 1988: 179). And this doesn't even contend with the standard model of particle physics!

[7] Further, each affirms an order of irreducible, multitudinous singularities: if points populate a homogeneous continuum, singularities will populate a heterogeneous continuum. This heterogeneous continuity inspires their more controversial projects. Whether embedding mechanics in a dynamics that indexes every actual physical system to a vast virtual structure (thereby anticipating analytical mechanics), affirming the autonomy of the pure past and the efficacy of time, or grounding everything in a molten domain of virtual problems, heterogeneity is the inspiration.

The (suppressed) "prologue" focuses upon Leibniz's conception of the plenum and the interaction of continuity and sufficient reason within it. Its lens: Leibniz's attempt—in the *Dynamica*—to make physics a rigorous science. It is not just that physics, if it is to be rigorous, *requires* a metaphysical ground; it presupposes it already. Without Leibniz's dynamics, physics would be little more than an instrumental discourse—effective, but arbitrary, its assertions no more binding than the stray observations of a solitary walker. Adequately conceived, the plenum (the domain of physics) is no more than the parasitic secretion of a roiling domain of virtual force, the *spatium*. This *spatium* is no chaotic morass: if its effects are maniacally-structured, if the local "interactions" of physical bodies are always exactly calculable and absolutely determinate, so much more the cause.[8] Our central question: *if we conceive* adequately *of the plenum, that is, if we conceive of it with its cause, is it still discontinuous? How can conceiving of the plenum as the* continuous *effect of virtual force ground it rationally, when continuity threatens the principle of sufficient reason?* The pressure that continuity places upon Leibniz's system inspires nothing less than a new conception of causality, one that Leibniz himself misconceives as a resurrection of final cause. But this conception of final cause— informed by the latest developments in mathematics, such as the calculus of variations, and the latest insights in physics, such as the recognition, after Fermat, of the centrality of "extremal principles"— differs enough from the Aristotelian conception of final cause to merit a new name, that of virtual cause. The importance of Leibniz's discovery of a new kind of cause becomes vividly apparent in the nineteenth century, with Hamilton's elegant consolidation of classical physics.[9] It is precisely because

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[8] The *spatium* secretes the conservation laws governing global physical systems and ensures the exact obedience of locally interacting bodies to these laws.

[9] This dynamical cause supports Bergson's strange thesis that time *in itself* is efficacious. No more will causation imply that time is epiphenomenal, an illusory residue of the arrow of causality (Mullarkey, Sklar). The virtual continuum

of this delayed effect that Leibniz's arguments, however curious, are not simply historical curiosities. They provide insight into certain questions haunting contemporary physics: *If actual bodies interact only locally, how are they globally coordinated?*[10] *How does a (virtual) state space constrain the (actual) evolution of a physical system, when vanishingly little of this state space is ever actual?*[11]

It is no coincidence that these latter questions animate Deleuze's ambition to articulate a genetic philosophy of nature. Leibniz's dynamics, with its novel conception of causation (expressed in the interaction of state spaces and extremal principles), anticipates a central component of the Riemannian geometry of sufficient reason: the curious "topological efficacy" of virtual problems. If Deleuze extends Leibniz's inquiry into nature, he does so by exorcising its uncritical devotion to identity and total determinacy. Actual beings resolve virtual problems by complex processes of differentiation that make no reference to identity; this interaction of actual and virtual secretes a set of transcendental conditions that, far from being global and invariant, are local and variable. If Deleuze invites Kant to preside over this critical exorcism, it is not just to annul Leibniz's residual dogmatism. It is, more pressingly, to liberate Kant's own critical project from dogmatic circumscription.[12] It should not surprise us that this circumscription is a symptom of Kant's failure

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enveloping an actual organism or any physical system is always a continuous multiplicity. It is a problematic whole, mutating by a durative logic, actualizing itself along divergent lines in disparate milieux.

[10] Casting this as a question of "local and global" rather than as "part and whole" reflects a prominent theme of this dissertation: to displace *logical* deliberations (such as the latter) with *topological* ones.

[11] A state space is the collection of the possible future trajectories of a closed system. This collection of paths is not just a continuum but a topologically non-trivial one. It has certain singular points which, though they correspond to no actual state (no path passes through them), determine both the form and the selection of the unique state that is actualized. Of course, Deleuze refuses to conceive of these virtual milieux under the sign of "possibility". It is an intolerably constricting modality, one allied always with efforts to reduce Nature to present actuality, to deprive Time of any autonomy or efficacy, to annul the potential for radical novelty.

[12] The "roast-master" will be himself roasted!

to address the labyrinth of the continuum.[13] To trace Deleuze's path to transcendental fields,

problematic logic, and intrinsic genesis, we must confront these questions: *What is the relation*

between the logic of sense and the logic of problems? Why does the latter envelop the former? Why does sense

(and not judgments) provide a "clue" into the transcendental field of virtual problems? How can Deleuze

argue that problems ground all things—that everything is a solution to a problem? Why do we need the

virtual at all? They will preoccupy us in parts I and II.[14]

Part III excavates the temporality implicit in the logic of problems, orbiting about the

curious relation between continuity and heterogeneity in Bergson's conception of duration.[15] If this

excavation tracks the seams of Bergson's disparate inquiries into duration, it is not simply to re-

present them: they must be liberated from dogmatic circumscription. No less than Kant, Bergson

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[13] To cast the transcendental field as a problematic sea is a necessary step towards a genetic philosophy of nature, one thinking not *of* nature but unfolding *with* and *as* it. Naturphilosophy will not "seek a fixed point from which to gain leverage on an external world, or to rise above it, but is itself a 'genetic' movement of and on this world, unconditionally. Philosophy does not, according to Schelling, consist in a redescription of otherwise available phenomena, but launches 'thought-operations' in the 'medium of the universal and the impersonal'. It is 'not [a] demonstrative, but [a] *generative* [*Erzeugende*]' process through which productive nature *itself* acts on, or produces, itself: 'to philosophise about nature means to *create* nature'" (Grant 2006: 1, quoting Schelling and Jaspers). A truly genetic philosophy of nature—one adapting Leibniz's demand for sufficient reason to a domain more fluent than he could have ever supposed—only exploits the irremediable excess coiled within the continuum. Naturalizing the transcendental field displaces it from the ambit of subjective experience, freeing it from classical logic and all manner of empirical impurities.

[14] Physical processes cannot be reduced to actual processes; we need something other than actuality to conceive adequately of nature. *"But why the virtual? Why not the possible?"* "The possible" is a false notion. It falsifies temporal processes—and all physical processes take time. Reasoning with "the possible" is reasoning with mutually external elements. Filling the future with possibilities—all of which resemble the present, all of which are mutually external—falsifies it. Durative elements reciprocally interpenetrate one another, and the flow of time does not respect the regime of resemblance: it is absolutely heterogeneous.

[15] Parts I, II, and III are all concerned with that most curious thing: organic wholes—equivalently, durative wholes, continuous multiplicities, intensive wholes, labyrinths, virtual problems. *Labyrinths* are best; they tilt us towards a general economic perspective (Bataille). These chaotic wholes are so emphatically metamorphic, capacious, and sensitive that it seems perverse to call them "wholes" at all. If it assimilates everything it encounters, it is only on condition that this "assimilation" is understood not to annul difference but to unleash it: shards remains indigestible, encounters impel cascades of change, each of which metamorphoses the whole. But how is it a "whole" amidst such variability? What is the "logic" governing the relation of its "parts" (which are absolutely heterogeneous, though indistinct) to each other and to the whole? If each part is heterogeneous to every other part, and if the state of the whole differs qualitatively moment to moment, why does it not just dissemble into radically disjoint elements? Minimally, we expect its coherency to be incomprehensible to classical logic.

tempers his radicality by a subtle dogmatism. The critical impetus informing so much of Bergson's thought does not touch that familiar thing, *identity. Is the form of identity really so indispensible? Does not the turbulent character of duration preclude every identity? Is it merely Bergson's* decision *to conceive of continuous multiplicities as unities that forecloses the possibility of a mathematical expression of duration? How can the continuity of duration evade that discourse—viz., mathematics—usually so adept with continuity?*

> *who glacially*
> *recur   ,   embalmed*
> *conjugate*
> *flux   still*
> *not enough*

> The past is yours, to keep invisible if you wish
> But also to make absurd elaborations with
> And in this way prolong your dance of non-discovery
> In brittle, useless architecture that is nevertheless
> The map of your desires, irreproachable, beyond
> Madness and the toe of approaching night, if only
> You desire to arrange it this way.

> —John Ashbery, "Clepsydra"

CHAPTER 2

PART I

THE TEXTURE OF FOLIATED TIME

> We must move to a geometry of sufficient reason, a Riemannian-type differential geometry which tends to give rise to discontinuity on the basis of continuity, or to ground solutions in the conditions of problems.
>
> —Deleuze 1994: 162

> We seek to determine an impersonal and pre-individual transcendental field, which does not resemble the corresponding empirical fields, and which nevertheless is not confused with an undifferentiated depth.
>
> —Deleuze 1990: 102

I. What is transcendental Spinozism?

A preoccupation with *transcendental fielas* marks Deleuze's first work and his last.[16] But what

happens between matters most: whether concept or organism, it lives only between poles. What is

the transcendental field? Why is it a signal contribution to philosophy? To be terse: it displaces the

transcendental *subject* from the center of critical philosophy, supplanting a perspective of

"conditioning" with one of "genesis". Only a genetic perspective can satisfy the terms of Kant's

critique: "the error of all efforts to determine the transcendental as consciousness is that they think of

the transcendental in the image of, and in the resemblance to, that which it is supposed to ground"

(Deleuze 1990: 105). This quote introduces many of our central themes: the critical correction to

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[16] If we wanted to read Deleuze's *oeuvre* as a single project, we could do worse than use his notion of "the transcendental field" as a key. I owe this insight to Daniel Smith (2015).

the dogmatic installation of a "regime of resemblance"; the refusal to prioritize "the form of the subject" in the determination of transcendental fields; the need for thought to spring from a ground that will not resemble what it grounds; the refusal to constrain this movement by some dogmatic image—that is, to subordinate it to an expectation of harmony.

Kant inquires into the conditions of possible experience. Two decisions tilt this inquiry towards dogmatism: first, Kant makes this experience the experience of a *subject*—and a fairly specific one at that; second, he invokes "the possible", which is a "false notion" (Deleuze 1988: 98). Inquiring into the conditions of all *possible* experience forecloses the possibility of generating real experience. Why? Kant can delimit a "domain of all possible experience" only by *fixing* the universal conditions of all experience. We will have much to say about how Kant finds these conditions and how he determines that they are complete. The "domain of all possible experience" is a false notion, one that betrays the transcendental enterprise: it dogmatically imposes constraints; it mistakes varieties of empirical experience for invariants of universal experience. Deleuze decouples the transcendental field not just from the "universal rational subject" but from *any* subject. When we inquire into the transcendental field, we cannot assume it resembles our empirical experience, our image of that experience, or indeed the experience of any subject. Real experience might admit only of residual forms of subjectivity (if at all): these residual forms are to the transcendental field what detritus at the tide-line is to the sea.

We will not assume that the vagaries—biological, historical, political—of empirical

experience resemble the movements of the transcendental field![17] Resisting this assumption is the

first step towards displacing Kant's static conception of the transcendental field with Deleuze's

genetic conception of it. Rather than seek *the* transcendental conditions of all possible experience,

Deleuze articulates the process by which *any* set of transcendental conditions might come to be. The

transcendental field is as open and indifferent to the results of its process as Jackson Mac Low is to

the results of his algorithms. The process variously executes itself. In particular, we assume neither

that the product resembles the process nor that the product resembles anything else already within

our ambit. If the product mimics an articulate subject, fine; if not, better: at least the latter catalyzes

metamorphoses—"in advance of a broken subject", as it were. Resisting these dogmatic *decisions*—

such as: product will resemble process; process will culminate in articulate subject—is a condition for

attaining a properly critical, fully genetic perspective on the genesis of transcendental fields. Further,

excising every last dogmatism, every uncritical assumption, is a condition for realizing the dream of

every philosophy of nature: to think *with* nature rather than simply *of* it—philosophy becomes just

another process, no less than art: "No beginning, middle, or end. Process, not object" (Cage 1990:

427). A genetic conception cannot help but contest the primacy of the subject—indeed, the primacy

of any form of identity.[18] In order to preserve the critical impulse, we will have to see how this field

secretes the transcendental conditions for *any* experience, not just for the experiences of conscious or

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[17] "The question which emerges for a transcendental empiricist is this: how must unmediated experience be thought if it is to be freed from unacceptable ontological and epistemological dogmas? As long as there are still presuppositions of one kind or another reigning in classical and logical empiricism, presuppositions that implicitly ameliorate the metaphysically critical and anti-representational primacy of experience, the empiricist onset of thought must be radicalised in a difference-oriented way" (Rölli 2016: 7).
[18] The criteria of self-identity—whether for political subjects or logical propositions—are no longer hegemonic.

even of animate beings. There is more to this field than its conditions, but it will be some time before we can survey it. We will learn first to decouple "experience" from consciousness, subjectivity, volition, and the many forms of identity. We will cease to qualify "experience" as "*subjective experience.*" The transcendental field admits of subjective experience, but only rarely—as rarely as matter admits of life. How perverse—dogmatically perverse (bad), not generatively perverse (good)—to force the transcendental field to conform *a priori* to the categories of identity or the forms of consciousness!

Deleuze recasts Kant's method for genetic ends. With Kant, Deleuze insists: we can begin only with *our* experience. But we must beware of the temptation to hypostasize its current form. This form is as local as it is unique: it emerged from the chance encounter of mutating series. It is occasional, in every sense. This medial, occasional domain possesses nonetheless a unique transcendental structure. If we can trace the latter's genesis, there is hope that we can capture the genetic mechanism for *all* transcendental fields. Then we can set aside "our" experience. This model of the genetic mechanism would be like that of terrestrial evolution: as we run it repeatedly, worlds and forms emerge without reference to human experience, without resemblance either to one another or to the problems impelling it. The genetic method severs the need to refer the transcendental field to any image of empirical consciousness. Let's be (even more) oblique: the field emerges from a continuum swarming with mutually irreducible material intensities.[19] If it is possible to move from nomadic intensities to sedentary extensities, it is only at the cost of constituting a transcendental field: the latter is the tribute paid for the impossible passage from intensive to

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[19] Yes, it's an (intensive) *continuum* of unique, irreducible points! How is there continuity amidst total heterogeneity? We confront that labyrinth in Part III.

extensive.[20] The transcendental field is a surface separating two dynamic regimes: the virtual and the actual—or, equivalently, the problematical and the physical.[21] The surface mediates the passage from intensity to extensity; transcendental conditions are the residue of this mediating act. That this passage is variable and unstable suggests that both the "topological dynamics" of the field and the conditions secreted by its dynamics will be themselves variable and unstable. A field—no less than an artwork—frames a set of problematic tensions one will be obliged to resolve. Which "one"? The one subject to the field's conditions! Otherwise put, a field focuses the tensions to be distended by a life. Experience is an ongoing improvisation on the problematic themes focused by a field.

Deleuze arraigns Kant on a single charge: *neglecting the genesis of the transcendental field.* This neglect authorizes Kant's illegitimate projection of the "merely empirical" forms of consciousness onto the *a priori* forms of the transcendental field. This is a fatal mistake, one that prevents Kant from satisfying his own critical criteria. There is no need to prosecute, Kant's already condemned himself! For Kant, the transcendental conditions of experience determine the experience of empirical objects. The transcendental conditions synthesize incoherent sensations into coherent perceptual fields populated by identifiable objects. More fundamentally, the categories determine what it is for an object to be an object. Heidegger "radicalizes" Kant's conception of conditions by generalizing

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[20] Brad Bassler has noted that advances in mathematics are marked by such "impossible" passages. We arrive at a threshold and, though it is not possible to do so, cross it. Alain Connes' non-commutative geometry provides a recent example: we simply "associate" a manifold with a non-commutative algebra. We can associate a manifold with a commutative algebra, and inversely. Why not a non-commutative algebra? Such occasions demonstrate the weakness of the notion of "the possible" and the superiority of the notion of "the virtual". The possible is always the enemy of creation, since it's always the projection of sedimented formations. This is why Deleuze finds in Beckett's exhausted figures a proper politics of exhaustion: exhausting possibilities is a condition for creativity (Deleuze 1997).

[21] Though Deleuze collapses Leibniz's "metaphysical space" into physical space, he preserves the distinction between the dynamics of each space: efficient causation presides over the extensive mixture of bodies in the plenum (or "surface"), while virtual causation (see the Prologue of this dissertation) presides over the intensive mixture of affects and material intensities in the *spatium* (or "depth").

them further: transcendental conditions determine not just the being of *objects*, but the being of *beings*. What is curious about these conditions is that they are binding, for subject and object alike, in advance of and independent of any encounter with objects. In the transcendental tradition, they can be said to be normative conditions.[22] I leave aside the question of whether or not Deleuze is a part of this tradition. If Deleuze does not strip these conditions of their normative dimension, he weakens severely the tie between them. Indeed, his hostility to jurisprudence puts him at odds with the presiding spirit of transcendental philosophy. He is interested not in normative and legislative constraints, but in mutative impulses, larval enclosures. Deleuze's hostility to jurisprudence colors his conception of transcendental conditions: rather than universal and invariant, they are local and variable.[23] Not only are the conditions local, but they are "no broader than the conditioned" (Deleuze 1983: 91). What does this mean, "conditions no broader than conditioned"? Why are the conditions no more universal than what they condition?[24] There is one answer to both questions: the complex processes of individuation—comprised as they are of movements of differen*t*iation and of differen*c*iation—that secrete individuals secrete also the conditions to which these individuals are

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[22] We should distinguish between ethical, experiential, and logical norms. Of course, the distinctions are not absolute: there is overlap, contamination, cross-pollination, corrosion, mutation. (Philosophers, stop flattering yourselves: *there are no impermeable distinctions!*) Very roughly, where ethical norms concern the content of an action, experiential norms concern the form of the field of action: for the former, it is: *if you encounter an object, you should not break it*; and for the latter: *if you encounter an object, it will be spatially extended.* Logical norms need not be any more "universal" than the other two; they can be local. A logical norm: *if you accept these premises, you should draw this conclusion.* Of course, different logics justify different conclusions.

[23] The very thought of variable conditions horrifies Kant. It would make the past inaccessible, and the future unpredictable: "If some magical power were capable of modifying the reproductive faculty itself, of transforming Nature's original model or of making additions to it, we should no longer know from what original Nature had begun, nor how far the alteration of that original may proceed, nor into what grotesqueries of form species might eventually be transmogrified" (Kant, quoted in Toscano 2006). We would be condemned to begin always from an indeterminate point in the middle. Kant resists this, barking at conditions: "Where I can see you!"

[24] To suppose that conditions are broader than the conditioned is to succumb to a more sophisticated version of the "hylomorphic" illusion decried by Simondon, where one explains becoming by reference to "active" forms and "passive" matter. In Kant's scheme, conditions are like the "forms", conditioned the "matter".

subject. But for the conditions of individual experience and the individual itself to be fitted uniquely

to one another, they must each be intrinsic aspects of a unique process. We will have to prove that

there is a genetic process that secretes at once a set of transcendental conditions and an individual

uniquely subject to them. This "proof" is a prelude to attaining the properly "genetic perspective"

that Maimon (channeling Spinoza, anticipating Schelling) demanded of all future transcendental

philosophy.[25] To summarize: for conditions to be no broader than conditioned is for them to be

binding only for what is immanent *in* this unique "bloc of becoming"[26] that secretes at once a set of

transcendental conditions, a milieu,[27] and the actual being subject to this unique set of conditions in

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[25] Beth Lord insists that Deleuze's "response to Kant can and should be read in terms of post-Kantian Spinozism" (Lord 2011: 131). There is a progression: Kant recasts the (Spinozist) attributes of Extension and Thought as the forms of space and time. But Kant conceives of the continuity of both space and time as *homogeneous*. For Maimon, this homogeneity is a severe misrepresentation: the forms of "space and time 'smooth over' the infinite differences that exist between things at the conceptual level. An intuitive intellect would intuit things as they are thought: in terms of pure conceptual difference or pure heterogeneity " (Lord 2011: 116). Further, Kant simply assumes that "all intuitions are spatiotemporal. 'We recognize simply that, up to the present, *we have never had* an intuition without space and time, not that *we cannot have one without them*'" (Lord 2011: 114, quoting Maimon). This robust, autonomous domain of pure qualities might await still other forms of intuition, much as Spinoza's attributes await still other modes that can experience them. It is Kant's failure to provide a genesis of these forms of space and time that compel Maimon to posit a domain of pure intensities, of pure differentials that lack either a spatial or temporal character, that secrete the transcendental structures of experience. Bergson critiques also Kant's characterization of these forms as homogeneous: Kant just assumes that an "extensive homogeneity" underlies the "qualitative heterogeneity" of sensations (Bergson 2001: 95). But the kind of continuity of time is purely heterogeneous. Instead of the forms of space and time, we have quantitative and qualitative multiplicities. But Bergson raises also the Kantian forms from the depths: rather than as underlying forms, these multiplicities assert themselves as a means of binding the elements of the multiplicity.
[26] "It is important to consider the logic: every becoming forms a 'bloc'—in other words, the encounter or the relation of two heterogeneous terms that mutually 'deterritorialize' each other. We do not abandon what we *are* to become something else (imitation, identification), but another way of living and sensing haunts or is enveloped within our own and 'puts it to flight' [*fait fuir*]. The relation thus mobilizes not two but four terms, distributed in interlaced heterogeneous series: *x* enveloping *y* becomes *x* , while *y*, seized by its relation to *x*, becomes *y* . Deleuze and Guattari constantly insist on the *reciprocal and asymmetrical* character of the process: *x* does not become something else (e.g. animal) without *y* for its part becoming something else (e.g. writing, or music)" (Zourabichvili 2012: 149). This reciprocal interpenetration is central to Bergson's logic of time.
[27] Following Simondon, Deleuze couples individual to milieu. They are residua of a more prominent process of individuation: "the individual always tends to emerge at the same time as a characteristic 'milieu' or environment (such as a crystal and its solution) (INFI, 24-5). This milieu emerges precisely because the individual is not capable of exhausting all of the potentials of the pre-individual reality from which it emerges. And indeed, this is why Simondon says that the milieu is itself a system, synthetically grouping together two or more levels of reality (INFI, 30, n. 6). It can thus be considered the individual's 'reserve' of pre-individual charge (INFI, 62-3). In any case, the picture that emerges

this milieu. Crucially, this transcendental "residue" (that is, the conditions of real experience) is but one aspect of the genetic process: its "coming to be" determines further the *virtual problem* that occasioned and constrained the becoming of the actual product (*a* being) of this process (much more on this later!). If it sounds monstrous—irreversible flux, unstable beings, sets of conditions fading in and out of existence, perpetual metamorphosis, virtual problems—it is! But no more monstrous than the variety of constructions in mathematics. Is it a coincidence that continuity and virtual problems are central both to mathematics and to this genetic perspective?

Conditions being no broader than conditioned blocks any attempt to pass from "the local" (*this* patch of conditioned experience, *this* bit of actuality) to the global (*all* possible experience). Though we cannot pass to the global, we can discern invariants of the *process* that secretes local experiential patches.[28] We are cut exactly to occasion: no ascending vertically, only deviating laterally or mutating in place (*hic Rhodus, hic saltus*). The "domain of all possible experience" is a dogmatic image of empirical experience. If the universal conditions of possible experience seem unimpeachable, it is only because we have deified a certain kind of empirical experience. The conditions of real experience depend upon the chance conjunction of actual occasions and virtual

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here is of a world composed of heterogeneous orders between which there exists a 'potential energy' which may be actualized in various ways by appropriately structured singularities. The individuals produced by these transductive operations may in turn serve as singularities for other systems or even as relatively amorphous structures (in themselves, or in relation to their milieux) which may be re-structured in encounters with other singularities" (Bowden 2011: 123). We will unpack this in time!

[28] We cannot give a full description of real experience until part III, when we contend with time. Suffice to say for now that it is irreversible, irreducible, "non-uniformly" continuous, purely heterogeneous, and (despite its continuity) liable to change qualitatively from time to time. The unique tint that colors experience colors also the conditions of experience. Even the subtlest alteration to it can induce a qualitative change: "every lived duration possesses a certain specific quality, a determined value, an affective coefficient it takes from my effort, my expectation, or my impatience: yet this impatience or this effort [might induce] a qualitative change" (Jankélévitch 2015: 42). Why shouldn't the conditions of experience be as sensitive as experience itself? Conditions being no broader than conditioned fixes Deleuze's transcendental inquiry to real experience.

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problems. They are singular, local, and provisional. But—this is the delicate philosophical problem—these local conditions are *no less necessary* than Kant's universal conditions. Resisting any claim to "universality" is not the same as resisting any claim to "necessity". The conditions of real experience must be *binding*—both for the being subject to them and for the beings "objectified" by them. All who, like Deleuze, would maintain themselves in the transcendental current can do so only by preserving the binding character of the conditions of experience. If these conditions were not necessary, they would not differ from contingent empirical conditions. They would lose their binding character. If Deleuze denounces tracing the transcendental from the empirical, it is not to imprison us within the empirical. Deleuze is no empiricist. He is a post-Kantian empiricist, a transcendental empiricist. The two planes—the transcendental and the empirical—are as irreducible as they are indispensible. Decoupling *necessity* from *universality* is a condition for executing the genetic turn and staying true to real experience.

> Transcendental empiricism implies consequently that the conditions are never general, but are declined according to the *case*: hence the crucial claim that they are never broader than that which they condition. This statement seems at first glance to annul the distinction between fact and law by aligning the latter with the former (which would be paradoxical coming from someone who denounces the "tracing" of the transcendental from the empirical). What it really means is that we can never speak in advance of *every* experience, except by missing its essential variation, its inherent singularity…. (Zourabichvili 2012: 211)

Deleuze's professed "transcendental empiricism" is not a repudiation of the transcendental tradition but *a* détournement of it. Though local and variable, the conditions of experience remain necessary.

Of itself, decoupling "necessity" from "universality" is, though peculiar, not too objectionable. Why

not have a notion of *local* necessity?[29] Deleuze, however, compounds the problem by coupling

necessity to… *contingency*! As he says:

> there is only involuntary thought, aroused but constrained within thought, and all the more
>
> absolutely necessary for being born, illegitimately, of fortuitousness in the world…. Do not
>
> count upon thought to ensure the relative necessity of what it thinks. Rather, count upon the
>
> *contingency* of an encounter with that which forces thought to raise up and educate the
>
> absolute necessity of an act of thought or a passion to think. The conditions of a true critique
>
> and a true creation are the same: the destruction of an image of thought which presupposes
>
> itself and the genesis of the act of thinking in thought itself. (Deleuze 1994: 139, my
>
> emphasis)

It is one thing to decouple necessity from universality, another to ground necessity in contingency!

It is hard to decouple *necessity* from *universality*, harder still to decouple *necessity* from

normativity—we will not attempt it. But fear not: as Deleuze recasts necessity, so he transforms

normativity—to the point that they would be "unrecognizable" to contemporary philosophy (pity).[30]

"Necessity" concerns not *universal law* but *intrinsic genesis*. It would not do if, in inquiring into

necessity, we simply accepted the prevalent formalizations of it. But, say, for formal logic's

presentation of necessity to be philosophically binding, we would have to know that this

presentation is itself necessary. But what is necessary about it? What are the origins of the syntactical

rules governing the use of the "necessity operator"? What is the ground of the semantic

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[29] A "Groethendieck topology" has a purely local notion of a modal operator like "necessity" (Goldblatt 2006: 359)

[30] *But if conditions are norms, how can they be so abnormal?* Quiet, philosopher!

interpretations of it? These are contentious matters, far from settled. Since neither the syntax nor the semantics of any formal presentation of necessity is itself necessary, we will not simply accept the hegemony of formal logic. *But what* else *is there? Are these not 'our"* best theories*, to which we ought to accede?* This is a supremely dogmatic attitude, in complete harmony with that deflated geode: contemporary Anglo-American philosophy. Even if we were to accept (hand on heart) one of the formalizations of necessity as definitive, we would still require a genetic presentation of it. We could not neglect the historical, conceptual, and even biological mechanisms that posed it.

There is no way to escape it: we must consider the genesis of necessity. Deleuze, channeling Spinoza, wants a less desultory geology. A definition of "necessity"—indeed, of anything—ought to be a genetic definition, one that includes its cause (Spinoza 2000: 26). More strongly, the definition of necessity must include its genesis. But the definition of necessity will be a peculiar one: its cause cannot be specific to it, because necessity must be involved in the genesis of anything. We can satisfy Spinoza's constraints by *identifying necessity with intrinsic genesis*. The wager: an account of the structure of intrinsic genesis will ground the necessity of anything exemplifying this structure. If intrinsic geneses secrete transcendental conditions, the latter's necessity will have a ground. For Deleuze's "superior empiricism" to be truly transcendental, it must establish the intrinsic genesis of the local conditions of real experience. This truly deviant transcendental empiricism (or, equivalently, transcendental Spinozism) submits itself to two harsh constraints: **first**, instead of hypostasizing any presently congealed orientation into *the* image of thought or *the* exemplar of all possible experience, it must allow for unforeseen deviations that admit maximal variability amongst

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the kinds and conditions of experience; **second**, that these conditions be necessary conditions—a "natural" residue of the intrinsic genesis of the complex of real experience.

Deleuze's theory of problems elaborates a notion of intrinsic genesis that might satisfy the above two constraints. Conditions are a part of the progressive resolution (by (actual) solutions) of (virtual) problems. The intrinsic genesis of a solution constructs a local aspect upon a problem; it involves the virtual and the actual—both domains modulate reciprocally. The intrinsic resolution of a problem generates transcendental conditions. Though they depend upon the actualization of solutions, transcendental conditions are not reducible to this process of actualization or the solutions that result from it. They remain of the problem itself—and no problem is reducible to its solutions. It remains "transcendent" to them, in Lautman's sense of the term. This transcendence is not the one of a dogmatic metaphysics: Deleuze's transcendental Spinozism is a philosophy of immanence, one opposed to any form of *dogmatic* transcendence. That it is a philosophy of immanence, one that refuses to disport itself upon vertical axes, does not mean that it reduces everything to a single, homogeneous plane: there are "orders" as heterogeneous and irreducible as Spinoza's attributes! As we will see, any philosophy of differential immanence must include innumerably many irreducible orders.

Like Kant's transcendental conditions, problems are immanently constitutive of experience without being a part of experience proper. But if every "solution" (for example, *my* experiential field) is co-constituted with a set of conditions, what need for problems? Why are they indispensible for grounding the intrinsic genesis of this complex (solutions-conditions)? Why do problems disclose the latter's sufficient reason? Why does Deleuze inscribe this archaic notion of "sufficient reason"—a

vestige of dogmatic metaphysics—at the center of his "post-critical" philosophy? Why is everything a solution to a problem?[31] It is true that solutions are co-constituted with a field of conditions. But a problem secretes in advance a "superior set of conditions" that determine what *will be* a solution. This superior but variable set of conditions is the topological structure of a problem: it always already constrains the process of resolution. This topological structure constrains the kinds of "solution curves" (that is, the flows or trajectories marking what comes to be by a problem) that it will admit. These constraints ground the normative dimension of problems: to be a problem is to determine what will be a solution. By grounding the normative dimension of the problematic complex, this topological structure grounds the normative dimension of transcendental conditions. That a problem determines the being of its solutions allows transcendental conditions to determine the being of appearances.

De-coupling the transcendental field both from the transcendental subject and from any pretension to universality does not just recast Kant's conception of the conditions of experience. It transforms decisively the Kantian problematic of synthetic *a priori* judgments. As much as their indication of reason's curious "ampliative" power, Kant was transfixed by the normative dimension of these judgments: how are judgments that are generated purely by thought binding nonetheless for a world "other than" or "transcendent to" thought? What grounds this normative dimension? It is the normative dimension of necessary judgments that most perplexes Kant. If Deleuze relates *necessity* to *normativity*, it is only after transforming both terms. Deleuze diverges definitively from Kant, Husserl, and Heidegger, but profits as much from their ways of posing this question as their

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[31] The viability of the "method" that Deleuze extracts from Bergson depends upon the ubiquity of problems. To say that everything has sufficient reason is just to say that everything has its problem. This problem secretes the logic that determines the being of the solution.

responses to it. It is Kant's neglect of the labyrinth of the continuum that allows Deleuze to

"exponentiate" transcendental philosophy without betraying its essential insights: simply stripping

Kant of his residual dogmatism leads to transcendental Spinozism where, rather than fixed, universal

conditions for a transcendental subject, we have infinitely variable conditions for all manner of

beings.[32] What does this pursuit of "sufficient criticality" have to do with continuity? If the

continuous "manifold of intuition" is not a pacific homogeneity that admits of "absolute"

unification but a turbulent heterogeneity that undermines every attempt at circumscription, it may

impel difference rather than sanction identity.[33] In the end, the paths of thought may be no less

discordant than those of time itself.

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[32] Deleuze proceeds here under the sign of *transcendental Spinozism*, a program inaugurated largely by Schelling: "a third current [of modern philosophy], perhaps the most topographically intricate of the three, is characterized above all by Schelling, and is driven by the dynamic of critique towards a completion of the transcendental program: substituting the immanent continuity of Spinoza's cosmology for the uninterrogated piety of logical identity inherited from Kant. Deleuze is the most powerful exemplar of this transcendental Spinozism amongst contemporary thinkers" (Land 2012: 263). Transcendental Spinozism installs itself from the outset in the orbit of Nature—refusing not only to exile physics from itself but to exile becoming from physics. Its own genesis is as much a concern for it as bodily genesis: "Since it is only in the process of its genesis that the universe acquires body, physics is not restricted to somatics, as Aristotle and Kant maintain, but must treat also of the generation of bodies, relegating the latter to regionality with respect to matter. As Schelling writes, 'materiality alone is not yet corporeality' (XI, 424). In the register Schelling takes from the transcendental philosophy, such a physics is absolute or 'unconditioned [*unbedingt*]' insofar as it does not deal with what is 'determined [*bedingt*]' as a 'thing [*Ding*]' (I, 166; 1980: 74).... But this Platonic-Schellingian conceptual work equally proposes therefore a proper means of conducting physics, against Aristotelian-Kantian somatism: since nature eternally becomes, the science of nature must be genetic" (Grant 2006: 28).

[33] *Long note on Kant's late philosophy.* Curiously, Kant accords continuity its due only in his last inquiries. A turbulent continuum is central to his attempt to answer the "highest question" of transcendental philosophy: "*How is nature itself possible?*" (Kant 1971: 79, in Grant 2006: 80). Kant engages this question by adopting a more genetic perspective: "Kant's dynamical reconstruction of transcendental philosophy seeks to place matter and possible experience—physics and transcendental philosophy—under one and the same a priori principle, from which the two sciences would spring. In contrast to the *Critique of Pure Reason*, therefore, where the world of physics is simply given over to Newtonianism, with its impenetrable bodies and the forces they impart to each other, the *Transition* 'from metaphysics to physics' seeks 'a material principle of the unity of possible experience' (*Ak.* XXI, 585; 1993: 92). The 'aether proofs' attempt to demonstrate that possible experience presupposes a whole of world-material that fills space and is permanently turbulent....The material principle is therefore as proto-phenomenal (generating objects of experience) as it is proto-somatic (generating physical objects). Giving this principle as caloric or aether, the *Transition* appears to make experience *depend* on *physis* itself: given the presomatic nature of matter and the non-phenomenal nature of experience, the moving forces of this ceaselessly active matter precede both" (Grant 2006: 79–80). But, Grant contends, Kant's late attempt to attain a genetic perspective only affirms the "anti-physical" stance infecting his entire *oeuvre*. For this *physical* ground is

First question: How can something occasional be necessary?

Second: What clue discloses the structure of the transcendental field?

Third: How can something be *a priori* and local?

Fourth: Why is everything a solution to a problem?

Fifth: What is an intrinsic genesis?

Sixth: What does this have to do with time?

Deleuze confronts also the problems Leibniz bequeathed to all future philosophies of nature: even *if* mechanics can calculate the evolution of physical states while countenancing nothing more than actual states and purely local efficient causes, is this adequate to nature? Is it even true that mechanics uses only efficient cause? Should we accede uncritically to its self-presentation? Can nature be reduced to the efficient interaction of actual being? What about variational principles? Don't they involve virtuality? What's wrong with interpreting a "phase space" as a space of all *possible* paths? Are possible states really just inert *possibilia*? How are they efficacious? What of gauge theory and its "internal dimensions"? What of the virtual spaces that constrain the evolution of actual regions of spacetime, refusing at once to actualize themselves and to relinquish their efficacy? Is time in itself generative?

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not empirically accessible: "the *Transition* has wagered that while there must be a physical basis for experience and its transcendental principles, this physical basis can be deduced a priori, and therefore prescribes a unified-field physics as *necessary* if and only if the transcendental conditions of possible experience are the *actual* conditions of possible experience. In other words, it is because the ground of nature is itself empirically inscrutable that it is accessible only to transcendental philosophy. The *Transition* therefore supplies a material principle of formal continuity without empirical commitments. Whether the physicists call it 'caloric, aether, or whatever' (*Ak*. XXI, 226; 1993: 74), there *must be* 'a matter, distributed in the whole universe as a continuum, uniformly penetrating all bodies and filling [all spaces] (thus not subject to displacement)' (*Ak*. XXI, 218; 1993: 69–70)" (Grant 2006: 80).

We are circumveiloped by obscuritads
                                                                    —Joyce, *Finnegans Wake* (244)

Philosophy does not begin with principles, propositions, or percepts. Such things appear too late,

suppose too much about thought, and (worse) decide upon the character of their "outside" to satisfy

what philosophy requires of its ground. Philosophy begins with something much less punctual:

problems, even if it cannot know this until too late. What Adorno said of philosophy could be said,

mutatis mutanda, of problems: they live on only because the occasion to evade them was missed. If

problems occasion philosophy, it is not just any kind of problem. These are not the problems of an

examination or some "perennial" philosophy. They are not discrete, they have not been surveyed,

even as they animate thought's core. Far from our possession, they possess us. Before it, one can

hope only to dissipate its force: "a problem is true or necessary, or rather a problem truly emerges,

when the thought that poses it is forced, when it undergoes the effect of an exterior violence, when it

comes into contact with the outside. The criteria lies not in an adequation to what is given or to an

exterior state of things, but in the *efficacy* of an act of thought" (Zourabichvili 2012: 63, emphasis

mine).[34] But if philosophy depends upon an externality (like a problem), *how will it be intrinsic? How*

can an occasional event ground a necessary thought? How can a sensible encounter generate

transcendental conditions? If we want to present an account of intrinsic genesis, if we want to justify

the identification of it with necessity, then we must ourselves proceed necessarily—never denying the

occasional nature of this procession. To deny being *initial* is not to renounce being *intrinsic*.

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[34] Spinoza accents also thought's efficacy: "There is no introduction to understanding, no correct method to know, because it is only in its *effective practice* that thought can be considered, as a real activity of a mind that puts to work, and submits to proof, its own power [*force*] *(vis sua nativa),* which it forms in its practice. If knowledge does not develop by conforming to an order of reasons by abstractly establishing a framework that persists only to organize it, it is because knowledge exists already in its real history, in its effective labor" (Macherey 2011: 50).

It is supposed often that "what is necessary" possesses a greater degree of being—or

perfection or organization—than "what is contingent" and, further, that to be occasional is to be

contingent. If we accept these suppositions, we confront an "evident absurdity": an occasional event

cannot cause a necessary movement of thought; if it could, the reality of the effect would exceed the

reality of the cause. But it is no longer legitimate to consign the necessary, the eternal, the static, and

the rational to one pole, and the contingent, the temporal, the dynamic, and the irrational to the

other.[35] Deleuze resists this polarization: it will be "the accident of the encounter that guarantees the

necessity of what is thought" (Deleuze 2000: 16). How perverse: an accident—once the haphazard

ash about an essence—is no longer the sign of contingency! To the contrary: the accidental kernel

generates intrinsically the necessary husk. What emerges intrinsically exists necessarily. The "magic

formula we all seek" is not just *monism = pluralism*; it is, *intrinsic genesis = necessary being* (Deleuze

and Guattari 1987: 20).

We begin always in the middle, freighted with unseen others, compromised by implicit

orders. Mediated perceptions, old thoughts, alien languages, recently re-conscripted matter—these

are not the obstacles to an intrinsic genesis but its necessary conditions.[36] If Deleuze affirms this

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[35] We must not let the nexus of possibility and "degree of perfection" bewitch us. Indeed, it is no coincidence that they reinforce each other. As Bergson argues, the possible is no less a result of the spatializing tendencies of the intellect than the attempt to quantify being: "Our mind is unwittingly obsessed by the idea of perfection—in the metaphysical sense, that is to say by the image of a *quantity of being*. As if this quantity could vary! As if Being taken in its entirety changed in any other way than in quality!" (Jankélévitch 2015: 179). These problems will detain us in part III. Drawing, respectively, from geometry and from lived experience, Spinoza and Bergson refuse to proceed except from a stifling plenitude, and there to catalyze irremediable productive excess (solar influx), material resistance, and virtual topology into a philosophy of differential immanence governed by a new logic of expression: "Equations and figures, we may add, oppose to us, like life does, an infinite plenitude. Nowhere does logic discover the least void, the least rarefaction of existence, or any gradations in 'perfection' or quantity of being that could enable our corrosive aporias" (Jankélévitch 2015: 185).

[36] "Deleuze is able to think the conditions of a radical absolute beginning while at the same time declaring that 'we are always in the middle,' and that a philosophy does not begin, does not think on the basis of a principle it takes to be first.

dross, it is because it "furnishes itself" towards metamorphosis (Whitman). If we are to

metamorphose, it is *by* this detritus and not *in spite of* it. Philosophy must renounce every pretension

to autonomy, to affirm its dependence upon occasions. *And yet it must unfold intrinsically.* This

profound tension animates Deleuze's entire *corpus.* This philosophy will develop by the unique

conditions shadowing its occasion. It will presuppose nothing about the character of thought, about

the form of the exterior, about the kind of relation between thought, its outside, and its milieu, or

even about the possibility of such relations.[37] It will remain open to the exterior forces that can

crystallize something new of a tired solution. If by shuffling the shards of discarded dimensions a

new one flashes into existence, we will have to admit then that we inhabited always a "metastable"

solution, one harboring a hidden excess. But why is there always excess? Why will a complex of

heterogeneous dimensions errantly dissipate it? We are immersed always in a contaminated milieu,

but it less the contaminating elements that are generative, more the virtual "space" enveloping

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The true beginning is necessarily outside the concept [*hors-concept*], or at the limit of the concept, and depends on the capacity of the latter not to close in on itself [*se refermer sur soi*], to implicate on the contrary the relation to the outside [*dehors*] from which it draws its necessity" (Zourabichvili 2012: 51-52). In this, he echoes Maimon: "So we start in the middle with our cognition of things and finish in the middle again" (Maimon 2010: 181). Spinoza's resistance to "Cartesian method", with its illusions of origin points, is central. Against Descartes, Spinoza insists that it is senseless to await a method that will secure truth anterior to every inquiry: "method is nothing but reflexive knowledge, or the idea of an idea; and because there is no idea of an idea unless there is first an idea, there will be no method unless there is first an idea" (Spinoza 2002: 11; TIE 38). Macherey elaborates: "if, according to Spinoza, the development of knowledge does not bring us back to the initiation of a procedure, it is because for knowledge there is no absolute beginning. By contrast, for Descartes, the search for truth is placed exactly under this initial condition of rupture with anterior forms of thought" (Macherey 2011: 48; cf pg. 44). Deleuze's anti-foundationalism informs his "grounding" of logic and mathematics.

[37] We can detect a Hegelian inspiration. For Hegel, "if we demonstrate which categories are inherent in thought as such, and we can only do this if we allow pure thought to determine *itself*—and so to generate its own determinations—'before our very eyes' (to use Fichte's expression)" (Houlgate 2006: 24). But, one might object, doesn't Hegel use the dialectical method? If so, has he not *presupposed* its validity? But the dialectical method "is not *Hegel's* method but the method or manner of development that proves to be inherent in presuppositionless thought itself: 'the nature of the content itself which spontaneously develops itself in a scientific method of knowing'" (Houlgate 2006: 35, quoting Hegel 1969: 27). Or if not Hegelian, Nietzschean: "We require a genesis of reason itself, as well as a genesis of the understanding and its categories: what are the forces of reason and of the understanding? What is the will which hides and expresses itself in reason? What stands behind reason, in reason itself" (Deleuze 1983: 91)? Nietzsche and Hegel share a critique of Kant.

them—near sentient, ever solicitous, ranged by problematic tectonic plates, always on the point of

overwhelming the actual islands balanced upon it (*Solaris*). We must preserve above all the condition

of being medial: the mediating elements refract the light of the problem into those heterogeneous

dimensions that open precisely to diffuse this luminous force by means of an errant, intrinsic genesis.

This genesis announces itself by inaugurating a new dimension; this inaugural act changes the

problem as much as its solutions. That necessity accompanies creativity should not surprise us:

necessity is intrinsic *genesis*, and being intrinsic is being errant (as we will see). But no novelty is *ex

nihilo*: the fact of being medial can never be revoked. Even while demanding intrinsic genesis,

Deleuze refuses to posit a "pure" foundation or to expect an analysis into simple elements or axioms.

There is only the irremediably complex contamination of every present, these otherly tides

compelling metamorphosis.[38] It betrays Deleuze's debt to Bergson: "Bergson allows for innovations

but not for radical creation. We shall see why this continuationism of plenitude cannot allow for an

absolute beginning: to Bergson's mind, a creative continuation is no more contradictory than a

creative evolution" (Jankélévitch 2015: 63)![39] Not until part III can we present "creativity" as

nothing more than the errant discharge of a superior force.

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[38] This coupling of *contamination* to *intrinsic genesis* informs Deleuze's anti-Heglianism, even as it draws Deleuze close to
Hegel: "the philosophical goal of absolute self-transparency and self-grounding that one finds for example in Hegel is
here dismissed in favor of a constitutive relation with otherness that continues along the entire path of philosophical
becoming. What results on such a basis is a philosophical practice that makes of philosophy a process of (distinctively
philosophical) learning. To learn—rather than to know—becomes philosophy's primary task and, more particularly, to
learn how to learn philosophically in singular and variable contexts" (Gangle 2016: 200).
[39] If Bergson and Deleuze approximate Spinoza, it is in their conception of freedom without free will: "freedom is not a
vertiginous option in a void without preferences and preexistence, nor even a power to inflect or arbitrarily suspend the
course of representations. Freedom is not a surprising *clinamen*, a fortuitous declination of the future but rather an
extreme concentrate of duration" (Jankélévitch 2015: 63).

III. Sense, or *Why are problems the ground of all things? Is* everything *a solution to a problem?*

> We seek to determine an impersonal and pre-individual transcendental field, which does not resemble the corresponding empirical fields, and which nevertheless is not confused with an undifferentiated depth. (Deleuze 1990: 102)

> But the question of knowing how the transcendental field is to be determined is very complex. It seems impossible to endow it, in the Kantian manner, with the personal form of an I…. But it is no more possible to preserve for it the form of consciousness, even if [with Husserl] we define this impersonal consciousness by means of pure intentionalities and retentions, which still presuppose centers of individuation. (Deleuze 1990: 105)

<u>Introduction</u>

Why a "logic of sense"? Deleuze concedes this much to Kant: propositions disclose a clue about the structure of the transcendental field.[40] Yet Kant's own "derivation" of this transcendental field from propositions is seriously flawed. Most distressingly, his inquiry into it is insufficiently critical. To overcome this insufficiency, Deleuze must identify a very different "clue" into this field than the one identified by Kant, namely, the table of judgments. Kant's nomination of the table of judgments as *the* "clue" ensured that his transcendental field would conform with the canons of classical logic and the tenets of representational thought. But, as we will see, this nomination is infected by a subtle kind of dogmatism.[41] To correct this, we must trace and, above all, affirm the "logic of sense"

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[40] This is not too surprising: our access to *a priori* truths about nature impels both of their inquiries. How can we generate propositions that seem to transcend every one of our limitations? What could ground them? These propositions seem to be true in advance of every praxis. They disrupt any obvious reduction of theory to praxis. Is not their prescriptive and binding character orthogonal to the provisional, improvisatory, and embedded character of praxis? It could be said that the temporality of these propositions differs from the temporality of empirical propositions. What then is their origin? How do they preserve their force? Kant delineates a transcendental field that grounds the synthesis of these propositions.

[41] Hegel too objects that Kant bases "his account of the categories on various kinds of judgment that he *finds* in formal logic after they had themselves been *found* by formal logicians in thought. It is this reliance on what he *assumes* thought to be and on what he *finds* in formal logic, not any alleged recourse to empirical, sensuous experience, that makes Kant's procedure in Hegel's eyes 'empirical'" (Houlgate 2006: 15).

operating already in our midst. We should pursue this logic—which might reveal the conditions not just of propositions but of all things—only after jettisoning the ballasts that kept Kant to the shallows: we will not orient ourselves by classical logic, empirical consciousness, or any form of identity. Kant ties his critique to these moorings before even setting out. "Being critical" cannot mean assuming that classical logic is the only kind of logic or that the transcendental field must be coupled to the form of subjectivity. It is not even clear in what sense this logic of sense will be a "logic" at all! It may deviate sharply from all existing formalizations of logic.[42]

Deleuze does not expect to index his transcendental logic to a fixed table of categories. It may, in its immanent movement, *happen upon* one, but we do not tilt things towards it. Besides setting himself against any philosophy that subordinates thought to judgment or that annuls in advance a "nomadic distribution" of categories in favor of a "sedentary" one (like the fixed table of judgments), Deleuze takes very seriously this condition of being medial: obscure mutations precede us, troubling metamorphoses await us—none for the better or for the worse: they simply are. If there is no more fixity in a life than there is in the milieux conditioning it, how could its conditions not be uniquely variable? No fixed, universal categories and an invariant "transcendental subject": only actual milieux that, once captured by virtual problems, occasion local geneses of transcendental fields that secrete novel sets of categories, each articulating their own intrinsic logic. There are at least two "logics" here: the **primary** logic of genesis and the **secondary** "formal logics" that, as functions of variable sets of categories, supervene upon this genesis. We are amply familiar with the latter: they are the systems of formal logic. The primary logic of genesis (or, equivalently, the logic of expression)

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[42] We should expect that a logic erupting always and only in the middle of things to be locally scarred and endlessly variable. And indeed it is! This "condition of being medial" marks even the logic that accompanies it.

does not just determine the becoming of formal logical systems, it leaves its mark upon them: formal systems must maintain a certain openness, they must not calcify completely—their incompleteness is a mark of their debt to this superior genetic logic. Every formal system is not just *open* to (or in advance of) other systems but actively solicits them to envelop it—and such envelopment can alter profoundly its character. Incompleteness is a birth-mark. It says: *No formal system that's not an inadequate bolus of slowed flux!* If the secondary logics accompanying the various sets of categories are captured well by *topos logic*, then Deleuze will have accomplished the dream of "grounding" formal "subjective logic" in a superior but implicit "objective logic" (as we will see, Deleuze upends severely the metaphorics of "ground"). We can *assume* that the primary logic of genesis resembles secondary formal logics only on pains of dogmatism! Deleuze's "critical correction" of Kant hinges on rejecting this assumption: the ground does not resemble the grounded.

As a physicist asks "*What is the geometry for this region of spacetime? How is it mutating?*" so a transcendental Spinozist asks "*What variably mutating logic attends this patch of becoming?*" If formal logics "resemble" one another—topos logic, as a higher-order formalization of this "space of all logical systems", constructs a means of passing from one system to another—they do not resemble the genetic logic that grounds them: it is not so easy to pass from the former to the latter. How then to investigate this obscure ground? What will be our "clue" into it? Do any "symmetries" of the transcendental field constrain the genesis of these sets of categories that give rise to formal logics? Do any "topological invariants" constrain the genesis of local sets of categories?[43] Formal logic has long been suspected of being parasitic. If it is or, worse, if it is parasitic upon an unmanageable flux, then

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[43] A topological invariant is often an obstruction: it obstructs, for example, any attempt to equip an even-dimensional sphere with a nowhere-vanishing vector field.

it may be more variable, local, and multitudinous than ever suspected. The wild proliferation of formal systems will be no longer a scandal. Deleuze's logic of sense privileges this (primary) logic of genesis rather than any of the "formal logics" specific to a set of categories.[44] Every set of categories implicates a superior "problem" that refuses to exempt it from further disruption. Though wildly turbulent, the problem, no less than its transcendental fields, has structure; capturing this structure requires new tools. A Riemannian geometry of sufficient reason should expect nothing less.[45]

It has long been a dream of philosophy to "read off" the canons of logic from what is, if not objective, then "other than" logic—something like "Nature" or "the continuum". If we could find a logical law that was also an ontological law, formulate it correctly, draw from it the rules of deduction, deduce from this complex still other logical laws, then we would have "grounded" formal logic in a non-logical domain. We would free ourselves from every kind of circularity! The light of one law still lures partisans of this project: that of non-contradiction. That a being is never simultaneously itself and not itself—this seems to be an *objective* law. Is it so different from the *logical* law that a proposition is never simultaneously true and false? Are these two formulations (the objective and the logical) not just two expressions of this singly ambivalent law? If we can "deduce" (by what means?) the other laws of logic from the law of non-contradiction, does this ground formal logic in ontology? Hegel and Deleuze contend that this dream is just that: a dream. We will *never* be able to "read off" formal logic from the objective world. Yet rather than propose a pure formalism,

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[44] If the chance conjunction of a problem and a milieu articulates a kind of "objective logic", then the categories secreted by this conjunction constitute a kind of "subjective logic". Though objective logic occasions subjective logic, the latter does not reduce to the former. It has a quantum of autonomy, even as it bears the marks of its genesis: an intrinsically-generated subjective logic remains unique only because it is indexed to its local genesis.

[45] Deleuze's attempt to construct a logic of problems is a bit paradoxical: it would be a general (but not formal, since it has "content") logic of emphatically local processes!

where logic would just be the empty manipulation of symbols, Hegel and Deleuze recast (in different ways) what it would mean "to ground" logic.[46] For both, though formal logic (or "subjective logic") is parasitic upon the "objective logic" of reality, the two differ in kind: the former no more resembles the latter than it springs with it from a single root. For Deleuze, objective and subjective logic co-constitute one another; it is a reciprocal genesis, even as each "side" has a different source. Euclidean geometry, Newtonian mechanics, and classical logic are limit-cases of, respectively, Riemannian geometry, general relativity, and topos logic. Even as limit-cases, they do *not* differ in kind from other cases: classical logic does not differ in kind from intuitionistic logic. But there is a difference in kind between the logic of solutions (topos logic) and the logic of problems . Deleuze affirms the heterogeneity of the two domains as well as their reciprocal interaction.

Objective logic is inseparable from the logic of problems. Each problem has an intrinsic logic, in this sense: just as we need not embed a surface in a higher-dimensional space in order to investigate it, so we need not envelop a problem in an ambient logic in order to solve it. We will clarify this! Consider a mathematical problem: it proposes the terms of its resolution, and its resolution often requires the construction of entirely new theories. Mathematical reality is not passive matter upon which we impose an alien logic. *But*, one could object, *we "cannot possibly prove anything without using already one system of 'underlying logic' or another"* (Rodin 2014: 142). Topos theory rejects this: deductions in mathematics trace the "intrinsic topology" of the problem that animates it. The "intrinsic logic" constraining a deductive movement is a function of the problem's

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[46] "The problem of *grounding* logic remains today largely open. It becomes only more acute in the present situation when we have got hundreds formal calculi, which are offered under the brand of 'logic'. Hegel's notion of objectification of logic as a modern replacement for the traditional idea of grounding logic in metaphysics suggests a strategy for solving this problem" (Rodin 2014: 136).

intrinsic topology: "logic is a special case of [topology]" (Lawvere 1970: 329, in Rodin 2014: 137).[47]

In topos theory, deductions unfold always already in a topos (a kind of topological space). The lineaments of the topos articulate its logic. Colin McLarty, "in his presentation" of category theory, "uses from the outset a logic without the law of excluded middle, which is sound in any topos; using this basic logic he introduces categories and topoi and the notion of internal logic of a topos. Thus it turns out that the basic logic used from the beginning of the exposition can be an internal logic of any topos. This allows for developing the general theory of categories and topoi *internally* in any topos: every theorem of the general 'external' theory still holds true in every internal version of the theory" (Rodin 2014: 142–143).[48] The logic of the initial deductions *will be* a function of the intrinsic topology of a topos. That this logic—the rules for deduction—will always be "homomorphic" to the topological structure of a topos implies that logic is a part of topology. However you reason, you reason in a topos: no deduction that does not trace a topological structure. Deleuze puts it a little differently: *however you are, you're in a problem.* Like a topos, a problem has its intrinsic logic. Deleuze subordinates formal logic to the (Riemannian) geometry of problems. In part III, we will consider how this "geometrization of logic" only exacerbates Deleuze's already monstrous relation to Bergson. If problems are continuous manifolds, if logic is grounded in problems, if time is itself problematic, Deleuze will have a means of overcoming Bergson's prohibition upon using mathematics to investigate time. ∎

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[47] The "geometrization of logic", so prevalent in contemporary mathematics, upsets the "logicist" bias still stalking the philosophy of mathematics (Zalamea 2012). If no mathematician would reduce math to logic, no philosopher of mathematics should indluge the "logicist" tendency to orient the philosophy of mathematics around logic.

[48] With categorial logic, "Lawvere achieves an *internalization of logic* with respect to appropriate categories in the sense that basic logical concepts such as propositional functions, logical connectives, quantifiers, truth-values, theories and models, are understood as category-theoretic constructions" (Rodin 2014: 136).

It is the *unifying* nature of judgments, Kant insists, that provides the clearest clue into the transcendental field. Deleuze counters: it is the *problematic* nature of sense. How is sense problematic? Even if it is, how is this a "clue" into the structure of transcendental fields? Before we can prove that sense is problematic, we will have to prove that it is paradoxical. It is the paradoxical character of sense that suggests that transcendental fields are problematic—they are the "surfaces" (or embedded submanifolds) of virtual problems. If Deleuze perceives this field through the chaotically-ramifying lens of sense, not Kant's unifying lens of judgment, it is nonetheless Kant who suggests that problems roil every milieu. Kant, seeking an immanent cause for reason's fatal tendency to stray beyond the domain of all possible experience, identifies the problems haunting every inferential act. Even if spectral, the effects of these problems are quite concrete: they drive the movements of reason like the tides of an aquifer a spring. Where in inferential activity do we encounter these problems? There is no syllogism that does not stage inexorably an encounter with a generative paradox. That it is generative implies that it is no toy paradox but a potent problem disclosing an aspect of the unconditioned. And it is the unconditioned that tempts reason beyond itself. Why? The problematic abyss of the unconditioned will always be covered—by an Idea. Kant identifies three such Ideas: god, soul, and world, each corresponding to an aspect of the unconditioned disclosed by one of three kinds of inferential regress. These Ideas have a curious status: they exercise reason, but they are utterly unlike concepts. Concepts refer to objects of possible experience, Ideas do not: the referent of an Idea is never an object of possible experience. Who can *experience* the world in its totality? No one—so it's not an object of possible experience. Yet it cannot be said that Ideas are mere phantoms, for they are efficacious. If they are illusions, they are nonetheless *regulative* illusions: conceive of

Ideas "not as constitutive principles for the extension of our cognition to more objects than experience can give, but as regulative principles for the systematic unity of the manifold of empirical cognition in general, through which this cognition, within its proper boundaries, is cultivated and corrected more than could happen without such Ideas, through the mere use of the principles of understanding" (A 671/B 699).[49] They even have a referent: Ideas refer to the *problem* posed by the inferential regress. Ideas index a problematic encounter with the unconditioned. A problem expresses an aspect of the unconditioned that will be implicated by an Idea. If problems are inseparable from an aspect of an unconditioned ground (equivalently, a "genetic surface"), might they just be this ground? Is this ground expressed exhaustively by these *three* problems? Why do all three involve forms of identity and unity (*the* world, *one* god, *my* soul)? Does this express a dogmatic commitment to a classical logic? an uncritical capitulation to a regime of representation that prioritizes the forms of identity above all else?

Kant's discovery that paradoxes pose (problematic) Ideas anticipates Deleuze's discovery that (paradoxical) sense expresses the problematic ground of all things. Deleuze steals a key thesis from Kant: the structure of what discloses an aspect of the unconditioned is a clue to the structure of the transcendental field of conditions.[50] The curious dynamism of this abyssal "ground"—a ground that generates the Ideas that structure rational inquiry—is a better clue into the transcendental field than the table of judgments. The genetic character of the Ideas is irresistible for those who, accepting Kant's critical turn but not his execution of it, wish to displace a perspective of conditioning with

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[49] The Idea of the "world in its totality" regulates scientific inquiry. But even this regulative character bears the marks of Kant's bias towards the forms of unity: the Idea of the world *unifies* (or, minimally, provides a unifying horizon for) all of the disparate empirical inquiries into the physical world (A 693/B 721).

[50] Deleuze identifies this "unconditioned ground" with "virtual problems".

one of genesis. It is a justly recurrent critique: Kant did not attend to the genesis of the

transcendental field. He simply *decided* upon certain of its characteristics. *Maimon, Schelling, and*

Hegel all identified aspects of the transcendental system whose genesis should have been traced: respectively,

the opposition of the sensibility and the understanding, the transcendental subject, and the categories.[51]

These critiques are not cosmetic. All three are convinced (correctly) that Kant could not

accommodate them without altering profoundly the scope, form, and method of transcendental

philosophy. A genetic perspective would have to satisfy these critiques. This is precisely what Deleuze

attempts: transcendental Spinozism traces the genesis of the transcendental complex.[52]

There is a deeper reason for Deleuze's displacement of Kant's "clue" for another: a neglect of

the labyrinth of the continuum.[53] Kant's neglect of this labyrinth condemns him to a dogmatism so

subtle that it pervades his entire system. Kant asserts that the manifold of intuition forms an

"absolute unity" at every moment (A 99).[54] The "I think" that accompanies the manifold of

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[51] "Both Solomon Maimon and Gilles Deleuze argue that Kant needs a concept of immanent genesis, not to address specific problems in ontology, epistemology, or philosophy of nature, but to make transcendental idealism what it should be: an exercise that is properly transcendental and appropriately idealistic" (Lord 2011: 105). We should add Bergson to this list: "It is not enough to determine, by careful analysis, the categories of thought; we must engender them" (Bergson 1983: 207). The genesis of categories is ongoing: "If, on the contrary, evolution is a creation unceasingly renewed, it creates, as it goes on, not only the forms of life, but the ideas that will enable the intellect to understand it, the terms which will serve to express it. That is to say that its future overflows its present, and can not be sketched out therein in an idea" (Bergson 1983: 103).

[52] This is comparable to Schelling's program: "naturephilosophy 'constructs' (IV, 84) activity in mind *from* the primacy of activity in nature: 'The acts which are derived in the theoretical part of idealism are acts the simple powers of which exist in nature and are developed in the philosophy of nature' (IV, 92)" (Grant 2006: 108). Why would Deleuze associate a genetic perspective with Spinoza? Isn't Spinoza an arch-dogmatist, the *Ethics* the exact opposite of a genetic text? Is there no one else Deleuze could enlist to preside over this effort? Since his earliest work on genetic definitions, Spinoza pursued a genetic perspective. Indeed, the *Ethics* begins not with dogmatic definitions but with the intrinsic genesis of an immanent substance.

[53] Part III considers the structure of durative continuity. Only then will the study of what emerges in time, whether actual or virtual, be united with the study of what emerges from continuous manifolds (virtual problems). That Kant addresses the "law of continuity" (A 660/B 688) does not free him of this charge of neglect.

[54] For Allison, this assertion is a *principle*: "this principle states that the components of a complex thought must be connected in such a way as to allow for the possibility of their ascription to a single thinking subject, which entails that they constitute a synthetic unity" (Allison 2004: 164). But presupposing the "unity of experience… as the guiding thread

intuition expresses a unity that precedes every synthetic act of unification by the understanding. This

primordial unity of apperception is a condition for the subsequent synthesis of an object of

experience by the understanding.[55] But the unity of the "I think" differs in kind from the synthetic

unity of an object: "That the I of apperception, consequently in every thought, is a *single* thing that

cannot be resolved into a plurality of subjects, and hence a logically simple subject, lies already in the

concept of thinking, and is consequently an analytic proposition; but that does not signify that the

thinking I is a simple substance, which would be a synthetic proposition" (B 407–408, emphasis

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of the deduction" has grave consequences: "The imposition of unity suspends the possibility of prior, tacitly occurring
cognitive processes that would have to be described using the vocabulary of a transcendental psychology and signals that
the matter to be mediated in the area of synthesis and schematism is undertaken after the fact based on abstract
justification.... Husserl, who, just like Kant, rejects any kind of mingling of the transcendental and the empirical, believes
nevertheless that he can detect in Kantian thought an insidious dependency on the psychology of Locke and Hume. In
his opinion Kant regards the empirical all too traditionally (following classical empiricism)" (Rölli 2016: 102). Indeed,
"the processes of becoming precede their results, which in turn distort them, which is why the results as such need to be
made thematic and questioned regarding their origin" (Rölli 2016: 103). But Husserl too fails: he genuflects before a
dogmatic image of representational thought.
[55] In the B Deduction, "Kant is inclined to identify the original unity of the manifold of pure intuition with the equally
original unity of synthetic apperception.... Under the title 'synthesis' Kant brings together a series of quite different
phenomena without differentiating them sufficiently from one another" (Heidegger 1997: 95). He differentiates
amongst three kinds of synthesis: insofar as space and time are "*purely intuitea*, their specific unity, their *wholeness, is
given a priori*. The one with them—the 'syn'—is not first produced afterward, but this one is *given* with space and time
and characterizes what they are essentially. That is what we call the onefold which is especially peculiar to space and time:
'syn*dosis*.' In introducing this term, we at the same time referred to and differentiated 'syn—*thesis*' and characterized it as
the spontaneous unification which is accomplished by understanding. Moreover, we already pointed out that syndosis
and synthesis must obviously be unified—in a manner of unifying that was not defined—in the whole of knowledge
which is a unification of intuition and thinking.... The term synthesis designates all these ways of unification and has an
ominous ambiguity" (Heidegger 1997: 180). Synthesis pertains of course to synthetic *a priori* judgments. Though
synthesized purely of the understanding, they must somehow be grounded in sensibility, since these judgments have a
relation to objects. "Unlike synthesis, which always acts upon an essentially heterogeneous manifold, syndosis brings the
purely homogeneous manifolds of space and time into a unitary intuition. This syndotic unity, as proceeding from an
original whole, does not depend on concepts of any kind, so that, by substituting the more exact 'syndosis' for Kant's
misleading word 'synthesis', we can say that this syndosis and its unity belong to space and time and not to the concept
of the understanding. Syndosis is a combination that does not involve categories. We can indeed say with greater justice,
Heidegger claims, that the synthetic unity of concepts, of categories, themselves presupposes the original syndotic unity"
(Weatherson 2002: 51–52). That there is an isomorphic relation between the syntheses of the understanding (codified
exhaustively by the categories) and the syndoses of intuition grounds the categories in intuition. But, Deleuze would
object, an isomorphic relation is an extrinsic relation. If we are to ground them, we require an intrinsic relation.
Heidegger's objection to Kant's use of "synthesis" could be leveled also at his use of "continuous." With Kant, synthesis
is a continuous process grounded in prior unities that are themselves continuous wholes. But how we are to conceive of
this continuity is unclear.

mine). "The I is a simple substance" is a synthetic judgment because it is "synthesized" by means of the categories. Each category presides over its own kind of synthesis. Categorial synthesis is grounded in the more primordial syntheses of apperception and of sensibility. The outer form of sensible intuition (space) and the inner form of sensible intuition (time) are both unitary. Each experience is *in* a single space and *at* a single time; and "these definite individual spaces and times are limitations of the *whole* space or the *whole* time" (Heidegger 1997: 180). The spatiality and temporality of an experience presupposes, respectively, a homogeneously continuous space and a homogeneously continuous time. Is the continuity of space the same as that of time? If each is homogeneous, what distinguishes them? Can this continuity be decomposed into unitary "parts"? Can experience declare itself "unitary" amidst these continuous wholes? Two objections: first, Leibniz (and many others) has argued that it is not a trivial matter to determine how something that is continuous can be thought of as a whole. For Kant, since every intuition presupposes the unities of space and time, every intuition involves these continuous wholes; the forms of space and time accompany every experience. Second, Kant assumes that this outer form of space and inner form of time will not upset the unitary character of experience. Indeed, these forms help to constitute it. But is the continuity of space and the continuity of time really so reconcilable? How do these two kinds of continuity interact?[56] Has he resolved this labyrinth of the composition of the continuum? The different ways of composing the forms of space and time ground the different ways of synthesizing the intuitive manifold into objects and propositions. For the categories—which govern the synthesis of sensations into objects— are grounded in the various ways of "manipulating" a pure spatio-temporal manifold—that is, a

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[56] Bergson insists that the extensive continuity of space and the intensive continuity of duration differ in kind. Not only are these multiplicities mutually irreducible, but they have nothing in common.

manifold emptied of all empirical content.[57] Put differently, each category reflects a way of "bending

and stretching" a pure manifold. Kant grounds the synthesis of sensations into objects in the

"manipulated" forms of space and time. But temporal continuity might disrupt these synthetic acts

and preempt unification. Further, grounding synthetic acts in continuous forms might disrupt the

unmarked migration of classical logic from the understanding to the sensibility. Classical logic,

Brouwer would insist, is inappropriate for continuous wholes. That this manifold of intuition is

continuous might deprive Kant of the right to use classical logic as a "clue" into the structure of the

transcendental field: continuity, involved as it is in the synthesis of objects from sensations, chases

classical logic from the field.[58] Nor can we the genesis of the forms of space and time themselves!

What logic presides over their genesis? One cannot characterize this "genetic logic" as intuitionistic

or non-classical. The ground does not resemble the grounded, and so the logic constraining the

genesis of the ground does not resemble the logic constraining the genesis of the grounded—that is,

the synthesis of objects in experience. "Genetic logic" differs in kind from any of the formal systems

of topos logic. It is neither classical nor intuitionist. One thing is clear: this genetic "logic of sense"

must be a "logic of continuity", whatever that is!

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[57] Kant's attempt to ground the categories in intuition remains extrinsic. Worse still, it requires him to presuppose that the continuous manifolds of space and time are *homogeneous unities*—doubly wrong! Even after distinguishing the syntheses of the categories in the understanding from the "syndoses" of the pure temporal manifold in intuition, we encounter the same assumption: "When Kant says that the form of intuition gives 'mere manifold' he does not mean [alas!] that it lacks all unity, but rather that it is yet unsullied by all conceptual determinations. This *conceptual* unity comes later, through *formal* intuition. The unity of formal intuitions, which gives us determinate times and spaces, presupposes the original syndotic unity [of the pure manifold of time]" (Weatherson 2002: 52). Neither Kant nor Heidegger perceive the homogeneity and unity of the temporal manifold as a problem. Deleuze convicts both of them on this point.

[58] This is not to say that there is something defective about classical logic, just that as a local, empirical logic it is not a transcendental logic. But a shift to a genetic understanding of the transcendental field may disrupt even the primacy of classical logic for empirical inquiry. The logic of sense attacks the global extrapolation of classical logic.

Why lavish all of this attention on sense? Must more arcana be grafted onto the foul trunk of the philosophy of language? If so, it will not be by us. Sense provides the first glimpse of a new kind of ground, one that subordinates neither itself nor its productions to the forms of identity or to already-catalogued means of categorization. Refusing to prioritize identity suspends also the rights of resemblance: no more can we assume that grounded resembles ground, conditioned their conditions, actual virtual, extensive intensive.[59] With identity deposed, the ground that swims into view is not a fixed ground. Like Spinoza's substance, it is a verb not a noun: auto-productive, continuously fulgurating, each change changing the whole, corrosive.

The sense of a proposition is the first clue that propositions necessarily implicate paradoxical "spaces". This space dissolves their apparently definite character by subjecting them to a "logic" entirely different from propositional logic: the latter becomes an effect of the former. Further, this inquiry into sense discloses the problematic character of this paradoxical space, suggesting that problems ground all things. That this dimension of sense is ubiquitous implies that the threat of metamorphosis is ubiquitous—to Proust's dismay, although only its ubiquity could sharpen that twilit vigilance of insomnia into such pulsing prose. Sense bears within itself the metamorphic charge of virtual problems. Just as significantly, the inquiry into sense indicates how, absent any zero point

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[59] From the beginning, the asymmetry between extensity and intensity installs itself at the heart of Bergson's *oeuvre*. He argues that invariants of the extensive domain cannot be transposed uncritically into the intensive domain. One example: "although the extensive cause varies continuously, the changes in the [intensive] sensation of color are discontinuous, passing from one shade to the other shade" (Bergson 2001: 57). The continuity of phenomena cannot be transposed onto lived states. If these latter change discontinuously, they may harbor a deeper continuity—a continuity that differs in kind from the continuity of phenomena. It may turn out that some transposition from the extensive to the intensive is "lawful", but we cannot assume so at the outset—unless we've absolutized the form of identity and the rights of resemblance. Bergson is clear: "there is no point of contact between the unextended and the extended, between quality and quantity. We can interpret the one by the other, set up the one as the equivalent of the other; but sooner or later, at the beginning or at the end, we shall have to recognize the conventional [that is, dogmatic] character of this assimilation" (Bergson 2001: 70). This refusal of the rights of resemblance, this resistance to the centrality of the form of identity, this disruption of the possibility of facile transposition, grounds Bergson's radicality.

or origin, what comes to be does so necessarily . Traditionally, necessity has depended upon, if not the necessity, then the fixity of its ground (think of axiomatic systems). But Deleuze does not just resist the temptation to fix the ground, he undermines any attempt to do so. Everything is marked by this condition of being medial, *especially the ground*: nothing is not a provisional accretion cobbled together in the face of certain metamorphosis. The problem then is this: How can anything come to be necessarily when nothing is ever initial, not even the ground? How can there be intrinsic processes when everything is irremediably late?

If we refuse the regimes of resemblance, how to pass from paradoxical sense to problematic ground? The passage is fraught enough to require an entire book—and not just any book: one that resists the smooth linearity of most texts. Only as deliberately jagged and even a book as *Logic of Sense* could cut a path from sense to problems. The book's non-linear (but precise) sequence of series fractures out of the perplexed embedding of sense in problems. If *Difference and Repetition* skirted this passage, it affirms its aim: to establish the logic of sense as a transcendental logic. Kant's transcendental logic concerns the relation of thought to objects *prior to* any actual encounter with objects. Though not a purely formal logic, since it is *not* indifferent to its contents, transcendental logic is still an *a priori* logic (Heidegger 1997: 126).[60] For Kant, all logic is normative: to be a logic is to specify how one *ought* to proceed. General logic "contains the absolutely necessary rules of thinking, without which no use of the understanding takes place, and it therefore concerns these rules without regard to the difference of the objects to which it may be directed" (A 52/B 76). Now

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[60] In Heidegger's interpretation of Kant, general logic "treats of the mere unifying function of thought," transcendental logic "of the relation of thought to objects" (Weatherson 2002: 69). "Transcendental knowledge [unveils] precisely this pure, *a priori* relation to objects. However, we cannot say that all *a priori* knowledge is transcendental. Only that *a priori* knowledge that makes knowledge possible [by maintaining an *a priori* relation to objects] is to be called transcendental. Some kinds of *a priori* knowledge, such as geometry, do not do this" (Weatherson 2002: 70).

"transcendental logic supplies norms for 'the pure thinking *of an object,*' not norms for thought *as such.* Accordingly, it is a *special* logic" rather than a *general* logic (MacFarlane 2002: 49, quoting A 55/B 80). Transcendental logic determines the form that objects will take, specifying what it is for an object to be an object.[61] But it must also determine *how* such specifications are binding—both for *our* experience of objects and for the *objects* of our experience: "the possibility of such an anticipation of determinations of objects prior to all experience, as well as the meaning and legitimacy of such an anticipation, are the basic problem of transcendental logic" (Heidegger 1997: 133).[62] This determination of objects prior to any actual encounter with objects is the problem of "transcendence." The peculiarity of transcendence—which animates the derivative but no less vexing problem of synthetic *a priori* judgments—can be encapsulated thusly: though what determines what it will mean for an object to be an object is "purely" of thought, it is binding for what is decidedly *not* of thought, namely, objects.[63] Kant and Heidegger inquire into the ground of this improbable accord. Where Kant pretends to alight upon an exhaustive list of conditions, Heidegger discerns still deeper strata—which imply (confusingly) that conditions are as "historical" as they are irrevocable. Rather than an exhaustive list of conditions or the conditions characteristic of a historical epoch,

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[61] More generally, "*transcendental knowledge is ontological knowledge,* i.e., *a priori* knowledge of the ontological constitution of beings," that is, of the being of beings (Heidegger 1997: 127).

[62] For Kant, categories compel both appearances to obey certain forms and subjects to assent to the necessary truth of synthetic *a priori* propositions. "Categories are concepts that prescribe laws *a priori* to appearances, thus to nature as the sum total of all appearances (*natura materialiter spectata* [nature regarded materially]), and, since they are not derived from nature and do not follow it as their pattern (for they would otherwise be merely empirical), the question now arises how it is to be conceived that nature must follow them, i.e., **how** they can determine *a priori* the combination of the manifold of nature without deriving from the latter" (B 163, emphasis added). Categories fulfill two functions: to ground the form of objects and to inform necessary propositions. It is the task of the transcendental deduction to specify "how" they do so.

[63] "In this thinking of objects which is pure and independent of experience there is a knowledge which we do not owe to objects by first drawing the determinateness from them empirically. Accordingly the theme of a logic of this pure thinking would be the *origin* of this determinateness, which is independent of experience and not taken first from objects" (Heidegger 1997: 126). What is curious is that these objects are *not* "in us" in any sense. They "transcend" us. Yet they are bound by a logic of pure thought. What grounds this curious coincidence?

Deleuze discerns still deeper strata of the transcendental field: problems.[64] If Dasein secretes the conditions that determine what it is for an object to be an object, problems secrete the conditions that determine what it is for a solution to be a solution. But the being of problems differs from the being of Kant's transcendental subject: problems admit of provisional, local sets of conditions (variable tables of categories) while simultaneously precluding the advent of any final set of universal conditions. Problems never relinquish their right to upend a set of transcendental conditions. This perpetual "opening of the field" ensures that every consolidation of an experiential milieu will be provisional. Discursive beings embedded in a transcendental field of sense, physical beings immersed in the natural fields of biology and physics—both are provisional solutions to problematic fields. They are improvised labyrinths that—like a delta to a river or an ecosystem to a sun—attempt but fail to dissipate an overwhelming energetic influx. No less than axiomatic systems or mathematical theories, biological species emerge in and by series of linked problems. Deleuze's transcendental logic becomes a genetic logic only by becoming a logic of problems. For Deleuze, transcendental logic treats less of the *a priori* relation of thought to objects and more to the genesis of a relational nexus—one that folds within itself modes of thinking, acting, being, and becoming. Here's the progression: from the milieu of discursive thought we deduce a logic of sense, and from this descend to a logic of problems. Each thing will have posed for itself precisely the problem that only it could have solved. Its relation to a problem is its sufficient reason. Though it will have solved precisely its problem, the form of its resolution does not preexist it. That the field of solutions is open, as the compass of each solution is bound, follows respectively from the *continuity* and the *topology* of the

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[64] Deleuze accepts (with some qualifications) Heidegger's identification of transcendental logic with ontology. Heidegger's ontology "discloses in advance what is essential about the being of beings" just as Kant's transcendental logic discloses in advance what is essential for the being of the objects of experience (Heidegger 1997: 132).

transcendental field of problems. Much will hinge upon Deleuze's understanding of continuity and the topological structure of virtual problems.

Dimensions of the proposition

Deleuze distinguishes sense—this "insistent previousness evading each and every occasion"—from the three explicit "dimensions" of a proposition (Nathaniel Mackey, from Moten 2000: 30).[65] The **first dimension** of a proposition is denotation: "it is the relation of a proposition to an external state of affairs (*datum*)…. Logically, denotation has as its elements and its criterion the true and the false" (Deleuze 1990: 12–13). Sense exceeds denotation: a proposition that fails to denote may still have a sense. "That Anglo-American philosopher is insightful" has a sense but no denotation. That sense exceeds denotation implies already something striking about sense: a bipolar logic—one that, for example, refers every proposition "true" or "false"—is not adequate to a logic of sense. Besides sorting propositions exhaustively into a pole marked "true" and a pole marked "false", a bipolar logic will be inadequate to sense because its polar distribution is a sedentary one. The poles of this distribution are static—both in themselves and in their opposition to one another. But that sense exceeds denotation does not imply of itself that the logic of sense differs in kind from the logic of denotation. We will have to prove first that sense grounds denotation and, second, that it differs in kind from it. Since they differ in kind, the structure of the logic of denotation will not resemble that of the logic of sense.

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[65] Yes, even if it is a purely chanced occasion, its sense will have preceded it there.

The logic of denotation is a Boolean algebra. The most familiar exemplar is classical logic, which has "true" and "false" for its poles.[66] A Boolean algebra connects logical structure (operations on propositions) to set-formation structure (operations on sets). A Boolean algebra identifies "the structure shared by propositions" with the structure shared by "the subclasses of a given class" (Rodin 2014: 114). As Lawvere and Rosebrugh put it, there is a "homomorphic relation" between logical connectives (such as "and" and "or") and the operations (such as "union" and "intersection") governing "the 'mereology' of the corresponding universe of discourse" (Rodin 2014: 114, quoting Lawvere and Rosebrugh 2003: 193). Classically, this "corresponding universe" is a set-theoretical universe. For example, if the Boolean operators in a set X are the union and intersection of *subsets* of X, then the corresponding Boolean operators in its power-set $\mathcal{P}(X)$ are the (propositional) relations amongst the *elements* of $\mathcal{P}(X)$. There is a structural relation between the operations on the subsets of X and the operations on the elements of $\mathcal{P}(X)$. Thus, algebraically speaking, a power-set $\mathcal{P}(X)$ has the structure of a Boolean algebra: under inclusion, the elements of $\mathcal{P}(X)$ form a partial order. If this partial order has the structure of a Boolean algebra, its logic is classical: the codification of the classical relations of entailment amongst propositions *inherits* its structure from the Boolean structure of a set and its power-set.

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[66] "'True' and 'false' belong among those determinate notions which are held to be inert and wholly separate essences, one here and one there, each standing fixed and isolated from the other, with which it has nothing in common. Against this view it must be maintained that truth is not a minted coin that can be given and pocketed ready-made" (Hegel 1977: 22). We will consider Spinoza's critique of this "dogmatic" notion of truth and falsity. For Spinoza, even a falsehood—such as the sun being a mile away—is not simply false. It has a degree of truth. Rather than consign it to the false, Spinoza considers the confused aspect that it truthfully expresses. Spinoza, Hegel, and Deleuze all displace extrinsic conceptions of truth ("truth is a correspondence between a proposition and a thing") with intrinsic conceptions of it. Of course, they disagree about what is sufficiently intrinsic.

The denotative dimension of a proposition involves actual "states of affairs". That a Boolean algebra is adequate to this denotative dimension suggests that a Boolean algebra is adequate only to actuality, if even to that. A denotative logic is a logic of the conditioned: we should not project it upon its conditions (whatever those are).[67] If sense *conditions* denotation, we will not find the same kind of static bipolarity at the level of sense that we find at the level of denotation. If sense conditions denotation, it will be "asymmetric" with it—neither static nor bipolar. Identifying these asymmetries is crucial for constructing a logic of sense:

> This is indeed the most general problem of the logic of sense: what would be the purpose of rising from the domain of truth [or denotation] to the domain of sense, if it were only to find between sense and nonsense a relation analogous to that of the true and the false? We have already seen that it is futile to go from the conditioned to the condition in order to think of the condition in the image of the conditioned as the simple form of possibility…. The logic of sense is necessarily determined to posit between sense and nonsense an original type of intrinsic relation, a mode of co-presence. (Deleuze 1990: 68)[68]

Besides marking the passage from conditioned to condition as a fraught one, the asymmetries between the logic of denotation and that of sense preserves the autonomy of the two domains. This

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[67] It may be possible to conceive of "the set of solutions" that respond to a problems as a topos. Such a logic will not in general be classical: "the 'intrinsic' logic of a topos is in general intuitionistic" (Mac Lane 1992: 5-6).

[68] This mysterious "co-presence" is a consequence of the *continuity* of the field of sense: in this field, the whole is present in each part. An explanation for this will have to wait until we delineate a "logic of continuity".

autonomy is a crucial component for understanding the reciprocally determining relation between these mutually irreducible domains.[69]

> The realms [of sense and of denotation] interact as determining conditions for one another…. These determinations would collapse the two realms into one real one, were there not an asymmetry between the two realms, that is were there not a difference [in kind] between the relations that hold in both—otherwise the relations would become the laws that conflated the two, for example through a shared principle of non-contradiction or even a law of excluded middle. (Williams 2008: 71)

Asymmetries distinguish the transcendental field of sense from the domain of denotative propositions. They disrupt any attempt to project structures characterizing the conditioned onto the conditions.[70] It will be only in engaging more fully with Kant that we can present stronger arguments against such projection. As yet, we know neither that sense differs in kind from denotation nor that sense conditions denotation. The initial asymmetries between the two domains warn against proceeding with the assumption that the two domains will bear any relation of resemblance or of analogy. The asymmetries insist that sense be thought in its own terms rather than as a sterile projection. Here as elsewhere, we wish to conceive of something intrinsically—rather than in the image of an extrinsic domain such as that of "denotation". Conceiving intrinsically of anything, let alone sense, seems unlikely—though not as unlikely as intuiting immediately an essence

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[69] This relation of reciprocal determination is itself a condition for intrinsic genesis. In his review of Jean Hyppolite's *Logic and Existence*, Deleuze ties the problem of sense to that of intrinsic genesis (Deleuze 2003: 15–18). We expect to find between conditioning sense and its conditioned domains a relation of reciprocal determination.

[70] It is not inappropriate to invoke Curie's principle: dissymmetry generates the phenomena. Descending from condition to conditioned breaks the symmetry of the transcendental field: we pass from a ubiquitous co-presence that precludes every polarity to a well-distributed domain with two poles. Dissymmetry distinguishes between phenomena in a physical field, as it does between elements of the transcendental field (Lautman 2011: 230).

(Spinoza)! But there is hope, if of a paradoxical cast: paradoxes lurk in the dimensions of the proposition. Immersing ourselves in this ever-oscillating paradoxical *movement* might propel us somewhere new—this movement disclosing its structure along the way. It would be like immanent critique of an artwork: the enigmatic character of a work expresses its immanent tensions; immanent critique dissipates these tensions in a mimetic movement disporting the artwork's "immanent logic" upon its wake (Nicholsen 1997).

Deleuze's concept of sense generalizes Spinoza's concept of power: where (for Spinoza) a mode's power is a function of its aspect upon substance, for Deleuze a being's sense is a function of its aspect upon a problem; where (for Spinoza) a thing's power is its capacity to affect and to be affected, for Deleuze it's the "series" that it implicates and that explicate it. Every solution will have as much sense as it can bear. Its allotment of sense is a function of its aspect upon a problem: "Even if the problem is concealed by its solution, it subsists nonetheless in the Idea which relates it to its conditions and organizes the genesis of the solutions. Without this Idea, the solutions would have no *sense*" (Deleuze 1990: 54). Why are sense and problems so intimately related? That is our guiding question. A transcendental inquiry into propositions and sense discloses a relation between problems and sense. To speak elliptically for a moment: every solution determines only that aspect of the problem it attempts to resolve.[71] Though a solution determines of itself its own conditions, it is constrained in this self-determination by a problem. "How is it at once self-determining and thoroughly determined? This sounds like a paradox!" And indeed it is, though we will have cause to affirm it. A solution determines two things: its extent and its means of resolution. A certain

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[71] It does not determine all aspects of the problematic field, since such fields have an autonomy of their own.

symmetry bears upon the intrinsic genesis of the conditions underlying its extent and its means: a solution resolves only of a problem what it can perceive of it. More concretely, a subject—a species of solutions—selects exactly those conditions that allow it to do what it was always going to do: its praxis is indexed to an aspect of a problem. One is fated, but not determined: praxis dissipates errantly the force of the problem.

Classically, transcendental conditions determine both what it is for an object to be an object and for a proposition to be a proposition. To be an object of experience, a thing must satisfy certain conditions: it will have a cause, appear in space, and bear the marks of time. Similarly, a proposition will have satisfied certain conditions: prior to having a truth or even any significance, a proposition has to have a sense. With Kant, sense attains a kind of "superiority" to truth: he "stipulates the transcendental conditions for something to have a sense, that is, to be an object for us…. Whatever proposition we hold to be true, the referent of this proposition has to satisfy the transcendental conditions of sense. In this way, sense is made a superior condition of truth" (Voss 2013: 6–7).[72] Prior to determining whether it is *true* that the angles of a "square circle" sum to 2π, we must ask if "square circle" has a sense. Can a square circle be an object of experience? *No*, because it has no sense—"series" neither flow into it nor out of it (Voss 2013: 51). Thus, we cannot even ask whether it is true or false that its angles sum to 2π. We can see in this example how Kant exploits the obscurity of "sense" to pass from propositions to objects. Sense attracts Kant because it elides the

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[72] Kant insisted that a transcendental logic of sense would differ in kind from a "general logic" of propositions: general logic "abstracts from all content of cognition, that is, from any relation of it to the object, and considers only the logical form in the relation of cognitions to one another" (A 55/B 79). But a transcendental logic would "not abstract from all content of cognition; for that logic that contained merely the rules of the pure thinking of an object would exclude all those cognitions that were of empirical content. It would therefore concern the origin of our cognitions of objects insofar as that cannot be ascribed to the objects" (A 55/B 80). Transcendental logic is a special logic: it concerns only the origins of the cognition of objects. It excludes from its domain any definite cognition of an object.

differences between the "domains" of discursive experience: as much as propositions, objects have sense.

Deleuze nominates sense as "the condition of truth" (Deleuze 1990: 19). "Truth" is a part of the denotative dimension of a proposition. For Deleuze, if sense is a condition of truth, and so a condition of the denotative dimension of a proposition, it is not a condition of possibility but a genetic condition. If sense is the genetic condition of truth, sense grounds denotation. An inquiry into sense should precede any inquiry into denotative truth. We are trying to conceive of things *from* their cause. "Denotative truth" concerns the actual relations between empirical beings; we wish to trace the emergence of empirical being from its real but non-actual ground. Deleuze cannot neglect Kant's inquiry into sense, but he will not follow it: it is insufficiently genetic. Though praising Kant as "the one who discovers the prodigious domain of the transcendental," Deleuze castigates him as its first betrayer: Kant is the one who merely traces his "so-called transcendental structures from the empirical acts of psychological consciousness" (Deleuze 1994: 135).[73] It is as if Kant forgoes oceanic sentience for insular nostalgia—in effect rejoicing at the end of *Solaris*. Thusly contaminated, it is not surprising that Kant's "discovery" of the conditions only confirms what has already been decided—about what constitutes an object, about the priority of the subject, about the preeminence of classical logic, about the nature of reason. That *we* happen to descend to the transcendental field from our "subjective condition" no more binds the two—namely, field and subject—than our

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[73] "The Kantian philosophy commits this further inconsequence: it *borrows* the categories, as so-called root notions, for the *transcendental logic*, from the subjective logic in which they were adopted empirically" (Hegel 1977). Heidegger concurs: In the transcendental deduction, "the theme for investigation is *pure ontological synthesis*. But Kant proceeds so as to describe first the empirical *ontic* synthesis [in judgments] and then to carry the results over to the pure synthesis [by the categories in the understanding].... There is neither an explicit characterization of this approach nor a justification of the possibility of the simple move from observation of ontic synthesis to observation of the ontological one" (Heidegger 1997: 228).

practical dependence upon classical logic obliges the transcendental field to conform to classical logic. It may be as rare for the "intrinsic logic" of a transcendental field to be classical as it is for the intrinsic logic of a random *topos* to be Boolean or for the intrinsic curvature of a random manifold to be zero. Of course, it is not just malice: Kant was privy neither to the revolutionary changes in logic nor to those in the mathematical conception of continuity. Rather than wrongly conceived, Kant's transcendental subject is too narrowly conceived. Kant's subject is a specific case, one "solution" amongst infinitely many such solutions—and not all solutions need possess the form of the subject. This is the heart of Deleuze's critique of Kant: to seek the conditions that exhaustively determine the possible experience of an ideal, universal subject is to betray the critical enterprise.[74] Instead, seek the emergent conditions that accompany the real structure of unique occasions.

Deleuze's critique of Kant follows from these questions: What guides Kant's inquiry into sense? What "clue" leads him into the transcendental field? Does he explicate sense intrinsically? Or is this explication contaminated by extrinsic elements—such as the biases of empirical consciousness, the canons of classical logic, the familiar structures of the actual world? Too often, Deleuze contends, Kant allows the "dogmatic image of thought" to poison his inquiry into the categories with foreign bodies. Kant's fealty to this image constrains both his inquiry into the transcendental field and his final tabulation of the categories. Not surprisingly, Kant discovers in his descent to the transcendental field nothing that countermands the "eight postulates" of the dogmatic image (Deleuze 1994: 167). What is this image of thought? It emerges from the notion that thought is

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[74] Delueze does not contest Kant's importance. If, at the beginning as at the end, we remain in this experiential flux, experience can no more ground the conditions of experience than it can ground synthetic *a priori* knowledge. Forever contingent, experience cannot ground the necessity of natural knowledge. This is Hume's challenge. What can we do? Decamp to the *conditions* of experience. Though *of* every experience, these *a priori* conditions do not arise *from* experience. They have their ground elsewhere, while still being immanent.

representational. As representational, it accords with common sense and good sense—referring all differences to a primary identity.[75] For Deleuze, "good sense" countenances only what can be unequivocally *oriented*, "common sense" only what can be unequivocally *identified* (Deleuze 1994: 133). Something is positive or negative, good or bad, this or that—*there is no third!* And certainly no mutative distributions of chaotic tendencies! Distributions are always well-ordered, identifications are always unique, each thing is always and only itself. Why subordinate thought *in advance* to the stipulations of common sense and good sense? What if the transcendental field disrespects common sense and good sense? Even if not, should we consecrate the search for transcendental conditions to the tenets of good and common sense? Deleuze *refuses* to hypostasize common sense and good sense not primarily because of his perversity but because of his commitment to criticality: just as it would be dogmatic to assume that the logic of sense resembles a well-ordered Boolean algebra, so it would be dogmatic to assume that all forms of thought respect this image of thought. It is in the spirit of being sufficiently critical that we delineate this image, catalog its ubiquity, and cast it aside. True "critique operates by marking the difference between objects and their conditions, understanding [dogmatic] metaphysics as the importation of procedures which are adapted to objects into a discussion of their constitutive principles. This means that critique is primarily a philosophy of production" (Land 2012: 272). Is it so surprising that a descent to the transcendental field would

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[75] Bergson's critique of the intellect inspires Deleuze's critique of image of thought. The dogmatic image's tendency to suppress difference resembles the intellect's tendency to suppress time. Bergson explains better the tenacity of the spatializing intellect than Deleuze the tenacity of the dogmatic image. Yet it may have been a bit coarse for Bergson to condemn the intellect *in its entirety*. Deleuze separates out different images of thought precisely to preserve the possibility that there is a mode of intellection adequate to time and to continuity.

require the utter dissolution of familiar fixtures?[76] We know the fate of those who do not take seriously their *katabasis.*… For Deleuze, nothing is more important than respecting this passage from conditioned experience to the conditions of experience: *banish all elements of actual experience, you who enter!* Kant does not heed this advice: his conditions so resemble the conditioned that they are almost trivially identical. If Deleuze inscribes the transcendental and empirical domain in a plane of immanence, it is not to efface the real difference between these domains: they remain heterogeneous, preserving the difference between conditioned and conditions. Kant's uncritical fealty to elements of empirical consciousness contaminates an otherwise exemplary excursus. But how to think of conditions if not in the image of what they condition? What "clues" lead into the transcendental thicket? What will replace the transcendental subject? the categories? the Ideas? the transcendental and metaphysical deductions? Why does Deleuze define transcendental fields as problematic fields? Why are problems continuous manifolds? If Deleuze's "transcendental deduction" will establish by what right problems can be said to be the ground of all things, why does this deduction begins with an analysis of sense? *Patience!* We will answer these in time.

Deleuze advances two theses against Kant: **first**, transcendental logic is always local. There is no fixed table of categories circumscribing a domain of all possible experience; conditions are local and "plastic" rather than global and "invariant" (Voss 2013: 12).[77] For Kant, something has its sense only by conforming to a fixed set of categories. Deleuze conceives of it quite differently: far from a

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[76] It might even militate against the Boolean algebras so prized by empirical intuition: "Deleuze's own 'metaphysical deduction' [see below] will rest not on classical logic, but on the differential calculus, and will thus attempt to overthrow the double nature of the understanding as both synthesizing the manifold [of intuition] and formulating judgments [of the intellect]" (Somers-Hall 2012: 18).

[77] Occasion to occasion symmetry is broken, resisted, or reconstituted. Should we not expect the same for the conditions of occasions? At the least, one can never assume that they have the facile symmetry of classical logic. There might be a more subtle approach to the symmetries of logic: that of Girard's linear logic.

reward conferred upon a thing for conforming to the categories, sense emerges in the chance

encounter of (minimally) a sign, an enveloping milieu, the past, and various series. It is a local,

brittle thing, snatched from a field of total contestation. Why did Kant conceive of the categories as

global and invariant? The categories were the key to understanding the possibility of necessary

knowledge (synthetic *a priori* propositions). Like so many before him, Kant coupled *necessity* to

invariant universality. But this is not the only way to conceive of necessity. Following Spinoza,

Deleuze couples *necessity* to *intrinsic genesis*. A truly critical philosophy not only would discern anew

the conditions for each occasion but would refuse to expect of these conditions any anticipation of

the form of the subject. Not all conditions have their *telos* in subjectivity, not all processes their *telos*

in identity. **Second thesis** against Kant: the conditions of experience derive from the conditions of

the occasion generating the subject. Only after discerning the conditions accompanying the

occasioning genesis is it possible to discern the (derivative) conditions of subjective experience—if a

subject is *even amongst* the detritus of this genetic occasion! Far from bearing within itself so many

incipient subjects, the transcendental field is an adamantly impersonal field populated by pre-

individual singularities. Nothing about a transcendental field suggests that it is coupled *necessarily* to

a subject. We are not *deciding* dogmatically that it is *not* subjective. That decision would violate the

spirit of critique! We must project as little as possible upon the paths leading to and from the

transcendental field. Being *medial*, we do not pose as pure. Rather, we tempt poverty, projecting

upon it neither the form of the subject nor any image of impersonality:

> It seems impossible to endow [the transcendental field], in the Kantian manner, with the
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> personal form of an I, or the synthetic unity of apperception, even if this unity were to be

given universal extension. On this point, Sartre's objections are decisive. But it is no more possible to preserve for it the form of consciousness, even if we define this impersonal consciousness by means of pure intentionalities and retentions, which still presuppose centers of individuation. The error of all efforts to determine the transcendental as consciousness is that they think of the transcendental in the image of, and in the resemblance to, that which it is supposed to ground. (Deleuze 1990: 105)[78]

The transcendental field does not process "inputs" by fixed conditions. It generates variable sets of conditions that bear variably upon emergent experiential vectors. Rather than affirm the divide between phenomena and noumena, obscuring thereby how "the givens" (*data*) are given; rather than index everything to a transcendental subject, obscuring thereby how *its* structures came to be; rather than demarcate a phantasmal domain of possible experience, obscuring thereby the genesis of experience, we appeal to virtual problems: a problem will secrete immanently a transcendental field, its set of conditions, and the "real experience" it grounds (Deleuze 1994: 211).[79] Variably constrained and continuously varying trajectories generate a unique durative manifold. Taking "real duration" over "possible experience" shifts transcendental philosophy away from a perspective of conditioning and towards one of genesis: the transcendental field "forms an intrinsic genesis, not an

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[78] Heidegger prefigures Deleuze: "the project of providing a fundamental ontology through an existential analytic of Dasein is the attempt to follow a transcendental strategy without a transcendental subject" (Lafont 2015: 278). In the end, a "transcendental field" need not "refer to an object or belong to a subject" (Deleuze 2001: 25).

[79] "Naturephilosophy must therefore extend empiricism to the unconditioned precisely in order to generate nature from its *a priority* all over again. Rather than setting arbitrary limits to possible experience by deriving these limits from already *actual* experience, 'empiricism extended to the unconditioned' (III, 24; 2004: 22) recognizes that '[t]he transformations to which contemporary physics has subjected the concept of the possibility of experience warn us that it is probably the most elusive concept in transcendental philosophy'" (Grant 2006: 149, citing Vuillemin, in Förster (ed.) 1989: 247).

extrinsic conditioning" (Deleuze 1994: 154).[80] We see here a reason to resist projecting conditioned

onto conditions: allowing for the elements of empirical consciousness to determine the conditions of

experience vitiates the possibility of an intrinsic genesis of conditions. Projected conditions are sterile

after-images, totally devoid of any dynamism. Representation, resemblance, analogy—these are

inherently *extrinsic* relations: the former draws everything from an external domain, the latter two

compare mutually external objects, often superficially. Of course, there are other reasons, first, to

sacrifice transcendental philosophy to the form of the subject and, second, to elevate the regime of

representational thought over all other images of thought: "Representation isolates the body,

separates it from what it can do" (Zourabichvili 2012: 116). That Kant would prioritize

representation rhymes with his politically repressive cast: he would never concede that variable forms

of thought variably emerge, that this emergence is materially conditioned, that one never knows

"beforehand what a body or a mind can do, in a given encounter, a given arrangement, a given

combination" (Deleuze 1988a: 125). To refuse any element of this litany is to dampen the

emancipatory bent of thought, bodies, and the material collectives of which they are modulations.

To dissolve our identity, to insist on our permeability, is at one with increasing our power—that is,

our capacity to affect and to be affected: "A body is not a thing, or a substance, and does not really

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[80] For Kant, "the principle by virtue of which experience is necessarily subject to our *a priori* representations is called a 'transcendental' principle…. 'Transcendental' qualifies the principle of necessary *subjection* of what is given in experience to our *a priori* representations, and correlatively the principle of a necessary application of *a priori* representations to experience" (Deleuze 2008: 12, emphasis mine). Deleuze expands the sense of 'transcendental' to accent its capacities for *emancipation* over those of subjection. The transcendental, generating new kinds of experience, becomes an agent of metamorphosis.

have a contour; it exists only insofar as it affects and is affected, it feels and is felt" (Zourabichvili 2012: 116).[81]

Yet almost despite himself Kant forged tools to foster metamorphic emancipation. One of the most potent aspects of his philosophy—even if he tried to suppress its potency—is the centrality of time: the pure form of time grounds experience. Deleuze unveils time's magmic cast by departing from Kant on three points. Not coincidentally, all of them countenance durative *continuity*. Kant's "neglect of the labyrinth of the continuum" manifests itself in his conception of the pure form of time. Deleuze disagrees, **first**, that the manifold is accompanied necessarily by the form of the subject: not only is it not *my* manifold, but it is something that antecedes *any* imposition of identity; **second**, that it is pacific enough to admit of forms of identity and unity—that is, that it resists neither being composed into a self-identical unity nor grounding categories bent upon unification; and, **third**, that the possible "compositions" of the manifold can be cataloged exhaustively in a finite list of categories. For Kant, the categories are structurally isomorphic to the different ways of "composing" or "manipulating" the *pure* temporal manifold—that is, the manifold devoid of any sensation.[82] Grounding the categories in time grounds mathematics in time—not an image of

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[81] We will have occasion (in part III) to detail Bergson's critique of representation. Representation falsifies duration as well as bodies: "The distinct outlines which we see in an object, and which give it its individuality, are only the design of a certain kind of *influence* that we might exert on a certain point of space: it is the plan of our eventual actions that is sent back to our eyes, as though by a mirror, when we see the surfaces and edges of things. Suppress this action, and with it consequently those main directions which by perception are traced out for it in the entanglement of the real, and the individuality of the body is re-absorbed in the universal interaction which, without doubt, is reality itself" (Bergson 1983: 11).

[82] That there is a structural isomorphism between the ways of composing the pure manifold of time *in intuition* and the ways of composing an "impure" sensible manifold into objects *in the understanding* "grounds" the categories in intuition. It is delicate: these categories remain purely of the understanding, but they derive their modes of composition from the modes of composition of the intuition. Why must the categories be grounded in intuition? Synthetic *a priori* knowledge emerges from the categories. That this knowledge is necessary poses a problem: our *experience* cannot ground it, since this experience is contingent (assumption: necessity cannot arise from contingency); but it is dogmatic to project these

empirical time but the pure form of time.[83] Deleuze agrees with Heidegger: "Kant's decisive

accomplishment was to demonstrate that the basic concepts of logic, the categories, were

fundamentally related to time" (Weatherson 2002: 13). Logic and geometry, grounded in the

categories, are webbed time. But might there be ways of "composing" this pure manifold besides the

twelve listed by Kant? And what does this mean, *composing the pure manifold*? Can we conceive of it

in topological terms—as, say, a homotopic transformation? Or would it be a homeomorphism?

Here's how the categories involve time: ask yourself this: how does (physical) causality differ from

(logical) implication? Don't both name a relation of the form: given x, y follows? It is the presence of

time that distinguishes the physical relation from the logical relation.[84]

Kant's fundamental error was to misconstrue "time" and "continuity"—he underestimates

the potency of the temporal manifold. Far from evading the labyrinth of the continuum, Kant traps

himself forever within it: exit is possible only after revising radically his system. Rather than a pacific

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categories onto a "reality" outside of us. Kant's solution—that these categories are among the conditions of experience—will evoke still other problems: "since all knowledge is essentially intuition, and all thought must ultimately relate to intuition, this ground must itself be an intuition. However, since empirical intuition is already problematic, in that it relies on sensation or something external to our faculties, we must have an intuition that precedes the reception of sensation from any particular being or real of beings. We must, therefore, have a *pure, a priori* intuition" (Weatherson 2002: 41). Heidegger draws out the implicit temporal structure in the categories to emphasize the isomorphism between the pure composition of the temporal manifold and the impure composition of sensations into objects. "The distinctive thing about the Kantian categories is their *relation* to intuition. Without a necessary relation to our sensibility, the categories are mere forms of thought. We cannot have speculative knowledge [such as that of mathematical physics] through mere categories alone" (Weatherson 2002: 12). This "relation" is quite problematic. Even if there is this isomorphic relation between the categorical modes of composition in the understanding and the modes of composition of the pure manifold in intuition, Deleuze would object that an isomorphic relation is too extrinsic a relation. We would need a more intrinsic relation between the categories and pure intuition.

[83] This transcendental or, better, *virtual* time—a complex involving the pure past, problems, and transcendental fields—is "real without being actual, ideal without being abstract" (Deleuze 1994: 208).

[84] The "schemata connect the categories with time; the reason for this is that time is the only form of intuition that applies to any intuition whatsoever, even to the inner intuition we have of ourselves, whereas space applies merely to all outer intuitions. Strictly speaking, the category of causality is already a temporalized, 'schematized,' category; for if the time condition is removed, the relation of cause and effect is nothing but the logical relation of ground and consequent. The same holds for the category of substance, which is not merely the thought of a thing, but the schematized thought of a thing that endures in time" (Pluhar xxxvi, in Kant 1987).

surface, the pure form of time is a "desert" no less gnarled than weathered pine—riven by folds,

pocked by intensities, crossed by variable "transition zones", exposed utterly to the elements

(Deleuze and Parnet 2007: 11).[85] Life here is costly: indexed to an impersonal desert, it can never be

my life. A searing impersonality characterizes the "the transcendental desert of primary production":

it is "the reproduction of production as a continuum of maximum indifference" (Land 2012: 271).

A life can barely find, and never keep, its fold. This self-roiling, utterly heterogeneous durative

continuum never relinquishes its claim on its productions: this is the retribution actual beings pay to

time. Even what lacks the form of a subject is subject always to radical metamorphosis.

Impersonality, in the form of time, seeps into every one of its production: the uniquely turbulent

"rhythm" characterizing my duration expresses this congenital condition (Bergson). I am possessed

of the uniqueness of time, and not the converse—no self-identical "I" that is not the residuum of a

unique time. Though impersonal, this continuous inflection of time is more intimate to a life than

anything personal. Inhabiting every experiential fold, every bodily crevice, time is closer to me than I

am to myself. The intimacy of this impersonal durative continuum centers Deleuze's thought upon

metamorphosis. It is the key both to his power and to his critique of Kant and Heidegger. Deleuze

convicts them of neglecting the force of time. Such may be expected of those who do not take

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[85] "In each of us there is, as it were, an ascesis, in part turned against ourselves. We are deserts, but populated by tribes, flora and fauna. We pass out time in ordering these tribes, arranging them in other ways, getting rid of some and encouraging others to prosper. And all these clans, all these crowds, do not undermine the desert, which is our very ascesis; on the contrary they inhabit it, they pass through it, over it. In Guattari there has always been a sort of wild rodeo, in part directed against himself. The desert, experimentation on oneself, is our only identity, our single chance for all the combinations which inhabit us" (Deleuze and Parnet 2007: 11).

seriously the labyrinth of the continuum.[86] Who could guess what lay coiled within the simple

figures for continuity?

Let's rehearse Kant's philosophy! (Part I)

> Deleuze's position regarding critical philosophy can indeed characterize his project of
> transcendental empiricism in its entirety. It is significant that Deleuze takes as his starting
> point the *ambiguity* of Kantian thought. On the one hand it grounds the "reign of
> representation" while on the other hand it has the critical resources at its disposal which, if
> properly applied, can undermine precisely this reign.
>
> —Rölli 2016: 34

> Rather than being concerned with what happens before and after Kant (which amounts to
> the same thing),[87] we should be concerned with a precise moment within Kantianism, a
> furtive and explosive moment which is not even continued by Kant, much less by post-
> Kantianism—except, perhaps, by Holderlin…. Kant introduces a kind of disequilibrium, a
> fissure or crack in the pure Self of the "I think", *an alienation in principle*, insurmountable in
> principle: the subject can henceforth represent its own spontaneity only as that of an Other,
> and in so doing invoke a mysterious coherence in the last instance which excludes its own—
> namely, that of the world and God. A Cogito for a dissolved Self: the Self of "I think"
> includes in its essence a receptivity of intuition in relation to which *I* is already an other.[88]

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[86] There are reasons for this, some sociological: topology had not yet sorted itself clearly into a discipline.

[87] Both pre- and post-Kantian philosophy is marked by the predominance of *iaentity*. It matters little whether the prevailing identity is that of God or Self: difference is obscured, continuity inconceivable, genesis unobtainable.

[88] Daniela Voss provides an exemplary gloss: "The fracture or crack in the 'I' is produced by the pure and empty form of time. This means that I experience myself, i.e. my feelings, thoughts, actions and bodily sensations, etc., always under the condition of time, which is the interior form of receptivity. But the synthesis of all these different representations within the unity of consciousness is performed by the transcendental I, or the 'I think' as the transcendental form of apperception. Phrased more precisely, the I affects itself under the form of time. The remarkable outcome of this kind of auto-affection is that the difference between being and thought, or matter and form, is *interiorisea*. Deleuze refers to this establishment of internal difference as the moment of 'discovery of the transcendental, the element of the Copernican Revolution'. A transcendental difference separates the a priori syntheses of the 'I think' from the empirical, psychological self" (Voss 2013: 215–216, quoting Deleuze 1994: 86). This scheme "incorporates all the power of a differential unconscious, an unconscious of pure thought which internalizes the difference between the determinable Self and the determining I, and injects into thought as such something unthought, without which its operation would always remain impossible and empty" (Deleuze 1994: 174). "It is incomprehensible only from the point of view of a common sense or that of an exercise traced from the empirical that, for example, thought should find within itself something which it *cannot* think, something which is both unthinkable and that which must be thought" (Deleuze 1994: 192). The pure form of time does not resemble at all "successive" psychological time. In part III, it becomes the multiplicitous,

I.

Kant seeks the *a priori* forms that condition both the reception of sensations and the syntheses of sensations into objects. Already it seems curious—why suspect that *a priori* forms "underlie" so variable a thing as receptivity? And why distinguish between the reception of sensations and the synthesis of sensations into objects? What manner of extravagance is this? Isn't reception already the reception of objects? We'll answer these questions in time. Let's fix the terminology: the *a priori* forms that condition reception are the forms of sensibility. There are only two such forms: Space and Time. They make the manifold of intuition a spatio-temporal manifold. At the level of sensibility, there are no objects: "I" have only "my" manifold of "spatio-temporal" intuitions. The injection of the "I" is not trivial: Deleuze critiques Kant depends for coupling this "I" to the spatio-temporal manifold. It betrays a dogmatic decision about the transcendental field: it not only admits of a "form of identity" such as the "I" but cannot be conceived without it. Deleuze contests both of these assumptions. Back to the genesis of experience: once it becomes a spatio-temporal manifold (coupled to the "I"), it is shipped off to the next processor: the understanding. Now the *a priori* forms of the understanding—the categories—synthesize the manifold of intuition into the objects of experience. For Kant, every experience of objects involves the forms of the understanding. Crucially, the experience of objects presupposes the *a priori* forms of sensibility: so experience involves two kinds of *a priori* forms—those of the sensibility and those of the understanding. It is in this sense that every experience "must ultimately be related to intuitions, and thus to sensibility, since there is no other

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impersonal, pure past—a time defined not by actual succession but by virtual coexistence. If time unfolds continuously, it is a nowhere-uniform continuity (see the Prologue). It is labyrinthine. That the pure form of time is *empty* allows us to evade the need to posit a "passive" medium upon which the active form of time imposes itself. Its emptiness erases the need to posit any substrate. Logic is knit of the innumerably many modulations of the form of time.

way in which objects can be given to us" (A 19/B 33). We are finite, situated beings.[89] Kant maps

the relation between these two *a priori* "forms", that of outer sense and inner sense. But, for Deleuze,

Kant tilts intolerably this relation towards unification and harmony. Why not exploit disunity?

exacerbate differences? pursue compositions other than harmonious ones? The *difference* between the

sensibility and the understanding; the pure *manifold* of time—these are not to be harmoniously

resolved or kindly pacified but ruthlessly exploited. (In part III, we will argue that time—whether

personal, impersonal, or transcendental—is not homogeneous under *any* aspect.)

Who could object to grounding experience in intuition? Answer: *the entire philosophical

tradition.* Grounding experience in intuition indexes knowledge to intuition. This is acceptable

perhaps for practical or accidental knowledge. But what about necessary knowledge? What about

mathematical knowledge? How could it be indexed to something local and accidental?[90] These

questions animate Kant's framing of the problem of synthetic *a priori* judgments. These

judgments—which include mathematical theorems—spring from the categories of the

understanding. Though they do not emerge *from* empirical experience, they are binding *for* empirical

experience. What grounds their normative character? this ampliative capacity? Grounding the

experience of objects in intuition seems to conflict in two ways with our capacity to form synthetic *a

priori* judgments. First, these judgments are universal, which would seem to exceed the capacities of

finite beings. Grounding experience in intuition affirms our finitude: we intuit always and only in

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[89] The finitude of intuition "consists in the fact that what is intuited must be given to the intuition from somewhere else" (Heidegger 1997: 59). "The *mediate* process of knowing demonstrates our finitude: we are dependent upon a thing's being sensuously given, and thereafter synthesized" (Weatherson 2002: 69).
[90] "Thus the pure *a priori* object-relatedness of the functions of unification as such [*viz.*, the categories] can be grounded only in these functions as functions of *thinking* necessarily carry within themselves a *reference to intuition*, from which they *primarily* obtain their *content*" (Heidegger 1997: 171–172).

this place in *this* time. Second, since these judgments are *a priori*, they cannot be grounded in

empirical experience. And yet they bear upon the objects of empirical experience! Now, since all

thought must relate to intuition, "synthetic judgment *a priori* as synthetic must be capable of

referring to an intuition which grounds it" (Heidegger 1997: 65). What, if not empirical experience,

grounds these curious judgments? To compound the problem further, sensibility and the

understanding are distinct from one another, though the nature of this distinction is unclear. If

synthetic *a priori* judgments arise purely from the forms of the understanding, it is not clear how

they maintain a relation to objects, since any relation to objects is mediated by sensible intuition.

Kant argues that synthetic *a priori* judgments follow purely from the categories. That these

judgments relate to objects implies that the ground of the categories must involve the forms of

sensibility. And yet these categories are purely the possession of the understanding, which is

irreducibly different from the sensibility. Somehow, the categories must be "grounded in intuition"

(Heidegger 1997: 171).[91] The problem of synthetic *a priori* knowledge is preeminently the problem

of mathematical knowledge: how is it that, merely by investigating (non-empirically) the *connections*

amongst purely a *priori* elements, thought *relates* to empirical objects beyond it? Tying objective

knowledge to intuition, referring the *a priori* forms of the understanding (the categories) to the *a*

priori forms of sensibility—this disrupts the traditional answers to this question. The intrinsic

connections amongst *a priori* elements differs in kind from the extrinsic relations these elements will

have with the *a posteriori* objects of empirical experience. Necessary connections amongst *a priori*

elements relating to the coming welter of *a posteriori* objects—this cannot be accidental. But what

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[91] "Heidegger insists that in order for the categories to be directed to intuition, they must have the *origin* of their content in pure intuition, specifically in *time*" (Weatherson 2002: 82).

could ground the complicity between these two orders? As we will try to show, "the categories owe their relation to objects to their relation to time" (Weatherson 2002: 82). But what grounds logic "fractures" the self, threatening Kant's entire architectonic.[92] Deleuze exploits this fracture to turn Kant's system to different ends.

These *a priori* forms of sensibility—space and time—are independent of every experience: they are the conditions of possibility for sensible experience itself. They allow "the manifold of appearance to be intuited as ordered in certain relations" (A 20/B 34). The forms of the understanding ground the synthesis both of incoherent sensations into coherent objects and of diffuse cogitations into coherent judgments. The way that we synthesize concepts into judgments is supposed to *resemble* the way that we synthesize sensations into objects. Kant leans heavily on this relation of resemblance: since the two kinds of synthesis—that of concepts into judgments and that of sensations into objects—**resemble** one another, so must the rules governing these synthetic acts.[93] We can "derive" the *transcendental conditions* of experience from the *rules* of judgment-formation only because the two domains resemble one another. From the table of judgments, Kant "reads off" the "rules" for the table of categories. The table of categories (A 80/B 106) discloses the *a priori* concepts that operate upon the "manifold of intuition" so as to make "cognition" possible (A 78/B 103). Cognition synthesizes sensible representations in concepts: it is the act of making judgments.

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[92] Like categories, concepts are grounded in a roiling virtual milieu that lends them an autopoietic cast: "concepts refer to genetic conditions that are precursors of their conception: affects and percepts" (Rölli 2016: 214). No less than categories, "concepts possess for Deleuze a *necessity* that yet in no way excludes their *contingency* and singularity" (Rölli 2016: 215).

[93] "The same function that gives unity to the different representations *in a judgment* also gives unity to the mere synthesis of different representations *in an intuition*" (A 79/B 105). A single *function* will suffice for both syntheses. "Kant's argument for the applicability of categories to objects rests on the relation he tries to establish between *discursive* syntheses (judgments) and the syntheses of our *sensible* perceptions" (Longuenesse 1998: 6).

Concepts are essentially rules for the synthesis of objects: "to judge is *both* to unify representations by combining them in a concept … *and* to relate these same representations to an object in a manner that purports to be valid with respect to the object" (Allison 2004: 84). For Kant, syntheses are acts of unification; similarly, concepts are always in the service of unification. Deleuze's protests crackle through: if everything is a function of unification, what of difference? Why sabotage the possibility of thinking difference in itself—that is, difference without reference to identity? *especially since time introduces a* "differential rift" *into the transcendental grounds of experience*? What do Kant's decisions obscure? Are there paths that skirt identity? What if we wager *against* unity?

Judgment is doubly normative: first, the representations of a concept must conform to the categories; second, the unification of representations in a judgment must conform to the concept. This *act* of judging is adjudged (by Kant) an exemplary activity. But we know neither the extent of this capacity nor even if it is *the* preeminent capacity. Why not "finding, encountering, stealing instead of regulating, recognizing, judging" (Deleuze and Parnet 2007: 8)?[94] If, with Spinoza, we index thought to bodily dispositions and affirm that nobody knows "what a body can and cannot do," it is to resist Kant's circumscription of cognitive activity (Spinoza 2000: 280). It does not seem possible to identify the essence of thought—unless thought has been curtailed dogmatically, or essences allowed to mutate. We know little about our body, less about our power, and nothing about our ground: who could have surveyed exhaustively our capacities? Who has divined the essence of any living process? Even if we accept Kant's reduction of the understanding to the activity of judging, how do we know that judging is not a deficient and partial moment of a more potent

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[94] For Deleuze, "recognizing is the opposite of the encounter" (Deleuze and Parnet 2007: 8). Trading encountering for recognizing deprives us of the possibility of a necessary metamorphosis: necessity depends upon the encounter and recognition only arrests metamorphosis. "Experiment, never interpret" (ibid., 48).

rationality? Deleuze sets Spinoza against Kant: for Spinoza, "the power of the intellect is not determined *a priori* by conditions that would limit its activity" (Macherey 2011: 43).[95] That is not to say that it lacks every constraint: rather it constitutes locally its constraints, through its praxical orientation.[96] Its power—what it affects and what affects it—is inseparable from a unique trajectory. From this unique trajectory thought distills a unique and variable power. There is no *universal* exemplification of thought, no fixed essence—only local distillations and variable power. The act of judging does not express once and for all the essence of thought. Thinking is a lived process, bearing its own duration. And this durative continuity bears within itself a certain indeterminacy; this indeterminacy expresses itself as a resistance to being mapped exhaustively or curtailed definitively. It does not "erupt" anew so much as flit aside. Kant's surveying expeditions, final delimitations, and dogmatic impositions are so many betrayals of the critical enterprise. Instead of an intrinsic movement of thought, we find a subordination of thought to extrinsic elements. What, if not a dogmatic decision, could ground this nomination of the act of judging as "the single supreme and inner *end*" of reason (A 834/B 862, my emphasis)? Kant has not yet conducted his "critique of teleological judgment"!

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[95] If a genetic perspective would trace the genesis of the elements of a transcendental field rather than read them off of empirical consciousness, it must abandon the form of the subject. But what does that mean? For example, the *a priori* form of time can be neither indexed to nor supposed to resemble subjective time. The "form of the subject" imposes a biological *scale* on time wholly at odds with, say, a geological scale: "deep geological time defeats a priori the prospect of its appearance for any finite phenomenologizing consciousness" (Grant 2006: 6).

[96] What is supposed to be "praxis" is often not praxis at all. "Praxis" can be separated neither from the active solicitation of unimagined future praxes nor the passive perception of immensely variable currents. *Praxis cannot be reduced to present praxis.* It is unmoored, floating above the present, soliciting the metamorphoses that could inflect it definitively, wrench it into a new life. For Spinoza, praxis is a function of one's perception of Nature. We must hear in praxis a solicitation to metamorphose—to merge with a life that maintains itself in and by its aspect upon a turbulent, self-generating substance. For Deleuze, praxis is indexed to (an aspect upon) a problem—not some arbitrary milieu. A praxis worthy of the name is one that has scorned contingent historical conditions in order to be determined necessarily by a savage problematic order. Praxis refuses any fixed disposition.

Kant's table of categories "is the listing of all original pure concepts of synthesis that the understanding contains in itself *a priori*...; for by these concepts alone can it understand something in the manifold of intuition, that is, think an object for it" (A 80/B 106). The categories determine what it is to be an object of experience. That is, they determine what it is to have a sense. This table of categories "is systematically generated from a common principle, namely the faculty of judging (which is the same as the faculty for thinking), and has not arisen rhapsodically from a haphazard search for pure concepts, of the completeness of which one could never be certain" (A 81/B 106). Kant's decision to subordinate thinking to judging contaminates this "listing" of the *a priori* conditions of experience. We can see this quite concretely: that judging is a synthesizing activity inclines Kant towards selecting only those categories that ground syntheses. There will be nothing that preempts unification, nothing that disrupts orderly composition. Even if *I* (this empirical being) cannot conceive of a conceptual activity that avers synthesis, it does not follow that there are no synthesis-averse conceptual acts. Even if Kant enumerates *all* of the conditions that ground the activity of judging, there is life beyond judgment.[97] Kant might be able to prove *that* there must be *a priori* conditions. But so long as he does not know what reason or a body can do, he cannot exhaustively list these conditions. Kant's completeness proofs—for the table of categories, for the preeminence of judging—are ever forthcoming.[98]

Deleuze's transcendental inquiry begins by refusing two of Kant's dogmatic decisions: it will neither circumscribe thought nor expect to find a "sedentary" table of categories. Maybe there is an exhaustive list of conditions, maybe not. The transcendental field may remain ever open, generating,

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[97] We don't know what reason can do, we can't circumscribe its activity. It's not that we don't know *currently* what reason can do; we can never know it. Kant has consecrated the transcendental subject to the act of judging.

[98] But see Reich's *The Completeness of Kant's Table of Judgments* (not convinced).

shedding, and absorbing new conditions with new occasions. It is not just that the openness of the transcendental field *echoes* the openness of the praxical field—that would be to make the conditions resemble the conditioned. We must be delicate here:

> We cannot think of the condition in the image of the conditioned. The task of a philosophy which does not wish to fall into the traps of consciousness and the cogito is to purge the transcendental field of all resemblance. In order to remain faithful to this exigency, however, we must have something unconditioned which would be the heterogeneous synthesis of the condition in an autonomous figure binding to itself neutrality and genetic power. (Deleuze 1990: 123–124)

It will be some time before we can see that only a "virtual problem" could be this autonomous, genetic, unconditioned figure for (often discordant) syntheses.

The act of judging is no Virgil for our descent into the transcendental field. Judging neither exhausts nor exemplifies the praxes of the understanding. If, rather than liking it, one *despises* the dogmatic image of thought, there is little reason to commit the transcendental field to the concordant forms of identity. Why not set this field *against* every attempt to delimit the power of thought? That judging does not exhaust thinking suggests that the conditions for judging do not exhaust the transcendental field. Forget judging—who says that transcendental fields need be coupled to a subject at all?[99] Besides metaphysical dogmas, critique must extricate itself from the empirical conditions that crowd it at the outset. This is a more subtle and important fight. Only by ceaseless vigilance is it possible to prevent the empirical from contaminating the transcendental. To

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[99] What syntheses lie beyond subjective syntheses? What praxes solicit unanticipated dispensations of matter, that reorient radically the lives that course through it? Spinoza's *Ethics* asks the latter question. If the categories are necessary, they are so *only for a judging subject*. It may be necessary for certain praxes, just not for all praxes.

subordinate thinking to judging all but ensures that the inquiry into the transcendental field will be irremediably contaminated. Deleuze seeks a clue into the transcendental field that precludes such contamination.

II. *Abandon J.A. Wheeler's "Geometro-dynamics"?*

Kant's derivation of the forms of the understanding—as presented in the table of categories (A 80/B 106)—has always been controversial. The table of judgments (A 70/B 95) provides the famous first "clue" as to the form of the table of categories.[100] At first, the latter appears so emphatically in the image of the former that it seems a rather obvious projection.[101] But what are the grounds for this projection? Kant has an argument. Since the understanding connects concepts to judgments, it seems reasonable to suppose that the table of categories reflects what determines the formation of judgments. It is this relation between cognition and judgment that grounds Kant's decision to "read off" the *a priori* forms of the understanding—codified eventually in the table to categories—from the logical forms of judgment.[102] But we do not know that this table of judgments is complete. Kant

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[100] Heidegger dissents: the table of judgments "*is not at all the clue for discovering the origin of pure concepts of understanding*" (Heidegger 1997: 178).

[101] Bergson informs Deleuze's critique of projection. Besides decrying the projection of time onto space, Bergson provides an explanation for its prevalence: it is much easier to orient ourselves in homogeneous space, where any "division" is local (in that it does not implicate a whole that it acts upon) and stable (in that it will not be contaminated by successive states). "We introduce [space] unwittingly into our feeling of pure succession; we set our states of consciousness side by side in such a way as to perceive them simultaneously, no longer in one another, but alongside one another; in a word, we *project* time into space, we express duration in terms of extensity, and succession thus takes the form of a continuous line or a chain, the parts of which touch without penetrating one another" (Bergson 2001: 101, emphasis mine). Continuity is not here the enemy. It is just that the structure of geometrical continuity is antithetical to that of a durative continuity.

[102] "What Kant claims to display in his table of the logical forms of judgment are forms of mental activities, and the transcendental deduction of the categories consists in showing that these mental activities are necessary for any representation of an object" (Longuenesse 1998: 5). Peirce's semiotics will attempt something more general: "For Peirce, the structure of what is ultimately real is semiotic, or sign-like. At the centre of Peirce's philosophy is a structural coordination, a strict homology, between the ultimate categories of experience conceived as kinds of relation and the most basic types of signs. To the relational categories of firstness, secondness and thirdness correspond the fundamental sign-types of icon, index and symbol, respectively" (Gangle 2016: 108).

claims that "the understanding is completely exhausted and its capacity entirely measured by these

functions," but this is nothing more than a claim (A 79/B 105). Further, it is questionable whether *a*

priori forms should have such a transparently empirical origin. Kant criticizes Aristotle for just this

reason: the latter's "search for these fundamental concepts" was an empirical affair, and hence

insufficiently systematic (A 81/B 107). That Kant reads off the categories from the table of

judgments implies not just that his constitution of the transcendental field will be infected with all

manner of empirical biases but that—at a deeper level—he has forsaken the possibility of presenting

an intrinsic genesis of the categories. To displace a perspective of conditioning with one of genesis,

we must (as Hegel would insist) generate the categories intrinsically.[103]

That Kant's table of categories flaunts its empirical inspiration undermines its pretension to *a*

priori necessity. Indeed, the relations between the terms of the table of judgments and those of the

table of categories are often *analogous* relations—and analogous relations are not necessary relations.

Kant compresses the "metaphysical deduction" that would establish a necessary relation between the

two sets of functions—the first from the table of judgments, the second from the table of

categories—to a single sentence: "The same function that gives unity to the different representations

in a judgment also gives unity to the mere synthesis of different representations *in an intuition*,

which, expressed generally, is called the pure concept of understanding" (A 79/B 105).[104] A

homologous *function* (almost a functor) suffices for both syntheses: what unifies concepts in a

judgment is (homologous to) what unifies sensations into objects. This fixes the structural

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[103] Is there a repository of such geneses, besides real experience and Hegel's *Science of Logic*? Yes: poetry.
[104] The metaphysical deduction establishes *that* these rules are constitutive of the objects of judgments, the transcendental deduction will establish *how* they are so. "Kant's argument for the applicability of categories to objects rests on the relation he tries to establish between *discursive* syntheses (judgments) and the syntheses of our *sensible* perceptions" (Longuenesse 1998: 6, translation modified).

resemblance between the table of judgments and the table of categories. Kant insists that the order of experiential syntheses resembles that of judgmental syntheses: the rules for the formations of judgments express the rules for the ordering of the sensible manifold of intuition. Even if no one can *experience* the synthesis of the sensible manifold, since this synthesis is a precondition for any experience whatsoever, the rules that govern it can be discerned from the rules for ordering judgments. With the metaphysical deduction, Kant constrains severely the character of possible experience. Worse still, it imposes a structure upon durative continuity: the temporal "syndoses" in intuition resemble the syntheses of judgments in the understanding. But, as we will see in part III, durative continuity repels any extrinsic relation of resemblance: time is not homogeneous under any aspect.

For Kant, transcendental conditions are universal and invariant: they maintain their present form, bearing upon all experience for all time. These two properties of transcendental conditions—universality and invariance—are decisive for Kant's conception of the transcendental field. But they are decisive for him only because he has coupled *necessity* to *invariant universality*. Kant's critique is animated by the problem of how to ground necessary but ampliative knowledge (this is the problem of synthetic *a priori* judgments). That, for him, necessary knowledge just is universal and invariant draws him towards a static perspective (that of conditioning) and away from a genetic perspective. Transcendental conditions *fix* a domain of possible experience: if the content of experience fluctuates, its conditions do not. Why does Kant fix the condition? These transcendental conditions ground synthetic *a priori* judgments. That these judgments are invariably true implies (for Kant) that their ground must be exempt from even the most viscous mutation. However venerable it is to

couple "necessity" to "fixity" and to oppose it to "becoming", it is still dogmatic. Do we really know

so much about necessity, that we can catalog its antitheses? That Kant affirms the antithesis of

"variation" and "necessity" shields him from perceiving the need to provide an intrinsic genesis of

the categories.[105] If the transcendental field is invariant, one might expect an exemplary act—such as

judging—to disclose the ground of *all* cognition. Though an empirically-conditioned act, it is not

impossible that the rules governing it (the table of judgments) have congealed into a fixed image of

the invariant set of conditions (the table of categories) that ground all cognition.

Kant's table of categories is a "sedentary distribution"; it fixes the domain of possible

experience. If we attack Kant's *assumptions* about necessity, we reject his *use* of possibility. "Possible

experience"—a ridiculous notion! Of course, Kant had his reasons to invoke it: if the conditions of

experience were universal and invariant, they would indeed delimit an experiential domain. Since we

reject the conditional, to insist instead that conditions are local and variable, we reject the

antecedent: there is no finally delimited domain of possible experience. *But what if we let the contours*

of this domain fluctuate? Would this satisfy you? No: the notion of "possible experience" is a monstrous

pairing, a false notion, one obscenely inadequate to real experience. "Possibility" is not a correlate of

necessity; it is a parasite upon reality (the interesting relation is that between necessity and reality).

Critique should be allergic to as derivative a notion as "possibility". For "the possible" is not even a

projection of reality; it is a projection of a *consensus* about reality—nothing more than an image of

historical biases and metaphysical prejudices. Transcendental philosophy cannot be dazzled by

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[105] Reason is tempted constantly to betray the ideal of intrinsic genesis. For Hegel, mathematical proof is similarly afflicted: "The movement of mathematical proof does not belong to the object, but rather is an activity external to the matter at hand" (Hegel 1977: 24). We will have occasion to argue against this conception of the "movement" of mathematical thought. Specifically, Spinoza, Lautman, and Deleuze would disagree here with Hegel.

anything involving "the possible", whether "possible experience" or the "fitness landscape of all

possible species":[106]

> The possible is a false notion, the source of false problems. The real is supposed to resemble
>
> it. That is to say, we give ourselves a real that is readymade, preformed, pre-existent to itself,
>
> and that will pass into existence according to an order of successive limitations. Everything is
>
> already *completely given:* all of the real in the image, in the pseudo-actuality of the possible.
>
> Then the sleight of hand becomes obvious: If the real is said to resemble the possible, is this
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> not in fact because the real was expected to come about by its own means, to "project
>
> backward" a fictitious image of it, and to claim that it was possible at any time, before it
>
> happened? In fact, it is not the real that resembles the possible, it is the possible that
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> resembles the real, because it has been abstracted from the real once made, arbitrarily
>
> extracted from the real like a sterile double. Hence, we no longer understand anything either
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> of the mechanism of difference or of the mechanism of creation. (Deleuze 1988: 98)

 For his use of the possible, Deleuze convicts Kant of being insufficiently critical. To resist "the

possible" is not to reduce either experience to actual experience or physical reality to actual reality.

Resisting "the possible" is a part of Deleuze's robustly anti-reductive approach. He objects to

possibility because it is an inert projection, one that resembles actuality. In its place, we affirm a

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[106] The state spaces of Hamiltonian mechanics are not inert arrays of possible states. They are potent virtual spaces that
actively secrete actual states. The effective geometry of a state space differentiates it from the "ineffective" geometry of the
"domain of all possible experience". There is no genetic relation between the bounds of possible experience and an actual
experience. The latter simply respects the former. It occurs indifferently in the space demarcated by possible experience.
By contrast, state spaces generate actual states.

genetic virtuality, one irreducible to actuality even though it interacts ceaselessly with it.[107] Even

though it is premature to characterize "real experience", we can say this: if Kant's devotion to a

"sedentary distribution" of categories was sustained by uncritical assumptions, it is not too much to

expect that the conditions of real experience will follow a "nomadic distribution" resisting every

attempt at fixity and universality. We encounter only mutable sets migrating along variable

trajectories. A genetic perspective pursues an "immanent principle of auto-unification through a

nomadic distribution, radically distinct from fixed and sedentary distributions as conditions of the

syntheses of consciousness" (Deleuze 1990: 102). Without forgoing any of the force of necessity,

Deleuze renounces every pretension to invariant universality. Transcendental fields will secrete

conditions that are only ever local and variable. Here's a précis of the genetic viewpoint: The

transcendental field, after interfacing with a virtual problem, solicits the solutions that generate local

conditions. Rather than submit something to the categories for processing, select occasions generate

conditions along with conditioned.[108] And though they bifurcate, these two aspects of a genital

occasion—conditions and conditioned—continue to act upon each other, spurring irremediable

mutation and further divergence. Real experience just is this tensed, mutable, reciprocally

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[107] "Whereas a possibility displays itself as a variety of the actual only after the fact and in the process *doubles* in consciousness the defining features of the actual, the virtual possesses a reality that can self-actualise. In contrast to the mere *possibility* of a concept, a possibility which lays down rules regarding appearance within homogeneous forms of intuition, the *virtuality* of structure self-actualises as a time and a space which are immanent to that structure" (Rölli 2016: 18).

[108] If Deleuze's genetic philosophy traces the explication of intensities, Schelling's traces the explication of everything from a (non-corporeal, non-actual) matter: "That a phenomenon is explicated dynamically means: it is explicated from the original conditions of the construction of matter in general. It therefore requires no manufactured causes (such as specific matters, for example) beyond these universal grounds. All dynamic motions have their final ground in the subject of nature itself, namely in the forces of which the visible world is only the support" (Grant 2006: 119). "Nature is nature only insofar as it 'originally and necessarily, not only expresses, but even realizes, the laws of mind'" (Grant 2006: 119, quoting Schelling 1988: 41–42).

determining relational field that opens perpetually between conditions and conditioned. It can be no more "harmoniously resolved" than an energetic system definitively closed.

III. Maimon, intensities, qualitative heterogeneity

> Maimon's genius lies in showing how inadequate the point of view of conditioning is for a transcendental philosophy.
>
> —Deleuze 1994: 173

Like Kant, Deleuze indexes the conditions of experience to a temporal manifold. Unlike Kant, he conceives of this manifold as a heterogeneous multiplicity, not as a homogeneous unity. What is interesting about Kant's insistence that the manifold of intuition is homogeneous is that he does so even while acknowledging his failure to conceive of its genesis: "I still could not abstract from one point, namely, from the fact that the manifold for intuition must already be given prior to the synthesis of understanding and independently from it; how, however, is here left undetermined" (B 145). It is difficult not to see Kant's insistence that the manifold is homogeneous as a consequence of his neglect of its genesis.[109] This neglect leaves a void that will be filled uncritically. That is the lesson of Deleuze's genetic perspective: what is not generated intrinsically will be arrested dogmatically. Not that Kant's imposition of homogeneity is totally unmotivated! The pure manifold of time is *empty* of all sensible content. But does "pure and empty" imply "homogeneous"? Are they so synonymous? Physics disagrees: empty spacetime is quite heterogeneous! That the vacuum is *productive* suggests that an empty yet heterogeneous manifold could ground a truly genetic perspective. It could secrete

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[109] The homogeneity of time is a symptom of Kant's static conception of the transcendental subject. Neglecting the latter's genesis leaves open a space towards which unexpurgated metaphysical biases flow.

experience of itself—conditions along with content.[110] We can do longer with a passive, inert, homogeneous, unproductive manifold that simply waits for something extrinsic to affect it.

Kant has a reason for neglecting the genesis of the pure manifold: any account of its genesis would seem to trespass upon the noumenal realm. The pure manifold *precedes* every reception of sensible content. Like any object, it has an existence in itself, prior to its reception. If its *being* is beyond the bounds of experience, so much the more will its *becoming* be beyond those bounds: all experience presupposes that it has already come to be! We have little choice (Kant thinks) but to accept the manifold as a brute fact: to account for its genesis is to stray beyond the sensible. But there is another option: rather than *preceding* sensible content, the advent of the manifold (and thereby the manifold itself) could be *co-constituted* with sensible content. This is Maimon's solution. As he conceives of it, the manifold emerges with and by reciprocally-determining differential intensities—like a crystal with and by the interaction of singular points in a metastable solution. These differential intensities are the elements of sensation.[111] Binding together the becoming of the entire experiential nexus—the transcendental field, experience, qualities, faculties—vitiates the need to posit a noumenal realm. We dynamize the transcendental field: rather than await extrinsic impetus, it generates everything intrinsically.

For Kant, everything is given in intuition. But his perspective of "conditioning" (as opposed to "genesis") leaves this blind spot: we experience neither the *manner* in which what is given is given

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[110] It would be all the more important to detach the manifold from any subject, if we are to affirm the robust creativity of a subject-less nature and to resist idealism.

[111] To stipulate simply that these differential intensities are "integrated" to form a concrete sensation is to gloss over not only the considerable complexities involved in integration but also the delicate structure of the "logic" of implication and explication that is inseparable from intensities. Deleuze will not rest with the invocation of an operation like integration.

nor its *being* prior to its being given to us.[112] We cannot say even that sensations *cause* the temporal manifold to adopt these properties in this configuration, since the category of causality is applicable only subsequent to an intuition! That our intellect is discursive implies that, whatever we intuit, we can be sure that it has affected us. I can say nothing more of my encounter with sensations prior to my intuiting them than: *it affected me*—although asserting that it affected *me* may be asserting too much! As for the *being* of the sensible, can we say more than that "to be sensible" is "to be able to affect another"? It seems slight, but the question of the being of the sensible marks another site of contestation for Deleuze and Kant.[113] Salomon Maimon, for one, found that, by recasting the being of the sensible, he could transform transcendental philosophy into a purely genetic philosophy. How? Conceiving of the elements of sensation as *differential intensities* dissolves the dualisms troubling Kant's system: that between noumena and phenomena, and that between the understanding and the sensibility.[114]

For Deleuze, the being of the sensible is inseparable from an encounter: we encounter "not a quality but a sign, not a sensible being but the being *of* the sensible" (Deleuze 1994: 140). Once

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[112] "Transcendental idealism is not transcendental enough for Deleuze, because it cannot show how these structures of thought are really and internally connected to receptivity and the given" (Lord 2011: 136). The itinerary of intensities—produced by problems, compounded with other intensities in a transcendental field, eclipsed by the actual extensities of experience—is the genetic corrective.

[113] "The inability of transcendental idealism to account for the real of sensation, and the subsequent 'loss' of the real of sensation amidst the formal apparatus of sensibility, constitutes Deleuze's primary criticism of Kant. Of course, the *a priori* unintelligibility of the given is absolutely fundamental to transcendental idealism" (Lord 2011: 132).

[114] "'One of the most original points of Kantianism'—Deleuze asserts repeatedly—'is the idea of a *difference in nature between our faculties*'. Yet Kant is most interested in the *conciliatory* cooperation of these faculties" (Rölli 2016: 38, last emphasis mine, quoting Deleuze 1984: 22). Deleuze affirms the discordant exercise of the faculties. Ideas are the agents of discord: "Ideas correspond in turn to each of the faculties and are not the exclusive object of any one in particular, not even of thought. The essential point is that in this way we do not reintroduce any form of common sense—quite the contrary. We saw how the discord between the faculties, which followed from the exclusive character of the transcendent object apprehended by each, nevertheless implied a harmony such that each transmits its violence to the other by powder fuse, but precisely a 'discordant harmony' which excludes the forms of identity, convergence and collaboration which define a common sense" (Deleuze 1994: 193).

indexed to an occasional encounter, we might expect it to lend itself only ever to local explications—explications that resist, in their uniqueness, any attempt to universalize them; in their mobility, any attempt to fix them; and, in their continuity, any attempt to exhaustively compass them. Crucially, Kant cannot object to this statement about the being of the sensible: *to be sensible is to be able to be encounterea*. But by admitting this statement, Kant undermines his own system. He has ushered in a corrosive force. To see why it is corrosive, let's consider Kant's own statements about the being of the sensible. For Deleuze, Kant's most objectionable statement about the being of the sensible is the second "axiom of intuition": what is sensible has an intensive *magnitude* (B 207).[115] How does he arrive at this axiom? Let's follow the argument: for Kant, appearances "contain *in addition to the [pure] intuition* the materials for some object in general (through which something existing in space or time is represented)" (B 207, emphasis mine). That is, appearances contain "the *real of the sensation*, as merely subjective representation, by which one can only be conscious that the subject is affected, and which one relates to an object" (B 207). Dimming the real of the sensation leaves us with the pure forms of space and time. Kant suggests the opposite exercise: dimming the forms of space and time until we reach the "sensation in itself" (B 208). Sensation in itself, the real of sensation, will present itself as having, not an extensive magnitude, since extensity requires the form of space (and the form of space has been "dimmed"), but an intensive magnitude. How else could a sensation provoke "empirical consciousness" to "grow in a certain time from nothing = 0 to its given measure" if it did not have a *force* to it (B 208)? An intensive magnitude expresses a sensation's "influence on sense"—that is, its intensive force (B 208).

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[115] Here, Deleuze sets Bergson against Kant. For Bergson, intensities, though falsified as soon as they are quantified or represented, are not just immanent to experience: they are its genetic ground.

But, Bergson would counter, "having a force" is not always identical to "having a magnitude". A purely *qualitative* force has no relation to any sort of measure, extensive or otherwise (we will discuss this in part III).[116] If the force of sensation *in itself* is purely qualitative, a quantitative expression would only falsify it. Why? Quantity bears with it a quantitative logic. The elements of such a logic are stable and self-identical: they admit of definite operations, remain resolutely themselves, and maintain precisely their contours. It is a logic of discretion: discrete elements, discrete operations.[117] Identity is everywhere preeminent. But it is not clear that sensation *in itself* admits of such a logic. Kant assumes that sensation in itself is amenable to a "logic of solids", but this is just an assumption (Bergson 1983). If quantitative logic is adequate to anything, it is adequate to actuality—to the products and not to the production, to *natura naturata* and not *natura naturans*, to the quality (the after-image) and not to the intensities that it implicates, to the individual and not to the processes of individuation by which it became itself, to the detritus and not to the tides. Even Kant acknowledges something genetic in the real of sensation: it seeds the pure manifold = 0.

The notion of an intensive *magnitude* betrays the critical enterprise. It assumes that quantitative logic is, if not ubiquitously applicable, then applicable wherever there is force. But quantity, discretion, identity—these are aspects of conditioned existence. We must not project conditioned upon conditions. It is no accident that Bergson inaugurates his philosophical essay by

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[116] As much as "world" or "milieu", quantitative extensity is a late achievement—both historically and experientially. Before it is the experience of objects, before it is even the experience of beings in space, experience is the experience of qualities. Bergson identifies the latter experience with immediate intuition: a concrete experience of heterogeneous flux, absolutely prior to any parceling out of it in accord with the needs of praxis. Kant neglects the genesis and the ground of qualities as much as he neglects the genesis and the ground of intensities. Deleuze and Maimon converge in their insistence that we submerge the one in the other: to adopt a genetic perspective will be to trace the emergence of qualities from an intensive genetic ground.

[117] As Bergson would say, it is a logic of discrete multiplicities. Its elements are drawn from a discrete multiplicity; their interactions preserve all discretion. This logic can be opposed to that of continuous multiplicities.

critiquing the notion of an intensive magnitude: "This conception of intensive magnitude seems, indeed, to be that of common sense, but we cannot advance it as a philosophical explanation without becoming involved in a vicious circle" (Bergson 2001: 2).[118] The intensive domain demands a logic of difference. Refusing to adopt a logic of identity—where elements and operations are discrete, where self-identity is presupposed and preserved—is to take the first steps towards a genetic perspective:

> only when we apprehend directly in the sensible that which can only be sensed, the very
>
> being *of* the sensible: difference, potential difference and difference in intensity as the reason
>
> behind qualitative diversity. It is in difference that movement is produced as an "effect", that
>
> phenomena flash their meaning like signs. The intense world of differences, in which we find
>
> the reason behind qualities and the being of the sensible, is precisely the object of a superior
>
> empiricism. This empiricism teaches us a strange "reason", that of the multiple, chaos and
>
> difference (nomadic distributions, crowned anarchies). (Deleuze 1994: 56–57)

The being of the sensible draws us into the world of intensive force.[119] The importance of this world cannot be overstated. It provides Deleuze with a key to a critical, genetic, differential philosophy.

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[118] That this critique appears so early in his *oeuvre* marks the subterranean opposition to Kant animating it in its entirety. Deleuze is seldom more Bergsonian than when he critiques Kant. He elaborates Bergson's critique of Kant.

[119] "Deleuze places himself firmly in the tradition from Maimon to Cohen, which idealises the forms of intuition and thereby opens the possibility of conceiving space and time as intensive magnitudes. For Deleuze, the idea of the sensual embraces differential moments of sense which are mutually related when they are temporalised and apprehended. Time must be grasped as a form of inner sense, as resulting from the passive syntheses. In no way can the intuition be schematised *a priori*, letting the intensities be referred only to extension. Deleuze is aiming systematically at a pure intensive sensuality which is implicated in thought as the nonexplicable and which roils thought from within. Thus thought is forced to interpret the non-conceptual signs and to actualise them, even though the virtual intensities evade their explication in the forms of representation. They coexist as confused and unnoticed little genetic affections along with the clear and distinct facts of consciousness. For Deleuze it would be false to say that we perceive sense-data: sense-data are not immediate facts of consciousness but little genetic moments of experience which evade their own actualisation" (Rölli 2016: 79). The concept of passive synthesis is derived from Husserl, who relates it to the genesis of

This is why Deleuze "gives priority to the (virtual) being of the sensible, as the irretrievable starting point of thought, over the objective givens of consciousness. With the concept of the *virtual* he succeeds in conceptualising a transcendental region which does not emerge out of a doubling of the empirical and therefore does not determine experience's *a priori* forms with abstracted realms of possibility" (Rölli 2016: 14–15). It is not just the being of the sensible that resists every logic of identity. Its accompaniment—the temporal manifold—begins to show its turbulent side, refusing also the dogmatic imposition of the forms of identity. If this manifold is a qualitative heterogeneity swarming with differential intensities; if its heterogeneous continuity dissolves every identity— whether that of the self or the more formal identities of classical logic; if it is auto-genetic, then the transcendental field (this complex intersection of intensities, time, and problems) can appear only as "a veritable theater of metamorphoses and permutations. A theater where nothing is fixed, a labyrinth without a thread" (Deleuze 1994: 56).[120] If intensities are the properly genetic elements of experience, they are not quite the ground. Time is the ground. The pure heterogeneity of this temporal ground amplifies the heterogeneity of the intensities populating it.[121] Even if this roiling, continuous, intensive domain resists any identification, any representation, or any quantitative

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logic: for Husserl "active synthesis, as the production of understanding, rests on earlier associational syntheses [*viz.*, passive syntheses] *that are not regulated categorially*" (Rölli 2016: 93, emphasis mine). That they are not categorial allows them to generate the logical categories. To identify qualitative intensities with differential elements requires recasting the differential relation dy/dx: it is "not like a fraction which is established between particular quanta in intuition, but neither is it a general relation between variable algebraic magnitudes or quantities. Each term exists absolutely only in its relation to the other" (Deleuze 1994: 172).

[120] If this manifold gives rise to subjects and other forms of identity, it is only secondarily.

[121] If space is simply the homogeneous, then time grounds space (Bergson 2001: 98). Extensity is the distension of intensities (see part III). Even extensity might not be so homogeneous: time seeds it with intensive singularities. Homogeneous space is only the phantasmal image of the more fundamental "concrete extensity" (Bergson 1988).

expression, it is not unthinkable.[122] If Bergson opens intensities only to the intuition, insisting that they evade every act of intellection, Deleuze holds out for a *logic* of difference, one that would not countermand or displace the insights of intuition but amplify and exploit them.

Maimon is important to Deleuze because he develops a logic of difference to support a genetic perspective. This perspective weds Spinozist immanence, Leibnizian differential dynamics, and Kantian critique—*fearsome!* The key to this perspective is that differential intensities enter into relations of reciprocal determination: "The differential elements unfold their ideal characteristic genetic potential whenever they enter into appropriate relationships of reciprocal syntheses" (Rölli 2016: 12). Maimon uses Leibniz's differential calculus to model the genesis of experience from differential intensities: differential elements (dx, dy) generate intensities (dy/dx), intensities generate qualities (neighborhoods), and qualities compose objects (surfaces).[123] Except at the final level (that of objects), real difference predominates. There are only differences in kind: no identities, no differences by degree. No need to speak of a "self", not even a local self: no global "identity" will unify these pulsating, infinitesimal, local neighborhoods. It is sheer perversity to subordinate bubbling infinitesimal neighborhoods to a placid global identity. Maimon's turbulent domain precludes global identification. Consider a differential element dx. Why does it repel identity? In itself, *it is unproductive*. It impels nothing—and what impels nothing has no properties that can identify it or that can be identified with it. Yet it is not nothing: it *becomes* productive when it enters

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[122] Following Maimon, Deleuze replaces noumena with intensities: "This noumenon is not the indeterminate thought of an intelligible ground, but the being *of* the sensible which is both determinable and determining, and which can only be *sensea*, not represented" (Lord 2011: 134, citing Deleuze 1994: 222).

[123] "The reciprocal synthesis of differential relations as the source of the production of real objects—this is the substance of Ideas in so far as they bathe in the thought-element of qualitability [*la qualitabilité*]" (Deleuze 1994: 173). Why Ideas? An Idea is "a system of differential relations between reciprocally determined genetic elements" (Deleuze 1994: 173–174).

into a reciprocally-determining relation with another differential element dy (Maimon 2010: 21).

Thus, "in relation to x, dx is completely undetermined, as dy is to y, but they are perfectly

determinable in relation to one another. For this reason, a principle of determinability corresponds

to the undetermined as such" (Deleuze 1994: 172).[124] Interactions amongst differential elements are

local and generative. Determination is not negation, even if difference is ubiquitous. "Absolutizing"

difference is refusing to couple "negation" and "becoming". Discarding "negation" is the price

differential philosophy must pay to become genetic. One of Deleuze's key insights is that negation

only affirms the forms of identity:

> If red is to emerge according to the principle of difference, as Maimon claims, it cannot be
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> that red differs only from green; it must differ from every other color, and indeed, every
>
> other possible quality too. Furthermore, since red is not a general concept but a rule for
>
> generating a singular red instance, *this instance* of red differs in kind from, and must
>
> differentially exclude, every other instance of red.[125] The rule for this instance of red, then,
>
> must be a differential relation to every other possible quality. The reason that this instance of
>
> red emerges (as real object) is that its differential includes and *determines* its relation to all
>
> other qualities, and at the same time, its relation to all other qualities determines it to be

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[124] The differential dx affirms the triadic logic of expression: "The symbol dx appears as simultaneously undetermined, determinable and determination. Three principles which together form a sufficient reason correspond to these three aspects: a principle of determinability corresponds to the undetermined as such (dx, dy); a principle of reciprocal determination corresponds to the really determinable (dy/dx); a principle of complete determination corresponds to the effectively determined (values of dy/dx)" (Deleuze 1994: 171).

[125] "A real object is determined to be what it is by its differential rule that positively *generates* its predicates: predicates which are new and different in kind from others, because they are generated specifically with it. A thing is red not because it is 'negatively determined' in terms of some pre-existing possible predicate 'greenness', but because the rule by which red is generated involves its difference in kind from green" (Lord 2011: 139). Differential production ensures the ubiquity of pure heterogeneity: in producing intensities that can only differ in kind, it expresses the differences in kind between the pure differentials of the ground.

what it is. This is what Guéroult calls "reciprocal determination" as the *reason* for the

emergence of qualities. (Lord 2011: 139, last emphasis mine)[126]

It is monstrous: as the differential elements informing each quality differ in kind amongst

themselves, so each quality differs in kind from every other quality.[127] But these differences in kind

no more force us to segment the productive process into mutually extrinsic levels than to admit of

discontinuities in any one level. (In part III, we will see how this severe "heterogeneity" is compatible

with "continuity".) Differences in kind ground the persistence of difference amidst interaction.

Preserving difference is crucial for preserving the productivity of intensive domains:

> The real productivity of intensities from differences in kind is distinct from the actual
>
> products that differ by degree in the realm of imagination or sensible representation. These
>
> realms [of real productivity and of actuality] are not external or transcendent to one another:
>
> virtual differential productivity is immanent to its actual product, and the sensible is the
>
> "surface contraction" of the intensities of the idea. A process of reciprocal determination
>
> among differentials generates real intensities. (Lord 2011: 137–138)[128]

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[126] The logic of continuity mandates that each differential implicate every other one. See part III, footnote 28. As
Bergson knew, this is true of qualities: " if there is one quality, there are several qualities, there is an infinity of qualities,
each defining itself in relation to others" (Jankélévitch 2015: 120).
[127] "It is important to stress that even at the level of differentials, redness and greenness *differ in kina*. They are not
different degrees of a general concept of 'color'. There is no general concept of 'color' at the level of differentials. Instead,
Deleuze says there is an *Idea* of 'color' made up of all the varieties of differential relations, whose content is actualized in
empirically diverse colors. The Idea is a concrete universal that is constituted by virtual differences in kind, and
synthesizes actual differences in degree. 'The Idea of color … is like white light which perplicates in itself the genetic
elements and relations of all the colors, but is actualised in the diverse colors with their respective spaces'" (Lord 2011:
198, quoting Deleuze 1994: 206, emphasis mine). See also Deleuze 1994: 245.
[128] "These differences are singular and in each case 'new', which is why Guéroult calls qualities-as-differences
'singularities' [Guéroult 77]. The complete thinking of the rule for this instance of redness involves the difference of *this*
redness from *that* greenness, a difference in kind that emerges exclusively in this case. Each differential generates a unique
set of singularities. The complete thinking of a differential involves the full comprehension of all its differences in kind:
in this activity of thought, the differential becomes *completely determinea*. Thus, for Maimon, a thing is completely
determined if all its differences have been thought, all its singularities generated" (Lord 2011: 140). The interaction and

But do not differences in kind militate against "continuity"? How are emphatic differences nonetheless "immanent"? We will wait until part III to address these questions. "Reciprocal determination" is as central to endowing the movements of implication and explication with a genuinely creative charge as it is to preserving the continuity of the ground and its expressive lines. We are spiraling towards the center: problems, singularities, continuity, and sufficient reason. If intensities are the genetic elements of experience, problems are the genetic ground. Differential alloys of intensities form on the problematic surfaces of time. Their constrained interactions secrete the real conditions of experience. Transcendental fields emerge by the chance intersection of problems in time. This field—compounded of intensities and a unique aspect upon time—is a product of problems: the latter's virtual topologies marshal, animate, and channel the pure intensities that constitute *this* surface, this unique transcendental field. Topologies corral intensities, determining the "rules" of differential engagement. It is a roiling, heterogeneous, and impulsive domain, but one quite finely-structured: there are "invariants" amidst this ceaseless variation.[129] Though constituting the ground, these antecedent, problematic manifolds are not untouched by the chance genesis of experiential fields: they reciprocally-determine one another.[130]

(end of first rehearsal) ∎

Where are we? In the middle of Deleuze's argument that sense is not reducible to any of the three explicit dimensions of the proposition: denotation, manifestation, signification. It is crucial to distinguish sense from these three dimensions. That each dimension "presupposes" sense (see below)

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explication of differential elements occur in milieux constituted by Ideas. Problems "are the internally determining conditions that produce [intensities] that differ in kind" (Lord 2011: 137).

[129] This "topological" insight (that invariants exist amidst ceaseless variation) differentiates Bergson and Deleuze: mathematics need not always arrest flux. Contra Bergson, it can be used in the philosophy of time.

[130] Deleuze critiques Spinoza for not allowing the modes to determine reciprocally Substance (Deleuze 1994: 304).

suggests that sense conditions each dimension. If it conditions them, it cannot resemble them (or any actual process) in any way—it would be a genetic condition. But it is not enough to establish that sense is a catalyst in the genetic complex. Deleuze will not stop at establishing the rules by which a thing must be synthesized in order for it to have a sense. That would be to remain with Kant's "perspective of conditioning": sense would be simply the mark of proper processing, with no word on the genesis of the protocols of this process. Kant makes "sense" a superior condition to "denotative truth" by implicating it in becoming: before something can be true, it must have a sense.[131] If it has a sense, it has been submitted to the forms of intuition and synthesized by the categories of the understanding. But after purchasing the superiority of sense, Kant skips out on the check: though sense asserts its superiority by being involved in *becoming*, Kant *fixes* the categories. Deleuze will try to settle finally the debt that transcendental philosophy owes to becoming by, first, inquiring into the nature of sense, that it has this genetic cast; and second, by inquiring into the nature of the transcendental field, that it generates sense. Unscrew sense from the table! Unscrew the table itself from its legs!

The **second** dimension of a proposition is manifestation: "it concerns the relation of the proposition to the person who speaks and expresses himself" (Deleuze 1990: 13). To identify sense with manifestation would be to make an individual the sole criterion and final arbiter of sense. But the very act of individual speech presupposes a trans- and even a pre-individual linguistic system (the old distinction between *langue* and *parole*). Speech is a collective enterprise; it requires an impersonal dimension, something that exceeds the capacities of any one speaker. It is no more possible to reduce

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[131] Sense "*engenders* the logical proposition with its determinate dimensions (denotation, manifestation, and signification" (Deleuze 1990: 120, my emphasis).

sense to the purely personal dimension of manifestation than it is to reduce language to the sum of all speech-acts. Far from grounding this impersonal domain of sense, a speaker is grounded by it: besides every facet of their rhetorical disposition, it sets the conditions for every articulate disposition.[132] *One* does not sensibly speak; rather, disparate networks speak in one's place (resonate on site).

The **third** dimension of the propositions is signification: it concerns "the relation of the word to *universal or general* concepts, and of syntactic connections to the implications of the concept" (Deleuze 1990: 14). Could sense be identified with signification? It seems a less constrained dimension than denotation or manifestation. But Lewis Carroll's "What the Tortoise Said to Achilles" identifies an intractable paradox at the heart of inferential logic, one that blocks any attempt to identify sense with signification. Consider the following two premise argument (Carroll's example):

> (*A*) Things that are equal to the same are equal to each other.
> (*B*) The two sides of this triangle are things that are equal to the same.
> _____
> (*Z*) Thus, the two sides of this triangle are equal to each other.

Achilles insists that, if the tortoise grants the truth of A and B, then he *ought* to accept the truth of Z. But the tortoise demurs: to accept the truth of Z requires one to have accepted already the truth of a *suppressed premise* connecting A and B to Z. This suppressed premise—call it C—is of the form "If A and B are true, then Z is true." So the tortoise mulls over the truth of the new proposition C. Achilles amends the argument by adding C as the third premise. But again the tortoise demurs: even

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[132] The capacity to speak is grounded no more in a speaker than the capacity to be a body is grounded in a body: no auto-constitution, no extrication, no closed systems. In philosophy, as in poetry and in politics, it is time to retire the myth of the isolable voice, retain only the image of unique inflections in flashing seas.

if he accepts this suppressed premise as true, he need not accede to the truth of Z: for A, B, and C to imply the truth of Z requires yet another suppressed premise. Not surprisingly, it would be of the form: "If A, B, and C are true, then Z is true." The tortoise can demure indefinitely. Since the tortoise can always force Achilles to add another premise, they will never arrive at the truth of Z.

What does this paradox have to do with the possible identity of sense and signification? Signification considers a proposition not as it relates to a state of affairs (for that would be its denotation) but as a part of an implicit inferential network relating it to concepts and to other propositions: "the signification of the proposition is always found in the indirect process which corresponds to it, that is, in its relation to other propositions from which it is inferred, or conversely, whose conclusion renders it possible" (Deleuze 1990: 14). But the very possibility of perceiving the *relations* of a proposition to its (implicit) inferential network requires that these relations be *real*. Within an inferential network, a real relation is a valid relation. Hence, the signification of a proposition presupposes a network of truthful relations. But truth is a criterion of denotation! Any invocation of truth is simultaneously an invocation of the denotative dimension. For signification to ground sense, it would have to be possible to conceive a proposition purely as a node in a self-sustaining network of implicative propositions, as independent of its truth or falsity. But, as the paradox of Achilles and the tortoise suggests, to consider the connection between propositions requires that we countenance truth or falsity, and hence the denotative dimension. Thus, since it presupposes denotation for its very operation, "implication never succeeds in grounding denotation" (Deleuze 1990: 16). We have shown that sense exceeds also the denotative dimension. Denotation

cannot ground sense, but signification cannot ground sense because signification cannot ground denotation.

None of the three dimensions of the proposition ground sense. Of itself, each is too restrictive: what fails to denote can still have a sense, what speaks requires a domain beyond itself, and what is signified "can never exercise its role of last foundation, since it presupposes an irreducible denotation" (Deleuze 1990: 18). Indeed, the three explicit dimensions of the propositional complex seem to articulate a circle, each point presupposing the others. *Well, might sense be identified, if not with one of the three dimensions, then with this circle involving all three dimensions?* No! There are several problems with this reductive identification. **First**, for Deleuze, "one is established 'from the outset' within sense. Sense is like the sphere in which I am already established in order to enact possible denotations, and even to think their conditions" (Deleuze 1990: 28). To identify sense with the propositional circle is to dissolve it: reducing sense to a triadic circle makes of it an epiphenomenon. Once reduced, why bother with it at all? This reduction is possible only if the three dimensions of the proposition could explain all aspects of discourse. Further, this reduction forgoes any hope of discerning the cause for the circle, for its form, or for any one of its dimensions. Why only three dimensions? Are they really equi-primordial? All that can be said is that they presuppose each other. But reciprocally presupposing one another is not the same as having a cause; if they interlock, it might be over an abyss. True, "it is difficult to respond to those who wish to be satisfied with words, things, images, and ideas," but if one is to think becoming, if one is to begin without presupposition, one can no more begin with a causeless propositional

complex than with any one of its three dimensions (Deleuze 1990: 20).[133] Sense is as much a

condition for the propositional circle as it is for each of the three dimensions. But what is sense?

How could we describe it without presupposing the three dimensions of the proposition? Might

sense just be a fourth node of the circle? Like the others, neither grounding nor grounded? But this

leads to the **second problem.** Identifying sense with the circular complex betrays a philosophical

decision: *the condition will resemble the conditionea*.[134] Rather than *decide* on its negation ("*the*

condition never *resembles the conditioned!*"), Deleuze refuses every decision, holding out hope that

there is a deeper stratum that might secrete an answer to the question. L.E.J. Brouwer did not

counter classical logic's *decision* to affirm the principle of excluded with a decision to deny it. To

counter decision with decision is to engage in a kind of dogmatic formalism, in effect conceding that

logic is a game grounded only in arbitrary decisions about rules. It was not a decision but a

meditation on the continuum that compelled Brouwer to abandon the principle of excluded middle.

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[133] Of course, it is equally difficult to respond to those who are dissatisfied with words and things, gnawed as they are by inarticulate problems. The transcendental is a refuge for those dissatisfied both by reductive explanations and by theological ones. Deleuze's own "turn to the transcendental is designed to avoid the need to appeal to something transcendent or outside this world while also side-stepping reductive explanations in terms of natural laws and/or facts. Deleuze is therefore constructing a complicated and many-sided type of immanence, where all things are within a same world, but differentiated in terms of how they are in it" (Williams 2008: 97). Why shouldn't we take refuge in empirical facts? Wherever we turn, however we look, there seems to be an excess: scientific theories infected with metaphysical presuppositions, concepts compromised by mathematics. Serres is right: naive empiricism would be true if it weren't for mathematics (Serres 1981: 70, n.12). Transcendental Spinozism is the path to a robust, scientifically-informed natural philosophy.

[134] The latter's negation—the condition will not resemble the conditioned—is almost a principle for Deleuze. For other philosophers "resemblance" is not so much a principle as an unmarked decision. For Deleuze, Kant's decision to trace his categories from syllogistic logic is the paradigmatic projection of the empirical (conditioned) onto the transcendental (condition): "it is an odd procedure since it involves rising from the conditioned to the condition, in order to think of the condition as the simple possibility of the conditioned. Here one rises to a foundation, but that which is founded remains what it was, independently of the operation which founded it and unaffected by it" (Deleuze 1990: 19). What is wrong with decision and representation? "The world itself is not a representation or a decision. How could any representation or decision be adequate to it?" (Gangle 2013: 3). We do not mistake the thought of *this* essay for the thought of the entire world. We want only to proceed as nature proceeds: intrinsically. Intrinsic thought would denounce representation along with decision.

Rather than decide that the condition does or does not resemble the conditioned, Deleuze awaits a sign.

What have we established? Each dimension presupposes the operation of the other dimensions: "every relation of the proposition must be based upon the others in a circular way, we see that the whole or each one of its parts can collapse if it loses this complementarity" (Deleuze 1990: 120). This gives us our first clues about the transcendental field of sense. Distillations of sense (such as propositions) express the structure of sense: we should expect that sense, which determines an irreducibly triadic and complementary circle, is a "space" of extreme complementarity, one whose "topological dynamics" abide a triadic logic. These clues should lead us to a properly genetic perspective: for sense to condition the three dimensions of the proposition is for it to lend each dimension its content and to determine intrinsically the number of dimensions at three. If sense "fills" the dimensions of its distillations, the same kinds of elements should populate both domains. We will say this: the sense indexed to a sign is a topologically non-trivial "space" containing events, singularities, and series. It is an aspect upon a problem. Singularities are a specific kind of event: those that are singular *for that sign.* That the content of the three dimensions of a proposition can be expressed in terms of events, singularities, and series implies that sense determines the content of the dimensions.[135] And why will distillations of sense articulate themselves with *these* three dimensions? As we will see, they express the triadic "logic of continuity" that governs the topological dynamics of the fields of sense. The fields of sense are chaotic: swarming with singularities, crossed by series, constellated by events. But mistaking chaos for disorder would be as bad as mistaking virtuality for

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[135] "The 'tertiary arrangement of language', and the circular relation between its dimensions, is entirely produced by relations of convergence and divergence between singularities-events, and without any reference to any underlying, substantial unity such as Leibniz's God" (Bowden 2011: 86).

possibility. Chaos is an excess of order, noise a surfeit of information. In distilling itself from its

background, a proposition reduces its noise. Reducing noise explicates implicit structure.[136] If, in a

chaotic field, the three dimension are implicit, they become explicit by reducing the noise. The fine

structure of a field of sense is a function both of its topology and of the logic of continuity.

That sense grounds an irreducibly triadic and complementary circle provides a first glimpse

of the intrinsic genesis of propositions from sense and sense from problems. We will attain a fully

genetic perspective only upon embedding a field of sense in its problematic manifold. The genesis of

the propositional complex will correspond then with the reciprocal determination of a problem and

its solutions. Sense is a function of "the problem to which propositions correspond insofar as they

indicate particular responses, signify instances of a general solution, and manifest subjective acts of

resolution" (Deleuze 1990: 121). This three-fold correspondence alludes to the dimensions of

denotation, signification, and manifestation. But what is the relation between, on the one hand,

propositions and sense and, on the other, events, singularities, series, and problems?

IV. Peirce and Sense

> Once communication between heterogeneous series is established, all sorts of consequences
> follow within the system. Something "passes" between the borders, events explode,
> phenomena flash, like thunder and lightning. Spatio-temporal dynamisms fill the system,
> expressing simultaneously the resonance of the coupled series and the amplitude of the
> forced movement which exceeds them. The system is populated by subjects, both larval
> subjects and passive selves: passive selves because they are indistinguishable from the
> contemplation of couplings and resonances; larval subjects because they are the supports or
> the patients of the dynamisms. In effect, a pure spatio-temporal dynamism, with its necessary
> participation in the forced movement, can be experienced only at the borders of the livable,
> under conditions beyond which it would entail the death of any well-constituted subject
> endowed with independence and activity. Embryology already displays the truth that there

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[136] As physicist John Brient puts it (notes late April 2017).

are systematic vital movements, torsions and drifts, that only the embryo can sustain: an adult would be torn apart by them. There are movements for which one can only be a patient, but the patient in turn can only be a larva. Evolution does not take place in the open air, and only the involuted evolves.

—Deleuze 1994: 118

There is nothing special about a proposition. It has a sense, but so do all things: a speciation event, a glacier, a walk. We follow Peirce: the sense of a thing is the complex of series that it *could* implicate and that *would* explicate it.[137] We could say that the terms of this series are the occasions of explication, but *only so long as* we refuse to reduce "occasion" to "*actual* occasion". Rather than simple congeries of actual bodies in spacetime, occasions are quite populous: each one is attended by virtual events, bodies, a milieu, divergent futures, problems, the pure past. Further, each explication has its rhythm, its temporality. What clamors about a series fractures it in time. But more than actual bodies, more than any enveloping milieux, it is this strange class of pure, virtual events that is central to Deleuze's concept of sense.

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[137] "The entire meaning and significance of any conception lies in its conceivably practical bearings" (Peirce 1992: 145). Of course, Deleuze distinguishes between both meaning and sense and signification and sense. But since meaning is an effect of sense, it is safe to take Peirce's maxim to apply to the entire complex, holding for sense as well as for the three explicit dimensions of the proposition (denotation, manifestation, and signification). Peirce offers several curious "proofs" for this maxim or "philosophical theorem." Zalamea presents a "local proof" by means of Peirce's diagrammatic logic (Zalamea 2012a). There is a reason why it must be local: interpretation is always ongoing. If interpretive contexts modulate as much as their interpretants, no global proof can be expected. For Spinoza, the sense of a thing would be its *power*, which is simultaneously what it affects and what affects it. That Peircean *sense* is identical to Spinozist *power* suggests that Deleuze's dynamic conception of sense is not without precedent. Signs implicate series and are explicated by them. There is a reason why Deleuze prefers the concept of "series" to the more general concept of "sequence:" all series are sequences, but not all sequences are series. A series must have a reason, a rule by which it unfolds. A sequence need not proceed by a rule. There need not be anything binding its terms. Series underscore Deleuze's commitment to the principle of sufficient reason. That everything is in and of series implies that everything has a reason. Something's place in a series is never without cause. In this, Deleuze resembles that other serial philosopher, Leibniz. But where Deleuze's philosophy of continuity forces him to affirm that some series actually diverge, Leibniz can countenance only convergence.

The series indexed to a sign are its sense. Though indexed to it, they are not its possession. Series connect *virtual* occasions of explication. Each occasion crystallizes constellations of event-infinitives. Though an occasion indexes constellations, they are irreducible to it. Not just series to series, but even within a single series, some occasions are incompossible—that is, it indexes constellations of events that are actually incompatible. Example: like anything else, a piece of driftwood is a sign. It could wash up on a shore of Syracuse, where Archimedes uses it to trace a spiral. Or it could be swept past the shore, to vanish down Charybdis. The sense of the driftwood accommodates both occasions of explication, though they are actually incompossible.[138] The sense of any sign will traverse virtual series comprised of constellated event-infinitives.

The sense of a sign is a part of an irreducibly triadic complex: series thread through the occasions attending the explication of a sign.[139] This triadic complex is inseparable from a relation of reciprocal determination: sense variably conditions its sign as the sign variably conditions its sense. This simultaneous capacity of sense to be both condition and conditioned is a *first expression* of the relation between sense and problems.[140] Further, this relation of reciprocal determination is the key not only to the difference between the logic of sense and the logic of propositions but also to their interaction. Though different in kind, these two logics determine one another reciprocally in a unique plane of immanence—this plane is itself subject to an overarching logic of continuity. It is as in analytic mechanics: the logic of state spaces is not the logic of the actual world, but the two

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[138] Occasions are determined by the event-infinitives that they constellate. Events individuate occasions. Since few occasions are actual, occasions must be individuated virtually. Events determine the occasions, compound the series, and animate the sense of a sign. But events do not do this alone: problems have a part to play. Events and problems determine the sense of a sign.

[139] Sense is inseparable from this triadic act: *x interprets y as z*.

[140] That sense continually varies, and that sense affects the kind of transcendental conditions that will be secreted, suggests a reason why Deleuze insists that each occasion will have a unique set of conditions.

interact in Nature. Relations of reciprocal determination dynamize sense: sense cannot help but to change in time.[141] That sense is *essentially temporal* is as crucial for the construction of a logic of sense as it is for the immersion of sense in problems.

Sense is a durative whole—equivalently, a continuous multiplicity. Its series are "continuous" in this sense: they retain continuous relations with a past, they absorb continuously a future, and (most importantly) they "communicate" with all of the other series indexed to that sign *even as they diverge from them.* It is the continuity of a continually variable complex, each part of which is immediately present to every other part as (equivalently) the whole is present to each part. This mode of "simultaneous co-presence" is characteristic not of actuality but of the virtual multiplicities (such as lived experience) "jutting into" actuality: most of the bulk remains submerged:

> it is as if each of my lives
> is condoned with inflationary drift
> with deltas
> with models of themselves
> involving perhaps
> 4 or 10 dimensions
> more stunning than the ambit of an ibis
> transcribing its folios in trance
> > –Will Alexander, "The Sri Lankan Loxodrome"

In continuous multiplicities, a change to any one part changes the whole (see part III). In sense, each series "melts into and permeates" every other series, so that a change to any one series changes every other series—much as a change in a living organism's present changes instantaneously the entirety of its being, past and present (Bergson 2001: 104). Even the most disparate series maintain a relation.

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[141] What is so captivating about reading if not that it takes time? In time, sense can only change. We track the loss of virtual occasions, as well as what flashes forward in their place.

It is like the relation of the lived present to the past: no past event is any more "distant" from present time than any other past event. In fact, it is senseless to speak of distance or of any geometrical measure!

There are two aspects to every series: implication and explication. Though distinct, these aspects interrelate: implication provokes explication and explication implication. Why? a new implication is a change, and each change changes the whole: no change is local (this is part of the logic of durative wholes: see part III). Since each implication changes the whole, it changes also what would explicate it. But changes in what would explicate it change also its relation to what it could implicate, restarting the cycle.[142] That these highly mutable aspects of sense are indissolubly linked agitates the series. Simply to perceive sense initiates wholly other cascades of change: it is as turbulent a domain as Leibniz's plenum.[143]

It would be wrong to conceive of sense as simply present—equivalently, as reducible to actuality. The sense of an owl retiring to a canyon is inseparable from the entire evolutionary history of its species, to say nothing of the geological history of the canyon.[144] What is a species if not a

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[142] It is exactly as Peirce foresaw: "Every act of interpretation feeds back into the relevant sign's triadic structure, thereby initiating a new set of conditions for further events of interpretation. Because of this, the process exhibited in the triadic relation maintains both an operative closure and a developmental openness. On the one hand, every triadic relation is a kind of 'closed circle', since any operation that would interpret or revise a given triadic relation occurs structurally as a moment within that relation itself. The triadic structure anticipates and includes its ongoing correction in light of new experience, and to engage a triadic relation critically is therefore necessarily to move within that relation's own movement, participating constructively in that relation's own process" (Gangle 2016: 117–118).

[143] As we will see (part III), durative continuity is purely heterogeneous: it is self-dissimilar under every aspect. Heterogeneity is pivotal for Deleuze's construction of the transcendental field.

[144] This emphasis on time has rather dramatic import: "While it may seem obvious that the subject matter of natural history, more especially, of 'comparative anatomy', should indeed be animal bodies, two problems vitiate this understanding. Firstly, as Buffon had noted, the reality of species is only the phenomenalization of time, so in studying species and their reproductive capacities, the natural historian is seeking less for the specifics of these organizations than for their capacity to serve as such media for the study of nature as time. Secondly, even if it is assumed that bodies do provide the subject matter of natural history, the question '*which bodies?*' soon arises" (Grant 2006: 127). Buffon's naturalism has its origins in Leibniz: "Because Leibnizian nature consists in an infinite continuum formed of

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strange amalgamation of the terrible forces besieging an ecological interval? Every species clusters

around the aperture of a *camera obscura* that continually layers sea changes into its attic-sized

negative.[145] Staring at a species in Nature is like staring at a word in *Finnegans Wake*: the longer one

stares, the greater and more clamorous the distance from which it stares back. Environments,

uniquely-inflected paths through time, and problems secrete species. The latter are but unique ways

of folding the former. The actual emergence of a species is nothing but an image of an even more

complex implicate order: the latter unfolds in time what is virtually folded.[146] Even if all the traces of

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'imperceptible nuances', Buffon's naturalist *must* become an historian rather than a systematist, since it is in the
succession of individuals of the same species, the constant reproduction of like by like, that nature offers the naturalist
the opportunity to cut with its temporalizing grain" (Grant 2006: 123). We could say that "the grounds of this science
are to be sought in time, in units of becoming or development, rather than in bodies" (Grant 2006: 126). Of course, we
have to qualify "Leibnizian nature": it is primarily *virtual production*, not its corporeal products (the plenum). The latter
is not continuous!

[145] For Michel Serres, an organism is an eddy amidst flux: "here is the crux of the matter, all times converge in this
temporary knot: the drift of entropy or the irreversible thermal flow, wear and aging, the exhaustion of initial
redundancy, time which turns back on feedback rings or the quasi-stability of eddies, the conservative invariance of
genetic nuclei, the permanence of a form, the erratic blinking of aleatory mutations, the implacable filtering out of all
non-viable elements, the local flow upstream toward negentropic islands—refuse, recycling, memory, increase in
complexities. The living organism , ontogenesis and phylogenesis combined, is of all times. This does not at all mean
that it is eternal, but rather that it is an original complex, woven out of all the different times that our intellect subjects to
analysis or that our habits distinguish or that our spatial environment tolerates" (Serres 1981: 75). Different kinds of
time are endemic to different "systems": Serres considers "three types of systems, each with its own "time"—though
rather than a time it would be better to speak of a dynamical regime, lest we draw Bergson's ire: "the first, logico-
mathematical, is independent of time; the second, mechanical, is linked to reversible time; the third, thermodynamic, is
linked to irreversible time. However, the three types all have closure in common. They constitute a partitioning of a
given universe, either by the so-called closure axiom for the universe of discourse or by the independence of movements
and stabilities in relation to all exterior influences (thus Laplace's solar world in relation to the stellar universe) or by
thermal insulation" (Serres 1981: 72). Contemporary thermodynamics complements this scheme with a fourth system:
an open system (Serres 1981: 74).

[146] We will spend much time in part III considering how natural processes such as evolution are continuous even as they
involve infinitely complex, mutually irreducible orders. We will have to forsake linearity for the complex explication of
implicate orders—an explication that folds back into its magmic virtual ground: "in this linear progressivism, we are no
longer dealing with anything but a single type gradually complicated by a juxtaposition of exterior characters. There is
[to its detriment] no longer a victorious ('dominant') principle, nor a vanquished principle, nor a hierarchy, nor
gradations. *To say immanence is to say superposed levels* [—palimpsests]. But here [in simply linearity] everything is on the
same level, such that one can say, at will, either that the theme does not vary at all or that it disappears completely in
each of the successive ornaments, in each of the embellishments in which one dresses it up. In this [linear] theory, each
species resembles a superficial and entirely pure sound in which none of the harmonies that constitute its entire flavor
vibrate. But what good is it to express that something conserves itself if the dominant lives indifferently alongside its
variants, if one substitutes an inert gradation for the vicissitudes of a becoming rich in conflicts?! The *continuity* of a

the explication of this implicate order vanish from actuality, it leaves its mark virtually. This virtual

preservation is what it means to say that sense is never lost, even if it changes incessantly. Of course,

sense is lost *for us* and *for others*. But the effects of some series being selected for actuality and others

being excluded from actuality cannot be so easily confined. Effects do not tend only towards the

future, but radiate through the whole of time—the past is not static: modulations of future sense are

modulations of past sense. There are just modulations of sense, ramifying across the continuum-

many faults and circuits of a totally riven time. Peirce's shimmering works develop rigorously this

orientation.[147]

Peirce's definition of sense—that it the complex of series that something *could* implicate and

that *would* explicate it—is not innocent: to concede that sense is real is to concede that the virtual is

real. Sense seems real (and who could deny it, when "nothing exists from whose nature an effect does

not follow" (Spinoza, EIP35)?), Peirce's definition seems plausible: but since sense overflows not just

the present but all of actuality (past and present), it demarcates a vast domain that is real without

being actual—indeed, real without even referencing the actual. It far exceeds what is, was, and will

be actual to include also what never was and never will be actual. To affirm the reality of sense is to

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musical development is not made up of the pure and simple conservation of some fundamental theme but of the resistances this theme encounters on its path, the embroideries that would suffocate it if the musician were not able to make them transparent, of the hostile ideals against which it has to defend itself and that inflect it in their own direction. This subtle discourse, made up of mutual concessions, of defeats and of revenge, is *the very image of life*. But what is left of all of this in an insipid dialectic that reduces becoming to a collection of inert imprints deposited around the type of the species?" (Jankélévitch 2015: 125, emphases mine). "Bergson, on the contrary, is very much concerned to specify that creative evolution is pluri-dimensional. It has, as one would say in the language of counterpoint, several 'voices.' Like all true polyphony, it offers a certain thickness that evolutionism would very much like to neglect. It is a rich, varied, and unforeseen becoming in which we recognize the same superposed levels, the same depth-wise organization as in the intellectual effort. Life generally goes from the narrow to the wide, from the enveloped to the blossomed, from the possible to the real. The movement it accomplishes is centrifugal and radiating. The relationship among species is defined not as a morose longitudinal filiation but rather as a cousinhood" (Jankélévitch 2015: 120).

[147] Peirce "proposed a complex pragmatic architectonics, with multiple information channels and nested control layers, constructed in order to understand the world simultaneously in its most abstract generality and its most concrete specificity" (Zalamea 2014: 907). Peirce elaborates pendular transits between local and global.

affirm the reality of the virtual. Why virtual? Why not "the possible"? Peirce refuses to identify "what is not actual" with "what is possible". It is not for fun that we have insisted upon the *temporal* dimension of sense. Its temporal nature repels any invocation of "the possible": "the possible" is ever the ally of the spatialization of time (we will elaborate on this in part III). **First**, filling the future with possibilities spatializes it. Possibilities are mutually external to one another: either *this* possibilitiy or *that* possibility or…. And mutual externality is the mark of a "spatial" domain. But time is not space! **Second**, possible states *resemble* actual states. Conceiving of time as the successive realization of "possible states" effaces the heterogeneity of time. But time is not homogeneous under any aspect! The resemblance of possible states and actual states injects a surreptitious degree of homogeneity into the flow of time. This is intolerable.

Even more so than Leibniz, Peirce demarcates a robust virtual domain—one irreconcilable with the conservative conception of possibility critiqued by Bergson and Deleuze. This virtual domain maintains itself without any reference to actuality. Virtualities are not deficient forms of actuality—they are not negations of *that* emblem of solidity. But what suggests to Peirce that he nominate a "maxim" (namely, the Pragmatic Maxim) that posits this robust virtual domain? Nothing less than the continuum—that most general of concepts, that ubiquitous attribute of becoming. The intimacy of continuity and becoming has not raised their philosophical fortunes. The aspersions cast upon becoming often fall also upon continuity: "adopt rigor or adopt the continuum"! But Peirce exploits the intimacy of continuity and becoming to affirm the reality of the virtual. Natural processes are continuous: time—whether in its linear representations (physics) or in its manifold complexity (Bergson)—is continuous, motion is continuous. For Peirce, continuity is

unthinkable without the virtual. Thus, if real processes are continuous, then virtualities are real.

Peirce goes even further: the temporal and the motive continuum are impure alloys involving

virtualities and other elements. But rumbling beneath temporal and motive continuity, there is a

purely virtual continuity, one more fundamental than that of time or of motion.[148] Its purity is not a

mark of homogeneity!

Peirce's "Pragmatic Maxim" implies immediately that sense is not just discursive sense.[149]

Nor is it simply ideal: it permeates equally ideal concepts, discursive propositions, and material

bodies. It is virtual, drawn upon by bodies and propositions. This is why Deleuze pictures it as an

osmotic film "binding" bodies to language and language to bodies—as if the two could be separated!

From the perspective of sense, each elides into the other. The effects of a linguistic act are not

confined to language. By shifting the attention to *effects*, Peirce replaces the old opposition of mind

and body with dynamic fields unfolding in time. Consider the standard model of particle physics. It

is a set of physico-mathematical propositions. The series that it implicates and that explicate it

cannot possibly be confined to a purely discursive domain. One of the series explicating it is the

Large Hadron Collider—which, whatever it is, is not purely discursive. The sense of the standard

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[148] For Peirce, time depends upon the continuum, that reservoir of triadic relations: the structure of the continuum determines the structure of time, not the converse. Bergson will disagree: the structure of duration determines the structure of continuity (see part III). This is a fascinating confrontation: *what is more fundamental, time or the continuum?* Further, for Peirce, interpretation exemplifies triadicity. It is the most general form of a triadic act. Indeed, every act, entity, and moment is nothing but the interpretation of a sign. Thus, the act of interpretation and the structure of the continuum divulge the structure of time: "The temporal dimension of meaningful practice is itself irreducible, since it cannot be analyzed into more basic components, of which it would be the mere consequence, effect or sum. In other words, the specifically temporal feature of thought cannot be modeled accurately by a purely qualitative immediacy ('firstness'), or an instantaneously interruptive snapshot, or representation of thinking ('secondness'), but only by means of a continuous, temporally ordered and open-ended process itself ('thirdness')" (Gangle 2016: 117).

[149] Sense is a tissue of "ideal" events, and events—captured by infinitives such as "to green"—bind propositions to bodies (Deleuze 1990: 53). That bodies themselves presuppose events is crucial for binding bodies and sense: "Individuation in bodies, the measure in their mixtures, the play of persons and concepts in their variations—this entire order presupposes sense and the pre-individual and impersonal neutral field within which it unfolds" (Deleuze 1990: 124).

model includes also the institutional structures that accrete about the LHC. With Peirce's maxim, it is no longer possible to dismiss the obdurate poetry of, say, P. Inman as "nonsense." So long as this poetry indexes criminally under-explored spectra of possible reading practices it cannot be declared nonsensical. Though its semantic dislocations and syntactic opacities may fail to subvert the (bourgeois) notion that language is an immaterial, transparent, and passive medium—one suitable for the free circulation of ideas amongst rugged, self-regulating entrepreneurs—it does not fail to provoke novel reading practices for those who sit with it. Minimally, these latter effects are a part of its sense. It is poetry's resistance to established interpretive praxes that transforms the often reactionary act of reading into the trial of an arduous metamorphosis.

A universal semiotics neither reduces everything to a "text" nor casts everything as a language. It proposes only that *sign* is a more inclusive and a more revelatory category than *object* or even *thing*.[150] The former not only embraces those "ideal" elements commonly excluded by the latter, but it inclines toward logic. As much as a proposition, an object is a sign: a sign is a fragment to be "interpreted." We must not restrict "interpretation" to "*discursive* interpretation". Nothing about the definition of a sign implies that it is purely discursive. For a sign to be interpreted is for it to be taken *as* something *by* something else: interpretation is inherently triadic.[151] Further, it is inherently contextual: a sign solicits a context that will absorb and explicate it.[152] A sign is something

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[150] "A phenomenon is not an appearance or even an apparition but a sign" (Deleuze 1983: 3).

[151] An interpretive context is a milieu. Deleuze does not neglect its genesis: "Each space-time envelops a temporal difference, each milieu is the actuality [*actualité*] or the accomplished development of a virtual dimension. The milieu *does not resemble* the pure intensity of which it is the actualization" (Zourabichvili 2012: 113).

[152] "I will say that a sign is anything, of whatsoever mode of being, which mediates between an object and an interpretant; since it is both determined by the object *relatively to the interpretant*, and determines the interpretant *in reference to the object*, in such wise as to cause the interpretant to be determined by the object through the mediation of this 'sign'"(Peirce 1992: 410).

that will be effectuated in context. The "possible practical bearings" to which Peirce indexes the sense of a concept is not exclusively the praxis of conscious, animate, or even actual beings. We are incidental to interpretation, and actuality exhaustively interprets nothing. It would be dogmatic to constrain the logic of interpretation by the form of the subject or to reduce the field of effects to actual milieux.

Praxis is nothing but contextual effectuation—by an ecosystem, by the Van Allen Belts, by a dream.[153] A telescope captures a shard of frozen methane entering Saturn's rings. The fragment of methane is a sign for multiple "interpretive contexts." Such contexts might be little more than the forces that seize it. As much as the astronomer, the rings of Saturn interpret the shard: the former charts it in her ledger, the latter slots it in a circulating band. That these contexts relate only by the faintest conceit implies that the series running through a sign will ramify, if not outright diverge. I say again: Peirce does not index sense to human praxis. He works as assiduously to liberate sense from us as he does to liberate us from the lure of established praxes. Why restrict ourselves to recognizable praxes, when any number of perfectly viable yet non-human interpretive milieux solicit those willing to undergo a metamorphosis? It is impossible to talk about sense without talking about metamorphosis. The more exotic praxes implicit in sense cannot help but solicit metamorphosis—if

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[153] If I effectuate a sign, the sign (drawing upon its virtual fields) can "counter-effectuate" me—effectively dissolving the brittle context I inhabit. Effectuation is not the exclusive province of actual beings. Virtual fields maintain a right to counter-effectuate every actuality.

only because most of these praxes differ dramatically from what presently encases us.[154] If sense is

ubiquitous, so is metamorphosis: one can fade anywhere into labyrinthine channels.[155]

Time

Sensible phenomena are signs: to be perceived is to have been captured by various fields (*percipi est*

cēpisse). If there is such a thing as undifferentiated matter, it would be insensible: a sign differentiates

itself by its relations, only what has relations is significant (Peirce 1992: 410). The sense of a sensible

sign "is the succession of forces which take possession of it and the co-existence of the forces which

struggle for possession. The same object, the same phenomenon, changes sense depending on the

force which appropriates it. History is the variation of senses…. Sense is therefore a complex notion;

there is always a plurality of senses" (Deleuze 1983: 3).[156] To oscillate between the series flowing

through and from a sign is to oscillate between the heterogeneous aspects implicit in it. To be an

object, to have significance, is always subsequent to *being* a sign. An object is itself—without being

self-identical!—only by conforming to the "categories" of the transcendental field possessing it. But

its categories, its conditions, are not fixed in advance of its effectuation: they are "no broader than"

the unique past of that sign—a past irreducible to its present physical signature (Deleuze 1983: 91).

And effectuation is ongoing: since transcendental fields are indexed to ongoing effectuation, they

remain open to further mutation. Yet despite the "empiricist" insistence that the sense of a sign

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[154] We pass through a prismatic field of sense, snag a novel constellation of events accreted about a praxical disposition, and resurface. Even just a diffeomorphic "change of coordinates" on a surface divulges a new aspect upon a problem. And this new aspect cannot be insignificant.

[155] Every sign has its sense. But it is not as if we cannot differentiate amongst senses. It is as with Spinoza: every idea has its truth, however distorted. This truth is a function of its degree of adequacy, which is indexed itself to the praxis of the mode that posed the idea: the clarity of its aspect upon substance determines the force of its truth. That every idea has its truth no more deprives the category of truth of its force than Peirce's conception of sense deprives it of its ability to differentiate signs.

[156] Nothing in the definition restricts signs to the discourses, perceptions, or even praxes of *rational* beings.

emerges by accidental encounters, the conditions for a sign to be *this* sign remain *a priori*: the latter is a local condition. It is unclear exactly how the improvisational effectuation of a sign in successive contexts—an improvisation that generates its own virtual conditions by articulating (in conjunction with problems) a field of sense—coexists with the *a priori* necessity of its conditions.

A sign is "interpreted" when it is taken *as* something *by* something else. Of course, signs are not purely indifferent to their interpretation: they incline towards certain extrapolations, resist some contextual effectuations while soliciting others. The act of "taking as" explicates an implicit aspect of a sign's latent sense. No one or no milieu interprets a sign in any way they please: signs may be ambivalent, but they are not indifferent: an interpretation must satisfy certain conditions, obey various constraints, accommodate its invariants. None of the latter three are reducible to any one component of the interpretive act—they are generated in and by the occasional intersection of sign, sense, milieu, interpretant, and perceiver.[157] The interpretive complex is a continuous multiplicity: it modulates continuously, as does each of its components. In particular, no milieu is static: it is an open system enveloping still other open systems, itself enveloped by superior systems.[158] No sign, *qua* phenomenon, can be exempted from change: nothing is static. Since conditions emerge by the variable conjunction of inherently varying terms, we should expect the conditions that allow a sign to be interpreted in *this* moment as *this* sign with *this* sense by *this* context to modulate similarly.[159]

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[157] Interpretive acts are irreducibly triadic: something (first) is taken as something (second) by another (third). This triadic relation is fundamental and irreducible, though the field of sense implicated in the second moment is itself a complex of relations. Peirce notes: thirdness "is complex in the sense that different features [or moments] may be discriminated in it, but the peculiar idea of *complexity* that it contains, although it has complexity as its object, is an unanalyzable idea" (Peirce 1992: 176). In other words, the category thirdness is not derivative of the categories secondness, firstness, or any combination of the two.

[158] It is very much like a Spinozist mode: a mode is a mode only if it is perceived as such by another mode. They are nested one in the other, each inflecting and radiating affective currents.

[159] *Why are there now four terms? Is the complex of sense not simply triadic? What of this reference to time?*

The conjunction of the forces of sign, sense, and milieu is not a summation but an exponentiation. It would be best to speak of a *conjugation* of forces. As we progress, time and tense will only further obsess us. Sense is always and only in time: no essences, only processes.[160] Rather than identities to unearth, inflections to endure.

That the sense-complex modulates as much as a whole as it does in each of its parts trains Deleuze's transcendental inquiry to expect not universal, fixed conditions but variable, local conditions. But local variability will not preclude necessity: it was Kant's coupling of "necessity" to "fixed universality" that led him to expect fixed, universal conditions. Deleuze forges a contrary alliance: his refusal to decouple "ceaseless variability" from "(local) necessity" bids him to uncover the "virtual topology" at once animating the sense-complex and secreting its necessary conditions. But it is puzzling: amidst such local variability, whither the invariants that ground necessity? How can Deleuze decouple invariance from fixity? Are there any discourses that sanction this? Yes: topology investigates invariance amidst total fluidity. Decoupling "invariance" from "fixity" forces Deleuze to immerse sense in a larger problematic field. This immersion is crucial to attaining a genetic perspective: we will perceive the genesis not just of the sense-complex's own genetic capacity but of the complex itself from its problems. What is the topology of the transcendental field, that it is determinable amidst ceaseless variation? What is the clue into its structure?

The time of sense is a very curious kind of time.[161] It is not linear, though it does admit of linear extensions. It is not geometrical at all, since it ruins every attempt to fix a measure upon it. It

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[160] "It is true that sense is the characteristic discovery of transcendental philosophy, and that it replaces the old metaphysical Essences" (Deleuze 1990: 105).

[161] "Thirdness is not simply a matter of what is to come; it is a constitutive structure of temporality in general as a meaningfully ordered stream of experience and practice. It refers to all experienced continuity in time, to lived duration

is too fluid for all that. Its resistance to measure allows it to indulge in a kind of "action at a

distance": every (local) interpretation acts upon the *entire* field of sense (Maudlin 2002). Present

changes act upon the past as a whole, changing it instantaneously; and as the whole past changes, so

the present—it is a feedback loop: amplifying noise, increasing complexity. That this field is virtual

and not actual allows it to implicate irreducible temporal orders. Though irreducible, these temporal

orders act ceaselessly upon each other. The present erosion of certain slot canyons in Utah affects the

sense of the rare owls that once hid in its fissures, even if these owls have been long extinct.[162] How

an inter-animating dynamism amongst heterogeneous orders is not just compatible with but

constitutive of temporal continuity will preoccupy us in part III.

It is the virtual dimensions of the pragmatic maxim that lends sense its emphatically

interrogative cast. Implicit in every encounter: *what does this sign implicate? what could explicate it?*

what "distant" effects animate it?[163] Although this does not imply yet that sense is problematic, it

offers a clue that sense-space will be folded into problem-space. For problems and sense share a

curious intimacy. Mathematicians, whatever they may believe about themselves, assess a problem not

by its truth or falsity but by the sense it expresses—that is, by what it implicates and what explicates

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as the experience of orientation towards an indeterminate but not arbitrary future. Thirdness thus includes any practical involvement in any meaningful process. Such involvement always has a futural dimension, but it possesses this on the basis of a projective continuity with the past and the present" (Gangle 2016: 117).

[162] A speciation event has its sense (which marks it as a "speciation event") only retroactively. For when it actually occurs, the two species have not yet diverged. That will come much later, once lines of descent actually diverge. In its present the event is not actually a speciation event. It is so only virtually, since there is no actual divergence. Here as elsewhere, the temporality is complex. A sign will have been interpreted, these interpretations will have left a mark: if a sign is unique, it is because of its aspect upon its marked past, the inflections this aspect induces at present, and the conjoined influence of its past and its present upon its future capture by interpretive milieux.

[163] The dynamics of sense is interrogative: "The sign does not implicate sense without simultaneously explicating or expressing it, so that the structure of the sign or of expression is defined by the two *movements* of implication and explication, which are not contrary but complementary: one does not explicate without implicating, and vice versa" (Zourabichvili 2012: 67–68, emphasis mine). The series that a proposition implicates and that explicate it cannot be confined to past, present, or future. They involve all tenses, voices, and moods: past, present, future; active, middle, passive; subjunctive, imperative, interrogative.

it: "We doubt whether, when mathematicians engage in polemic, they criticize one another for being mistaken in the results of their calculations. Rather, they criticize one another for having produced an insignificant theorem or a problem devoid of sense" (Deleuze 1994: 153).[164] As much as sense, problems demand of us that we set aside the bipolar categories of "true" and "false". Problems are not just true or false: each problem has first a sense, a degree of power. As we will see, a *solution* can be true or false. But the logic of solutions is derivative of the logic of problems—as the logic of propositions is derivative of the logic of sense. A solution's truth or falsity is a local matter, concerning the "neighborhood" it "inhabits" within its problem. A problem secretes the conditions that determine locally what it is to be a solution. The bipolar logic governing a set of solutions is not a global logic. The former is derivative of the local logic of a problem—much as the metric of an infinitesimal neighborhood of a manifold determines entirely the (derivative) geometric properties of the manifold in that neighborhood. This is not without an echo in topos theory: "a Grothendieck topology appears most naturally as a modal operator, of the nature 'it is locally the case that'" (Lawvere, in Goldblatt 2006: 359). Deleuze, however, was unaware of topos theory. It is Spinoza who inspires his call to assess problems primarily by their degree of sense, and secondarily by their solvability. To speak of a problem's sense is to speak of its power, its capacity to affect and to be affected (what explicates it, what it implicates). For Spinoza, ideas are not just true or false. Rather, every idea has its degree of adequacy. This degree is ultimately a function of the aspect upon Substance of the being that posed it. Every idea is as adequate as it can be. Even the falsest idea relates to other ideas and to the "mode of being" (or praxis) that posed it:

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[164] It is better to speak (with Deleuze) of the sense of a problem rather than (with Bergson) of the truth or falsity of a problem. Of course, we could retain the category of truth by moving to a Spinozistic conception of it: no more the simple opposite of falsity, truth is an expression of adequacy.

through the category of *adequatio* Spinoza expresses this necessity or internal causality of the

idea that links it to itself, through the intermediary of all other ideas on which it depends in

the attribute of thought and which makes thought into a singular affirmation, an act, of the

absolutely infinite substance. Just as with things, with all that exists, ideas are subordinated

to a causal order that explains them completely. (Macherey 2011: 64)[165]

An idea measures the accord of the praxis that posed it with Nature—where "to accord with nature"

is not to bathe in billowy reassurances but to bind oneself and others to terrible but liberatory

metamorphoses. As *Ark* has it: "That the action of the universe is metamorphosis—its articulation,

metaphor" (Johnson 2013: 47, "Beam 17"). Rather than the extrinsic *correspondence* of idea with

ideatum, adequation considers an idea's intrinsic expression of substance.[166] If I think that the sun is

a hundred yards away I am not wrong, just captive: only one wedded to anthropomorphic illusions

would think such a thing (EIIP35s). This idea (that the sun is a hundred yards away) expresses a

complex but benighted disposition:

what [the idea] expresses, in fact, is the disposition of our bodies, which predisposes us to

perceive the sun in a way that de-natures reality within. Thus the image is false in relation to

the object it observes. But this does not signify that it is a purely illusory representation, an

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[165] A fully adequate idea will evade the restrictions, fixations, and illusions specific to a species.

[166] Ideas of "singular things admit as efficient causes not the objects themselves, or the things perceived, but God itself, insofar as it is a thinking thing" (EIIP5, translation modified). To identify "God itself" as the idea's *efficient* cause is just to identify the totality of all possible ideas as its efficient cause. The idea has its place in the order of ideas. Its truth is its expression of its place in the system. How many ideas inform it? How many connect to it? Is it a node or a detour? How much does the life of the mode that posed the idea express substance? How besotted is it of partiality? of specific illusions? of negative affects? It is Spinoza's guiding principle, to assess a thing purely by what it affects and what affects it—by its power.

idea without an object, which would be enough to refute in order to dismiss it. In effect it is

an idea, a true idea if not an idea that is true. (Macherey 2011: 69)[167]

Altering ideas to accord with nature *is* submitting to emancipatory praxes. It is no inner process:

metamorphosing thought must metamorphose praxis. Anything less: *requiescat in servitudine*. And

just as the alteration of ideas is not assessed by interior drama but solely by exterior effects, so

emancipation is never individual but only collective.

<u>Moulin</u> (in the ice sheet)

Why this detour through Spinoza? Besides illuminating Deleuze's conception of sense as power, it

suggests a means of assessing expressive force that is not immediately quantitative. We have *degrees* of

truth, but these degrees are functions of aspects upon substance—not of a scale imposed by

convention. They provide a measure, but not one that is obviously quantitative—much like, in

algebraic topology, homotopy classes and homology classes measure a space in a way that is not

simply numerical. If the fundamental group is an algebraic object that *lends itself* to quantification, it

is not clear that it is intrinsically quantitative. Deleuze's perversion of Bergson will depend upon

using expression, degree, and "measure" without introducing anything quantitative. This cluster of

problems haunted Kant's notion of "intensive magnitude": if it is illegitimate to quantify intensities,

there must be a non-quantitative conception of intensive force. This will preoccupy us in part III. If

Deleuze is to construct a logic of problems and to articulate by it a "logic" of time, he must find a

non-quantitative "measure" for problems and intensities. Further, if he is to ground actuality in

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[167] Since the order and connection of ideas is the same as the order and connection of things, the adequacy of the idea in itself will express exactly the adequacy of the life that posed it: "by a mode of knowledge, Spinoza intends a certain manner of entering into a relationship with ideas, itself determined *practically* by a manner of being, that is, by conditions of existence: the ignorant person is also a slave" to anthropomorphic projections (Macherey 2011: 66, emphasis mine).

continuous virtual processes, he must articulate a "non-spatial" conception of continuity.[168]

Identifying Bergson's qualitative multiplicities with Riemann's continuous manifolds is at once the heart of this attempt and the height of its perversity. Why perverse? Bergson forbade explicitly assimilating time to spatiality and conceiving of time mathematically—and manifolds are mathematical spaces!

However mutilated, false ideas express (Spinozist) Substance. The ubiquity of positive expression (in Spinoza's system) inspires Deleuze's attempt to determine how outright *divergences* amongst the solutions to a problematic field can be "composed" still by that problematic field so that they appear, without vitiating the reality of their divergence, as so many positive expressions of that unique problem. This composition must occur without either subordinating these divergences to an identity, effacing their real divergence, or censoring them for their dissonance. Divergent trajectories are not mutually exclusive trajectories but coupled expressions, each with its own intrinsic degree of necessity. Whether it is the solutions of problems or the series of sense, there is only ever affirmative expression.[169]

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[168] This will have to do with conceiving of *the continuum itself* as a purely virtual problem, one that cannot be represented. This rather opaque passage hints at a non-spatial, non-extensive, non-geometrical continuum: "while it is true that the continuum [*le continu*] must be related to Ideas and to their problematic use, this is on condition that it be no longer defined by characteristics borrowed from sensible or even geometric intuition, as it still is when one speaks of the interpolation of intermediaries, of infinite intercalary series or parts which are never the smallest possible. The continuum [*le continu*] truly belongs to the realm of Ideas only to the extent that an ideal cause of continuity is determined" (Deleuze 1994: 171, translation modified). Part III will investigate this intensive virtual continuum.

[169] Deleuze's treatment of "univocity" develops this theme of "communicative resonance" amidst emphatic divergence. Ubiquitous, affirmative expression grounds a Deleuzean interpretation of Hamiltonian mechanics. A state space contains not just counter-factual but illegal "possible states" of a system. The puzzle is this: though some states neither will be nor even can be actual, they influence the actual trajectory of a system. To remove even one trajectory is to alter the topology of the space—and it is the topology that "selects" the actual trajectory of the system from continuum-many such trajectories. That this continuum of trajectories determines which trajectory uniquely minimizes the action (and thence expresses the actual evolution of the system) suggests that we are not dealing with a static array of "possible" states but with an active amalgam of virtual states. The efficacy of this virtual continuum is an *image* of the genetic logic of problems—like a film can disclose an image of time.

■

<u>Transition</u>: Sense is other than the three explicit dimensions of a proposition. It is neither their sum nor the evanescent image of their circulation. Sense differs in kind from what it conditions (the 3 dimensions). The latter obey the logic of representation, the former that of expression. The structure of sense provides a first glimpse of the ground that will allow Deleuze to affirm divergence over convergence, difference over identity, continuous over discrete, problems over solutions, time over space. But why immerse sense in a superior ground? Nothing—not the three explicit dimensions of the proposition, not milieux, not signs—is untouched by the dynamic of sense. But this dynamic requires a coordination that it cannot provide. Signs split, cascade along ramified series, alter continuously their relations, deviate from themselves in the least of their parts. Signs express all that break upon it, wash over it, suffuse it, submerge it. But how does a sign *coordinate* its sense? How does it sustain such a disparate dynamic? One may suspect that it has no control over it, that its series diverge without hope of integration. Peirce denies this: series *ultimately* converge (see appendix). Even evolutionary series wind towards obscure *teloi*.[170] Deleuze disagrees here with Peirce: not only can series diverge, they *must* diverge. For Deleuze, despite this divergence, the sense-space of a sign remains *a* space—much like a state space in physics.[171] It is not just a "purely formal" union of absolutely disjoint spaces. But for such a space to be a space, some "binding force" must act upon its series. The echo of Riemann's essay is not unwelcome: this binding force induces a (non-quantitative!) "measure" for the multi-foliate "sense-space" expressed implicitly by a sign. Each interleaved stratum exfoliates itself along paths that diverge not just in relation to the paths of other

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[170] Zalamea echoes this by insisting that the "differential" series spawned by interpretive acts remain integrable.
[171] In Hamiltonian mechanics, the trajectories traversing state space are incompossible—they do not converge upon *a* world.

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strata but in relation to each other. Sense is inherently dynamic: a chaotic dynamism seizes the series

flowing through it, as they seize the sense enveloping them.[172] Despite the ubiquity of divergence,

Deleuze considers the "sense-space" indexed to a sign to be *a* space. Specifically, it is a "manifold."

He must show how *a* space can be so emphatically divergent. Can sense really bind these series,

making of them *a* space? Of itself, sense does not seem capable of providing that minimum of

consistency necessary for being a whole. If there is solidarity amongst series, what induces it? Of

itself, sense seems deficient. If its wholes are to be wholes, if its spaces are to be spaces, it must be

part of a larger dynamic. But what constitutes this larger dynamic? Is it different from the dynamic

of sense? Will it force the series traversing a sign to converge? What clue will guide our immersion of

sense in problematic fields?

V. Paradoxes of Sense

> It is not even clear that thought, in so far as it constitutes the dynamism peculiar to
> philosophical systems, may be related to a substantial, completed and well-constituted
> subject, such as the Cartesian Cogito: thought is, rather, one of those terrible movements
> which can be sustained only under the conditions of a larval subject. These systems admit
> only such subjects as these, since they alone can undertake the forced movement by
> becoming the patient of the dynamisms which express it. Even the philosopher is a larval
> subject of his own system. Thus we see that these systems are not defined only by the
> heterogeneous series which border them, nor by the coupling, the resonance and the forced
> movement which constitute their dimensions, but also by the subjects which populate them
> and the dynamisms which fill them, and finally by the qualities and extensities which
> develop on the basis of such dynamisms.
>
> —Deleuze 1994: 118–119

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[172] A sign may be well-defined under its denotative aspect. But with respect to its sense, it is never well-defined. The sense it expresses bears the marks of sense-space, which is a "paradoxical" space: paradox opposes common sense and good sense, with their definite orientations and unequivocal definitions. Sense grounds the aversion of signs to fixity and finality. Unruly sense drags a sign along nomadic or ergodic trajectories. We will see a similar dynamic in Kant's Ideas: that they refer to a problem—rather than an object of possible experience—explains their *power* to mislead reason. But for them to have this power requires that problematic spaces have their own dynamism. Like state spaces, they will have an efficacious topology. Deleuze maps problematic dynamics.

in another foci
in another depth
their form self-challenged….

& these incendiary magnets
like a nexus of phantoms
scattered across a geometric optometry

–Will Alexander, "A Nexus of Phantoms"

Paradoxes are not contradictions. Contradictions mark fatal impasses, paradoxes places of

bifurcation, whole "gardens of forking paths" impelling thought down one path *and* the other. In

privileging none of the paths forking from it, a paradox strips thought of the need to make a

definitive choice amongst them. It draws of itself a palimpsest, each leaf an image of a divergent

path, each path a labyrinth.[173] A paradox couples divergent series, refusing to affirm one path over

another. These irreducible paths open disparate but not disjoint fields for thought. What differs

about this "opening of the field" is that it stems from a singular nexus—the paradox itself. Rather

than juxtapose static images, paradoxes conjugate dynamic processes. They do not obey good sense,

since "good sense affirms that in all things there is a determinable sense or direction [*sens*]" (Deleuze

1990: 1). The affirmation of good sense betrays a *decision* that there will always be a privileged path,

a well-defined orientation, an orderly distribution. If we accept the latter, the only sensible thing to

do is to follow the uniquely privileged path. By contrast, "the power of paradox is not all in

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[173] Like a contradiction, a paradox is irresolvable. But unlike a contradiction, it does not preclude logical consistency. Paradox admits of a higher-form of consistency, one that is more like corporeal consistency: it induces solidarity amongst divergent lines. Without threatening its consistency, each sheaf of the palimpsest can be thought of as a turbulent eddy. Each eddy possesses topological properties that distinguish it from others: is it open? closed? compact? An organism is just such "a sheaf of times" (Serres 1981: 75).

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following the other direction but rather in showing that sense always takes on both senses at once, or

follows two directions at the same time" (Deleuze 1990: 77).[174] Paradoxes do not respect good sense:

they distribute sense equally to all the paths diverging from them. The paradoxical refusal of good

sense is a clue into the logic of sense. But might paradoxes be rare? Might a paradoxical distribution

of sense pertain only to exceptional signs? That *paradoxes* affirm divergent paths does not imply that

sense will do the same. Yet Deleuze claims that sense is paradoxical. Somehow, paradox expresses the

true character of sense: "philosophy is revealed not by good sense but by paradox" (Deleuze 1994:

227).[175]

    Indeed, sense is paradoxical—and for *all* signs. Deleuze claims that trying to specify the sense

of a proposition stages an encounter with the principal paradox of sense, "the one from which all the

other paradoxes [of sense] are derived" (Deleuze 1990: 36). Since there is nothing special about a

proposition—it is just one class of signs—Deleuze can generalize from propositions to signs. This

paradox has a familiar form: the indefinite regress. Wherever one speaks, thinks, acts, perceives, one

is in the element of sense. This irremediable immersion discloses a kind of paradox: whatever the

path, the sense of it awaits us—even if sense is never static, always dynamic. If its paths await us,

they do so neither as inert possibilities nor as pre-established tracks: they erupt in a complex

articulating involving the actual and the virtual. It is not a self-identical essence that awaits us but a

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[174] "Deleuze's theory of sense-paradoxes… combines the genetic and expressive potential of structure with the impossibility of its complete actualisation, which instead refers to an empty field within its serial arrangement, a field which constantly shifts about in the process of differenciation" (Rölli 2016: 205).

[175] The "logic" of sense-space will be a dynamic logic, one that does away with rigid "essentialism" (Girard 2011). Girard has attempted to develop just such a logic (Zalamea 2012: 315). Looking ahead, this *resistance* to unity is not an obstacle but an opportunity—as we will see with Lautman and mathematics in part II, resistance discloses the topological lineaments of underlying problems. That becoming *resists* classical logic should provoke us not to punish becoming by consigning it to non-being but (with Brouwer) to abandon classical logic. Its resistance affirms something of its singular structure. It is left to us to craft an adequate response. Besides aspects of sense, aspects of time are unveiled by three paradoxes (Deleuze 1994: 81).

voracious process. If we are immersed in the element of sense, it is as an eddy in a stream. The

principle paradox of sense emerges in an experience of this kind: the sense of a proposition can be

taken "as the object of another proposition whose sense, in turn, I cannot state. I thus enter into the

infinite regress of that which is presupposed" (Deleuze 1990: 28). This is a paradox in two ways.

First: sense is everywhere present but nowhere present—its focus unfocused, its boundary

fluctuating. A proposition expresses its sense, but its sense always precedes it. Strictly speaking,

"sense does not *exist* outside of the proposition that expresses it;" rather, sense "inheres or subsists" in

it (Deleuze 1990: 24, 31, emphasis mine). But, by the above, sense is not reducible to the

propositional complex. It exceeds it: being immanent *in* it is not the same as being reducible *to* it or

derivative *of* it. Sense might be expressed only in actual propositions, but it is not expressed

exhaustively by them: "we can never formulate simultaneously both a proposition and its sense; we

can never say what is the sense of what we say" (Deleuze 1994: 155). So sense is everywhere and

nowhere, present yet never presentable. And this is a paradox. **Second**, by selecting from the series

that traverse it, a proposition and an interpretive milieu express a unique aspect of sense. But, again,

this sense always precedes it. Sense is the condition for the selection of series as much as it is the

effect of this selection—for an aspect of sense appears only subsequent to a selection, even if it had to

precede it as a condition for the very possibility of selection. Sense has two contrary but

(dynamically) complementary aspects: now a genetic condition, now a conditioned field. Sense is a

condition for discourse that is unable itself to appear discursively. We are always in it, even as its

lineaments are indiscernible. There is no perception of sense *in itself*. One perceives always and only

an adulterated aspect of it. Indeed, sense is even less surveyable than it seems. Any attempt to express

the sense of a proposition is just to articulate a new proposition. This new proposition will have to be newly implicated by the original proposition, even as this original proposition must be perceived as itself an explication of this (previously) only implicitly present new proposition. It will be actively assimilated in the original field of sense of which it was already implicitly a part. But every new implication changes the whole, every expression changes the expressed: the logic of sense is the dynamics of duration (part III). So it is even worse than it seems: rather than progressively surveying the sense of a proposition, we find ourselves lurching through a ceaselessly changing space.[176] If the "regress of sense" is in fact a regress, it is very different from an inferential regress. With the latter, one regresses along a well-defined series by well-defined steps. This regress is well-oriented: each premise links to the preceding one either by explicit rules of inference or by the implicit demands of the derivation. Indeed, a derivation can be "cleaned up," its unnecessary premises removed, until it attains its "normal" form. Not so with the sense of a proposition. There are no rules orienting the regress of sense. Indeed, it is not even clear that it is a regress. It is disoriented enough to merit the attribute *labyrinthine*. But what lacks a privileged direction? What opposes the well-oriented distributions of good sense? Paradox. Since sense enfolds within itself always a disordered, indefinite, chaotic regress, it is paradoxical. Probing the sense of a proposition is drifting along the non-linear

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[176] It is an image of the scholar's art: "losing myself in the small print of the footnotes to the works I was reading, in the books I found mentioned in those notes, then in the footnotes to those books in their own turn, and so escaping from factual, scholarly accounts to the strangest of details, in a kind of continual regression expressed in the form of my own marginal remarks and glosses, which increasingly diverged into the most varied and impenetrable of ramifications" (Sebald 260). What is it, that the meanest attempts to specify it cause it to deviate senselessly? To survey sense-space is just to alight upon propositions related nebulously to the initial proposition. But each new proposition drags along with it its own sense-space. One does not progress along a series so much as traverse an arbitrary collection of implicitly present sense-spaces. It's a wonder that a proposition can have a sense at all: any attempt to express it only refracts it through the sense of other propositions, radically distorting it. At least deductions preserve the illusion that we could arrive at a first principle. It is the chaos of sense-space that compels Peirce to index sense to praxis. Only praxis seems concrete enough to fix momentarily some aspect of a sign's sense. But that praxis is metamorphosis sinks even this attempt at fixity.

flow-lines of turbulent spaces. If the sense of a proposition is paradoxical, then so is the sense—or, equivalently, the being—of all things.[177] The logic of sense does not resemble the logic of well-formed propositions, definite perceptions, concise deductions, clear representations.[178] It is as with Kant: it is not possible to encounter the conditions of experience in experience itself. Even if bipolar logic is adequate to actuality—though this is in doubt—it is too much to assume that it is adequate to virtuality. There are no *representations* of sense, only expressions of sense—and expressions differ in kind from representations: a representation does not change immediately what it represents, but an expression changes immediately what it expresses. The "logic of expression" differs in kind from the regime of representation (Deleuze 1990a: 62).

We are ready to pass from sense to problems. This is the ultimate aim of Deleuze's detour through sense. Only by passing through sense can we affirm that virtual problems ground all things: "this world of sense has a *problematic* status: singularities are distributed in a properly problematic field and crop up in this field as topological events to which no direction is attached" (Deleuze 1990: 104). A proper exposition of problems will occupy us in part II. Suffice for now to say that the sense of a sign "immerses" itself in the problems that convict it. The sense of a sign is *a* space only because it conducts the unique current of a problem. These theses hold of sense as well as of a problem:

[177] Virtual problems are paradoxical, but actual beings are well-oriented solutions to these problems. Deleuze is not alone in characterizing an entire domain as fundamentally paradoxical. Plato, in *Parmenides*: "Here, among visible things, it's not at all hard to show that things are both like and unlike and anything else you please" (135e). Kant argues that even the syllogistic domain stages everywhere encounters with a paradoxical ground that impels reason down mutually exclusive paths. Together these three philosophers identify the sensible, logical, and propositional realms as fundamentally paradoxical.

[178] Representations enforce the criterion of the clear and the distinct. No more than with a representation, philosophy cannot begin with any proposition: "thought is betrayed by the dogmatic image [of thought] and by the postulate of propositions according to which philosophy would find a beginning in a first proposition of consciousness: *cogito*…. Every proposition of consciousness implies an unconsciousness of pure thought which constitutes the sphere of sense in which there is an infinite regress" (Deleuze 1994: 155). No representation is ever in and of itself, ever isolable enough to serve as an origin.

1. It is not representable only expressible.[179]

2. It differs in kind from what it conditions.

3. It is non-orientable and therefore paradoxical.

4. It is continuous without being homogeneous; it is purely heterogeneous.

5. Each change changes the whole.

The dynamics of problems conduct the dynamics of sense. Perhaps more than problems themselves, it is problematic dynamics that ground the sense of a sign. Everything has its sense in and by its problem.[180] But is everything the resolution of a problem? Yes, whether it is a soap film, Galois theory, or John Cage's *1–VI*. The Riemannian geometry of sufficient reason wages not just that everything has its problem but that to understand a thing is to understand the problem it attempts to resolve. No sign that is not animated by many problems: if problems are "continuous manifolds", its sense is a sub-manifold of a selection of problems. But to understand the relation of sense to problems, we must

rehearse (again) Kant's philosophy! (Part II)

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[179] Sense is non-representational because it is the condition for every representation. To represent something is to present a proposition. To represent the sense of a proposition is to generate another proposition, which itself presupposes sense as a condition for its ability to represent anything, *ad infinitum*. We can never represent what is an *a priori* condition for every representation. "The problem bears resemblance neither to the propositions which it subsumes under it, nor to the relations which it engenders in the proposition: it *is not* propositional, although it does not exist outside of the propositions which express it" (Deleuze 1990: 122).

[180] For Leibniz, everything had its sense in and by a world. But these worlds admitted of only convergent or compossible series. Problems will be more capacious, each one a "world that diverges. Beings [or, equivalently, the solutions of problems] are pushed apart, kept open through divergent series and incompossible totalities that pull them outside, instead of being closed upon the compossible and convergent world that they express from within" (Deleuze 1993: 81). Far from requiring of sense only compossible series, problems compel sense to implicate incompossible series. That the sense of a sign is so compelled compels also the sign itself to leech across heterogeneous, divergent orders. A problem is like a Leibnizian world that would affirm of itself divergent series.

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The faculty of the understanding differs from the faculty of reason. The understanding has two functions: it synthesizes sensible intuitions by means of the categories and it unifies concepts in a judgment by means of the logical functions (Allison 2004: 314). It was the task of the "metaphysical deduction" to establish that these two functions are isomorphic: the table of categories reflects the table of judgments. These tables display the rules that exhaust the means by which the understanding draws disparate elements—*viz.*, sensible intuitions—into wholes. As the understanding operates upon sensibility, reason operates upon the understanding—with this asymmetry: reason is not divorced from the understanding as the understanding is divorced from sensibility. Reason operates upon the understanding by drawing its judgments into systematic wholes. A syllogism is the simplest example of a systematic whole. Indeed, for Kant, the syllogism is the fundamental figure of reason: all of the activities of reason reduce to the construction of syllogisms, just as those of the understanding reduce to the formation of judgments.

I.

Reason does not just differ by degree from the understanding. Kant insists that "the unity of reason [is] *qualitatively* different from the unity produced by the understanding" (Allison 2004: 310, my emphasis). The difference in kind between reason and the understanding follows from the difference in kind between the unities pursued by each: "though it remains the understanding that does the [initial] unifying, the ideal, projected unity at which [reason] aims differs in kind from any unity attainable by the understanding alone" (Allison 2004: 310).[181] It is true that reason depends entirely upon the kinds of unities produced by the understanding: the judgments that reason threads into

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[181] "The unity of reason is therefore not the unity of possible experience, but is essentially different from it" (A 307/B 363). The unity of possible experience is the unity of the understanding.

systematic wholes are themselves products of the understanding.[182] Because of reason's dependence

upon the understanding, Kant supposes that the systematic wholes of reason will be compatible with

the judgmental wholes of the understanding. But might not different kinds of unity imply

incompatible processes of unification? It might be that reason has its own transcendental principles

that determine the means by which it draws the disparate elements of the understanding—*viz.*,

judgments—into systematic wholes. Before Kant can contrast the synthetic operations of reason with

those of the understanding (as codified in the table of categories), he will have to find a "clue" that

discloses something of reason's own conditions of possibility—its transcendental field.

Like the understanding, reason draws already mediated elements into wholes: where the

understanding operates upon elements mediated by the sensibility, reason operates upon elements

mediated by the understanding. With the table of categories, Kant codified the rules circumscribing

the possible syntheses of the understanding. But the activity of reason will not be constrained so

methodically. Kant does not see a need: since reason is a part of the understanding, the constraints

on the latter will constrain the former. Kant's faith in these constraints is so strong that he does not

feel threatened even by the dynamism inherent in reason. For Kant, though reason *generates*

inexorably Ideas that, by referring not to objects of possible experience but to problems, exceed the

bounds of experience, it presents no mortal threat to the understanding. This dynamic is all the

more remarkable because it is intrinsic. Even as he praises Kant for discovering this dynamic,

Deleuze censors him for obscuring its importance. This intrinsic dynamism of reason might be a

better clue into the transcendental conditions of the understanding than the table of judgments.

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[182] Similarly, the understanding depends upon sensible intuition without being reducible to it.

Deleuze indeed displaces the "clue" disclosed by the table of judgments with that disclosed by the intrinsic dynamism of reason. That it is a "perturbative" dynamic serves well Deleuze's purposes: he objects as much to the *kind* of constraints that Kant imposes upon the understanding as to the supposition *that* the understanding will admit of anything but provisional and variable constraints.

II.

If one seeks a genetic perspective, Kant's transcendental dialectic discloses a more promising clue into the transcendental field than the transcendental analytic. Where the latter presents a set of rules that constrain what reason might synthesize, the former traces reason's intrinsic genesis of novel wholes.[183] From Maimon to Deleuze, intrinsically genetic processes are the *bête clair* of every attempt to articulate a transcendental Spinozism. That the systematic wholes of reason are often ideal, projected wholes serving a "regulatory" function implies that they are not constrained by the same conditions that constrain the objects of experience. The ideal wholes of reason lead us into a penumbral realm: of experience but beyond it, involving the objects of experience without being themselves such an object. Ideal wholes are not as exhaustively-determined as the objects of experience. They admit of a kind of indeterminacy that is alien to actual objects. Their inherent indeterminacy grounds at once their variability and their irreducibility. These wholes arrogate for themselves a force that differs qualitatively from any of the forces transmitted by actual objects. It is almost as if they were of another realm. Why are the systematic wholes of reason only "ideal, projected" wholes? A systematic whole would be a comprehensive whole. It would exhibit *all* of the connections that bind its elements into a whole: it would be possible to reach any element from any

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[183] The transcendental dialectic accomplishes precisely what Deleuze demands of the transcendental analytic: that it displace a viewpoint of conditioning for one of genesis.

other element, by means of an inference. This system would have admitted everything that could have been admitted, and would have exhibited every connection that could have been exhibited: "what reason quite uniquely prescribes and seeks to bring about concerning it is the *systematic* in cognition, that is, its [exhaustive] interconnection based on one principle" (A 645/B 673). But such a system exceeds the bounds of possible experience: there can be no exhaustive surveys of empirical domains, no definitive exhibitions of the logical connections between elements.[184] The experience of definitive closure amongst an indefinite number of elements is not a possible experience.

Though the "principle" that would bind this disparate domain into a systematic whole never arrives, reason is not bereft: it poses of itself surrogate principles that guide its compulsive pursuit of systematic wholes. These surrogates are the Ideas of reason. An "Idea postulates complete unity of the understanding's cognition, through which this cognition comes to be not merely a contingent aggregate but a system interconnected in accordance with necessary laws" (A 645/B 673). Of course, the "postulation" of a complete unity differs from the realization of it. Ideas offer little more than prods or promissory notes. But how does reason pose these Ideas *of itself*? Ideas are not concepts. Concepts are of the understanding, not of reason. Concepts must refer to objects of possible experience. By contrast, Ideas are *regulative*: they "will determine the use of the understanding according to principles in the whole of an entire experience" (A 321/B 378). That this whole exceeds the bounds of possible experience implies that Ideas cannot refer to objects. But to what do they refer? If they are efficacious guides, ones that lead to systematic wholes and not simple phantasms,

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[184] "The understanding by itself would remain entangled in its separate and divided procedures, a prisoner of partial empirical enquiries or researches in regard to this or that object, never raising itself to the level of a 'problem' capable of providing a systematic unity for all its operations" (Deleuze 1994: 168).

then they must have a referent. That this referent is bound up with the very process by which reason generates Ideas provides Kant with the first clue into the structure of reason's transcendental field.

Let's see how the immanent activity of reason generates Ideas. Systemic wholes are deductive systems, of one form or another. The most familiar form of deduction is the syllogism. The syllogism exemplifies the syntheses of *reason*: it draws disparate judgments (furnished by the understanding) into an interconnected whole.[185] Consider:

(A) The Anglo-American firmament secretes a hideous light.[186]
(B) Donald Davidson is of the Anglo-American firmament.

(Z) Donald Davidson secretes a hideous light.

For Kant, reason possesses an appetitive principle: it *seeks* systematic wholes. This appetite bears upon any whole of reason. As much as a single syllogism, the scattered truths of biology must be drawn into a comprehensive whole. Clearly, transforming an empirical science into a science from first principles is no simple task. But a single syllogism is no less problematic.[187] Despite appearances, even the above syllogism does *not* form a comprehensive whole. A comprehensive whole would exhibit explicitly every implicit relation upon which the syllogism relied. Reason seeks to survey exhaustively the entire relational complex. That syllogisms do not form a whole implies that reason, when confronted with even the most basic syllogism, will *seek* to envelop it in a whole. Wherever reason operates, it operates upon syllogisms. Syllogisms are atomic elements, the most primitive

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[185] This interconnectivity is essential. For not just any collection of judgments forms a whole. To be a *systematic* whole, the judgments must exhibit *necessary* connections rather than accidental or empirical connections.

[186] No one could accuse analytic philosophy of a lack of intelligence, only a lack of taste—and a fixation upon professionalization. Its chintzy "thought experiments" (enough with the trolleys!) and tacky quasi-formal "necessary and sufficient conditions" only embalm philosophy.

[187] This is reminiscent of our inquiry into sense. It is not just rare propositions whose sense is paradoxical. Rather, the sense of every proposition is paradoxical. Similarly, every syllogism opens onto an indefinite regress.

collections of judgments. Thus, the relation between a syllogism and the whole that would complete it presents a clue into the transcendental conditions by which reason forges wholes: "the formal and logical procedure of reason in syllogisms already gives us sufficient guidance as to where the ground of its transcendental principle will rest in synthetic cognition through pure reason" (A 306/B 363).

Why is the above syllogism not a whole? To prove that no single syllogism is a whole, Kant presents a version of Carroll's paradox (see above). For Kant, the major premise (premise (A)) is a "rule" (A 304/ B 362). The rule indicates those conditions that must be satisfied for a cognition to be "subsumed" by it. So for premise (B) to fall under premise (A), premise (B) must satisfy the conditions specified by premise (A). Since Donald Davidson is a member of the Anglo-American firmament, he is subsumed by premise (A). Since premise (B) falls under premise (A), premise (A) provides the rule by which we draw the conclusion (Z). The conclusion registers the subsumption of premise (B) by premise (A). For Kant, this relation of rule, subsumption, and conclusion holds for "every syllogism" (A 304/B 360). Indeed, a "syllogism is nothing but a judgment mediated by the subsumption of a condition [that is, a cognition] under a universal rule (the major premise)" (A 307/B 364). A syllogism petrifies a first attempt to subsume a particular judgment by a universal rule. But even if it succeeds in this attempt to refer a particular judgment to a universal rule that will allow it to draw a conclusion, reason cannot stop here. It has constructed only a *provisional* whole, one that satisfies only its present intent to draw a conclusion. But reason seeks always a *comprehensive* whole, one that exhibits not just all of the connections flowing from the premises but all of those flowing into them as well. It will have to pursue all consequences and excavate all assumptions. A universal rule (the major premise) will be itself "exposed to this same attempt of reason, and the

condition of its condition thereby has to be sought (by means of a prosyllogism)" (A 307/B 364). If

Carroll finds a regress in the gap between premise and conclusion, Kant finds a regress opening

above the major premise: reason will pursue inexorably the ground of the universal rule that it

deploys in the provisional whole of the initial syllogism. Such a pursuit can conclude only with an

unconditioned first principle. Reason operates by the imperative: "find the unconditioned for

conditioned cognitions of the understanding by which its unity will be completed" (A 307/B 364).

Only after alighting upon an *unconditioned* first principle will reason judge its attempt to place the

initial syllogism in a comprehensive whole to be complete: only "the unconditioned can provide the

requisite closure" that will satisfy reason (Allison 2004: 313). But to arrive at this unconditioned first

principle exceeds the capacities of (always conditioned) subjects! Reason's quest for the

unconditioned can never be satisfied. Where the understanding can unify its elements, reason

remains ever frustrated, its wholes always provisional, never comprehensive.

Syllogisms do not express the unconditioned, they stage the regress that discloses an aspect of

it. The regress is simultaneously an image of "the inherent dynamic of reason" and an aspect on the

unconditioned (Allison 2004: 313). That there are three different kinds of inference—categorical,

hypothetical, and disjunctive—and that each kind stages its own kind of regress suggests that there

are at least three different aspects of the unconditioned. The three kinds of inference "characterize

the various ways in which the unconditioned can be conceived" (Allison 2004: 313). Since reason

proceeds always and only by logical inference, Kant concludes that these three aspects must be the

only three aspects of the unconditioned. Before considering how Deleuze contests this conclusion

(that there are only three aspects), let's catalog the inferences and regresses. Kant relates *categorical*

inference to the most familiar kind of regress. Inference is supposed to transfer truth from the premises to the conclusion. But what will secure the truth of the initial premise, if not a preceding argument? For a premise to be truthful, there are two options: it is an unconditioned truth or it is the conclusion of a derivation. Suppose the latter. But this new derivation provokes the same question: what secures the truth of its initial premise? And so on. That deductions are truth-preserving evokes the specter of the unconditioned. Truth must have a cause, and this cause cannot be falsity. Why? If truth has a degree of reality greater than falsity, then for falsity to be the cause of truth would be for the effect to exceed the cause. If falsity is the absence of truth, then for falsity to be the cause of truth would be for truth to be without cause. But nothing is without cause. Truth cannot emerge *ex nihilo*. Thus, since it was caused by something, it must have been caused by something unconditionally true. *Hypothetical inference* is essentially Carroll's paradox. *Modus ponens* is often admitted as a rule: "If A, then B; A; therefore B." But this requires a higher consequence: namely "If '*if A then B, A*', then B." But to accept this new premise requires a still higher consequence, and so on. This regress appears in the gap between the premises and their conclusion. Finally, *disjunctive inference*: a disjunctive syllogism presupposes that the extension of a concept is (ideally) complete. But this extension is not surveyable; it exceeds possible experience. Thus, it cannot have been conditioned by the categories of experience. But there are no other conditions than those of experience. We encounter again the specter of the unconditioned.

III.

> Ideas must be called "differentials" of thought, or the "Unconscious" of pure thought. Ideas, therefore, are related not to a Cogito which functions as ground or as a proposition of consciousness, but to the fractured I of a dissolved Cogito; in other words, to the universal *ungrounding* which characterises thought as a faculty in its transcendental exercise.

For Kant, the unconditioned is veiled always by an Idea. Ideas are not concepts. Even if false, a concept abides by the structures of possible experience. It has its sense in and through the conditions that determine sense—that is, through the conditions that determine what it is for an object to be an object. But Ideas partly evade these constraints, since they concern a whole that cannot be an object of experience. Thus, the referent of an Idea has not been processed exhaustively by the table of categories. It is not an object of intuition. So if not to objects, to what do Ideas refer? Rather than the *objects* of possible experience, Ideas refer to *problems*.[188] Here's the genetic itinerary: reason's appetitive principle generates an indefinite regress; this indefinite regress discloses an image of the unconditioned; an Idea covers this image; covering it, the Idea refers not to the regress itself but to a problem; this problem expresses an aspect of the unconditioned. Whatever it might be in itself, the unconditioned is encountered only as the expression of a problem. Since it grounds a genetic process, we cast the unconditioned as a *genetic surface*.

Each kind of inference discloses its own kind of regress, and each regress discloses a unique aspect of the unconditioned. Since an Idea *just is* such an aspect, there are three "Ideas of reason":

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[188] The object of an Idea "can be neither given nor known, but must be represented without being able to be directly determined. Kant likes to say that problematic Ideas are both objective and undetermined. The undetermined is not a simple imperfection in our knowledge or a lack in the object: it is a perfectly positive, objective structure which acts as a focus or horizon within perception. In effect, the undetermined object, or object as it exists in the Idea, allows us to represent other objects (those of experience) which it endows with a maximum of systematic unity" (Deleuze 1994: 169). "Ideas have legitimate uses only in relation to concepts of the understanding; but conversely, the concepts of the understanding find the ground of their (maximum) full experimental use only in the degree to which they are related to problematic Ideas: either by being arranged upon lines which converge upon an ideal *focus* which lies outside the bounds of experience, or by being conceived on the basis of a common *horizon* which embraces them all. Such focal points or horizons are Ideas—in other words, problems as such—whose nature is at once both immanent and transcendent" (Deleuze 1994: 168–169). An Idea is "a system of differential relations between reciprocally determined genetic elements" (Deleuze 1994: 173–174).

god, world, and soul. This remarkable account seems to come from another philosopher entirely: reason has this capacity to summon—purely of itself, and from the syllogism of all places—a figure that breaks upon reason with all of the force of the sublime.[189] For Kant, indefinite regress is the *cause* of reason's ineradicable tendency to exceed the limits of possible experience. We encounter here a kind of circle: reason proceeds by the syllogism; the syllogism evokes inexorably the unconditioned; the unconditioned poses Ideas; Ideas animate reason.

But even if reason's *primary* praxis is to seek comprehensive wholes, it is not clear that this is its *only* praxis. For Kant, it is reason's pursuit of comprehensive wholes that uncovers these regresses in the first place. The appetite for closure determines the encounter. Thus, the encounter with a regress is never done purely for itself: it is a residue of the desire for total comprehension. As such, it is subordinated to the *telos* of comprehension. But must we deprive this activity of its autonomy? Might reason express an aspect of the unconditioned independent of its pursuit of comprehension? What else can reason do? By what right can Kant even evoke "ends" at this point in the *Critique*? If the expression of the unconditioned can be pursued for itself, without any reference to a total comprehension, reason may possess the capacity to exacerbate or, better, *to exponentiate* its regresses.[190] After all, a more potent regress will express more potently the unconditioned. If it can pursue the latter activity, it will develop the means to achieve it. Within reason, this layer of exponential praxis could develop in concord with its comprehensive praxis. Not every praxis need

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[189] It is reminiscent of incompleteness in logic, where something internal to a system outpaces it.

[190] Why exponentiation? Within mathematics, exponentiation implies incompleteness. It is the paradigmatic destabilizing operation (Bassler 2017). Kreisel's purely intra-mathematical version of Gödel's incompleteness proof relies upon the ability of exponentiation to outpace every rational bound (Girard 2011).

subordinate itself to synthesis! Not every *telos* need consecrate itself to harmony! Of course, that Kant subordinates understanding to judging grounds the subordination of reason to comprehension.[191]

For Kant, Ideas are compounded always of an image of an indefinite regress and an appetite for closure. But must we compose every Idea of these two elements? Perhaps reason's exhibition of problematic regresses can be decoupled from its appetite for comprehension. This decoupling could create a whole new class of Ideas—a class far in excess of the three listed by Kant. Unlike Kant's Ideas, these new ideas need not reflect the oppressive desire for closure and self-identity coloring god, world, and soul. Like Kant's Ideas of reason, they will refer to a problem. Of course, this problem need not be assimilated to an image of an indefinite regress. Or if it is, it need not be one of these *three* regresses: just as there are more than three aspects of the unconditioned, so there are more than three kinds of problems.[192] Kant's regresses express the unconditioned, but they do so tamely: the regresses are relatively well-behaved.[193] In the element of sense, we encountered a much less well-behaved kind of regress. It is not too much to expect that the unconditioned admits of all manner of turbulence. Worse still, it is monstrous to ground the force of problems in the transcendental subject. Refusing to couple the transcendental field to the form of the subject liberates problems

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[191] Not surprisingly, Kant insists on an "isomorphism" between the Ideas and the categories: three "species of relation" for each entry in the table of categories, three Ideas of reason (A 323/B 379). We have had occasion to critique the form of this table.

[192] There are problems other than problematic regresses that might correlate with these other aspects (Allison 315; Kant A 322/B 379). Deleuze does not abandon the correlation between problems and aspects of the unconditioned: every problem will express such an aspect. Maimon insists that there is only one Idea, but that it admits of multiple aspects: it is an inexhaustible, differential system like Spinoza's substance (Maimon 2010: 188).

[193] This is Lautman's great insight: dialectical notions that resist definitive reconciliation—such as the continuous and the discrete—express an aspect of the unconditioned. This aspect will be covered by a problem. This problem provokes solutions, but these solutions can never resolve definitively the tension of the dialectical notions. They present only a provisional, local resolution of it. Rather than converge in a comprehensive whole, these resolutions disrupt every attempt at total comprehension. They are generative, soliciting novel solutions that will connect existing sets of solutions in new ways.

from the subjective diagram. That, within Kant's diagram of the transcendental subject, this problematic force is quite anomalous hints at a "transcendental field" independent of any "transcendental subject". It might be that the latter is just an instance of the former. That Ideas really lead subjects astray suggests that Ideas ride currents in excess of any subject. Ideas possess their own force, one that impels reason ineluctably beyond itself: "the problematic is both an objective category of knowledge and a perfectly objective kind of being. 'Problematic' qualifies precisely the ideal objectivities. Kant was without a doubt the first to accept the problematic not as a fleeting uncertainty but as the very object of the Idea, and thereby as *an indispensible horizon of all that occurs or appears*" (Deleuze 1990: 54, my emphasis).[194] To his credit, Kant does not dismiss either problems or the unconditioned expressed by Ideas as simple illusions. Independent of any subject, but not of any transcendental field, the specter of the unconditioned poses Ideas of itself.

Deleuze's transcendental inquiry pursues less the rules by which Ideas are formed and more the structure of the problematic field that generates these Ideas. Problems are more general than paradoxes. The move from the paradoxical field of sense to the transcendental field of problems generalizes Deleuze's critical inquiry. It accomplishes the shift from a viewpoint of conditioning to one of genesis. Like paradoxes, problems do not indicate a preferred orientation or determine a unique direction; they impel divergence. This accords well with Kant's presentation of the

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[194] Along with subordinating it to encounters, centering thought in Ideas secretes a new image of thought. For Deleuze, what is striking about Kant's thought is its ambivalence. If he affirms the dogmatic image of thought, he undermines it as well: "when Kant shows that thought is threatened less by error than by inevitable illusions that come from within reason, as if from an internal arctic zone where the needle of every compass goes mad. A reorientation of the whole of thought becomes necessary at the same time as it is in principle penetrated by a certain delirium. It is no longer threatened on the plane of immanence by the holes or ruts of a path that it follows but by Nordic fogs that cover everything. The meaning of the question of 'finding one's bearings in thought' itself changes" (Deleuze and Guattari 1994: 52–53).

antinomies and the paralogisms: problems impel contradictory extensions. That problems diverge prodigiously suggests to Deleuze that they are best conceptualized as continuous manifolds. Why? Aspects of a problem admit of connections to other aspects in infinitely many ways. But this is not the sole reason for identifying problems with continuous manifolds. Bergson's philosophy of time provides another reason.

(end of second rehearsal)　　■

CHAPTER 3

PART II

THE TEXTURE OF FOLIATED TIME

> perennial
> invariance won't hollow it, no
> averaging makes their tones—
>
> "A" – 22

The virtuality of the Idea has nothing to do with possibility. Multiplicity tolerates no dependence on the identical in the subject or in the object. The events and singularities of the Idea do not allow any positing of an essence as "what the thing is".

—Deleuze 1994: 191

This world of sense has a *problematic* status: singularities are distributed in a properly problematic field and crop up in this field as topological events to which no direction is attached.

—Deleuze 1990: 104

This surface topology, these impersonal and pre individual nomadic singularities constitute the real transcendental field.

—Deleuze 1990: 109

> the visage of metrics
> tuned to a mesmeric lisp
> to a rancid facial dice
> thrown across ethers
> across 3 or 4 sierras or voids
>
> –Will Alexander, "Thought as Philosophical Torment"

I. Transition to Problems (skirting Heidegger)

The paradoxical character of sense provides a first clue for the theory of transcendental fields. That the sense of every being is problematic suggests that every being constitutes itself in and by a problem. In other words, everything—saw-whet owls, Zukofsky's "A", algebraic topology, the innumerable praxes fouling the world, prismatic soap films, the word "prismatic"—is a solution to a problem: to perceive its sufficient reason is to perceive it as a (partial) resolution of a problem. It is Kant who discovers "the question and the problematic as a transcendental horizon, as the transcendental element which belongs 'essentially' to beings, things and events" (Deleuze 1994: 195). This problematic "ground" is not one that fixes and identifies but one that unmoors every vessel and undermines every identity, whether that identity be as tenuous as an eddy or as articulate as a calcite spar. Deleuze is serious: "to ground is to metamorphose" (Deleuze 1994: 154). Despite this heavy weather, problems allow their solutions to attain a quantum of consistency—they say to their solutions: "permission granted, but not to do whatever you want" (Cage). The "topology" of a problem constrains its solutions. But the topological dynamics of a problem is not the only determining element: the ways in which its solutions articulate themselves shape as well the "problematic complex". The reciprocal interaction of these two dynamical regimes—the one roiling, involuted, turbulent, the other vectorial—will be crucial for Deleuze's attempt to construct a philosophy of dynamical immanence. Further, detailing problematic dynamics will be crucial for our attempt to resolve a problem at the heart of Deleuze's reading of Bergson, a problem not extrinsic to Bergson's philosophy but intrinsic already within it (part III).

Problems disclose aspects of the unconditioned. Thus, the *structure* of problems will provide

the principle "clue" to the structure of the transcendental field, quite like how the structure of

Dasein—that being for whom Being is a problem—provides a clue as to the meaning of the question

of being. This is not the only important commonality between Deleuze and Heidegger: they both

decouple "*a priori*" from "universal" and allow also for variable transcendental conditions. Neither

expect a transcendental inquiry to unearth universal conditions. It might be that *a priori*

conditions—which structure experience without ever being given in experience—are local and

variable.[195] Heidegger is important for Deleuze because he relates irresolvable problems to the

variability of the transcendental conditions of real experience. For Heidegger, that the problem of

Being subjects us to an always anterior interrogation—one whose force can never be muted, only

more or less dissipated—ensures that the conditions for the meaning of being are variable. These

conditions structure our engagement with the world. There is another reason that Heidegger attracts

Deleuze: he radicalizes Kant's transcendental program:

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[195] Unlike Leibniz, Deleuze does not think that it is always possible to pass from the local to the global. When it concerns the local conditions of experience or the local contraction of a past that forms a milieu, these conditions are unique. In fact, one cannot often survey the heterogeneous orders implicated by an organic whole or an intensity. Forget attaining the global aspect: it is often impossible to attain an adequate local one. Physics corroborates this: "we now know that there are dynamic systems of different sorts. There are the rare ones in which determinism exists as a limit-state, costly but conceivable, in which extrapolation is possible between the approximate description of any observer and the infinitely precise one of which Leibniz's God is capable. And there are systems in which the idea of determinist prediction conflicts with the laws of dynamics and in which the idea of determining the initial conditions becomes unthinkable. In certain cases, the passage between local, dynamic descriptions and global vision is impossible" (Prigione and Stengers, in Serres 1981: 150). Indeed, " physics finds itself defined by the fact that we cannot observe and measure with positively infinite precision, no more than we can communicate faster than the speed of light or measure with instruments that are not macroscopic…. It is not a question of recognizing that we are incapable of calculating such trajectories; rather, it is a question of realizing that the trajectory is not an adequate physical concept for these systems. Henceforth the field of dynamics will appear larger: systems described in terms of trajectories with their determinist and reversible properties are only a particular class within that field" (152). Lucretius provides the precedent, answering "'no' to the following question: 'Is the passage from local to global always possible ?'" (138).

we formulate [Kant's question "*How can the subject have in advance an understanding of the ontological constitution of the being of a being?*"] in a more basic and radical manner by saying: *Beings are in no way accessible without an antecedent understanding of being.* This is to say that beings which encounter us must already be understood in advance in their ontological constitution. The understanding of the being of beings, this synthetic knowledge *a priori*, is crucial for every experience of beings. (Heidegger 1997: 38)

For Heidegger, the being of beings is *a priori* because it is *projected* in advance.[196] But this projection is no "purely subjective" projection. In the preface to the second edition of the *Critique of Pure Reason*, Kant praises physicists for having implicitly

comprehended that reason has insight only into what it itself produces according to its own design; that it must take the lead with principles for its judgments according to constant laws and compel nature to answer its questions, rather than letting nature guide its movements by keeping reason, as it were, in leading-strings; for otherwise accidental observations, made according to no previously designed plan, can never connect up into a necessary law, which is yet what reason seeks and requires. (B xiii)

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[196] Mathematical physics intrigues Heidegger because it provides a paradigmatic instance of how a transcendental field—which expresses itself here through Dasein's "projection" of those ontological categories that will disclose the mathematical aspect of nature—makes possible certain historically-specific experiences of nature: "the paradigmatic character of mathematical natural science does not lie in its exactitude…; it consists rather in the fact that the entities which it takes as its theme are discovered in it in the only way in which entities can be discovered—by the prior projection of their state of being" (Heidegger 1962: 414; see also §32). Projections constitute the categories that determine those aspects of the entities that will appear in experience. To constitute the categories of experience is to determine the kind of being of the objects of experience. But "that something is 'in each case' *a priori* within a particular projection by no means implies that it is universally valid across different projections" (Lafont 2015: 285). Against Lafont, I argue that "situating" the projection of the being of beings does not necessarily betray the transcendental impulse. Even if Heidegger resists this impulse, Deleuze charts a means of preserving it alongside Heidegger's emphasis upon the variability of transcendental conditions.

But there is a problem: how does reason know that its "principles", rather than simply *reflect* the principles of nature, in fact *are* these principles themselves? Kant's answer: for an object to be an object, it must satisfy first the universal conditions of experience. His transcendental inquiry uncovers these conditions. Heidegger *identifies* this "transcendental" inquiry into the conditions of experience with his "ontological" inquiry into the meaning of being. Of itself this identification accomplishes little: the "meaning of being" is as hidden as the conditions of experience: "We understand something like the *being* of beings, but we neither grasp nor know *that* we understand this being in a pre-conceptual way or even that it is this understanding of being that primarily *enables* all our comportment to beings" (Heidegger 1997: 16–17). Crucially, this comportment is intellectual and practical. This practical dimension provides us with an important clue, one that justifies the above "identification": praxis is situated and variable. Thus, where for Kant this projection of the conditions of experience (or, equivalently, the meaning of being) is universal and invariant, for Heidegger it is "historical"—that is, local and variable.[197] What perplexes Kant and Heidegger is that this projection is normative: it is as binding for the future objects of experience as it is for the future subject of this experience. What is the structure of "experience", that it suffuses both what appears within it and what is subject to it with a normative dimension? For an answer, see the appendix!

II. *Can we generalize Kant's theory of problems? Do "syllogistic regresses" disclose the only aspects upon the unconditioned?*

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[197] "That such projections are prior to all experience of entities and cannot be revised on the basis of the experience of those entities by no means indicates their universal validity, since these conditions apply only to those who happen to share such a historically contingent projection" (Lafont 2015: 287).

Unlike (*alas!*) much of philosophy, mathematics does not unfold in some frictionless space. It cannot trace whatever arabesques it pleases. Something obstructs it, but what? What resists mathematical inquiry even as it guides it? For Lautman, this *resistance* is the first clue into "mathematical reality" (Lautman 2011: 28). Mathematical reality is approached best not through mathematical objects but through mathematical theories. It may seem that little is gained in this shift from objects to theories. What is a theory if not a collection of objects plus a collection of permissible operations upon them? Does specifying a means of transit amongst a domain of objects really give us a better purchase on mathematical reality? If we answer "no", it is because we are bewitched by objects: it is not hard to conflate "solidity" with "reality" and to elevate "objective solidity" over "theoretical transit". This privileging of objects over means of transit is not easy to overcome. It is a part of a long tradition: motion occluded by static bodies in fixed space, becoming reduced to a vanishingly small interval between definite initial and final states, intensity covered by extensity, time projected into space. Lautman does not openly attack this tradition. His gambit: to install the means of transit between objects as a new "foundation" for mathematics, even if this installation annuls every pretension to fixity! If he can convince philosophers of mathematics to accept this nomination of the "means of transit between theories" as the "foundations" of mathematics, then he can prize them away from their undue fealty to objects. Indeed, this gambit is designed to subvert every attempt to establish objects as logically prior to the means of transit.

There are few "foundational" programs that have not been compromised, first, by their uncritical belief in the solidity of objects and, second, by their identifications of "solidity" with "adequate foundation" and of "fundamental" with "unalloyed and simple". But the foundations of

mathematics must not be carried away by this metaphor, *foundation*. Nor must it conflate *basis* with

basic. Against an analysis that would decompose everything into simple elements,

> Lautman emphasizes a synthetic perception, one ready to determine the value of complex
>
> networks of mathematical interaction, beyond a stifling search for "primary" notions. The
>
> unity of mathematics is expressed, not in a common base to rebuild the whole, but in the
>
> convergence of its methods and in the passage of ideas *between* its various networks: logical,
>
> arithmetic, algebraic, analytic, topological, geometric…. It happens to be the *real* unity, at
>
> the interior of the synthetic universe of effective mathematics, that *disappears* when the
>
> plurality of mathematical knowledge is reduced to its fictional analytic reconstruction.[198]
>
> After all, the set-theoretical presentation provides convenient layers of relative consistency,
>
> but, in practice, it is increasingly evident that mathematics develops far from its so-called
>
> fundamentals. (Zalamea 2011: xxvii)

Lautman refuses both to posit any "simple elements" into which all mathematical objects can be

analyzed (even if only "in principle") and to believe that this analysis is anything other than a fiction.

Refusing to prioritize objects over the means of transit between objects sets him against the entire

tradition of set-theoretical foundations—and those who ground their philosophy in it (Badiou).

Only when the philosophy of mathematics passes from an analytic fixation on fictive atoms to a

synthetic oscillation between aspects—now topological, now numerical, etc.—will it abandon this

purely ideological preoccupation with objects. How perverse to interpolate unalloyed objects and

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[198] Jean Petitot present this as a thesis common to Cavaillès and Lautman: "Mathematics has a solidarity—a *unity*—that prevents any regression to a supposedly absolute beginning (this being a critique both of logicism and of a phenomenology of the origin developed within the framework of a philosophy of consciousness)" (Petitot 12). The influence on Deleuze is evident: he refuses every philosophical attempt to "regress" to an origin-point.

primitive operations into the foundations of a discourse (*viz.*, mathematics) that fetishizes above all

the "ability to move with size and speed" (Bassler)! For Lautman, the foundations of mathematics

offer not solid foundations but permeable membranes, concrete images of a discourse passing

imperceptibly out of itself and into a reality that is not its own—if it ever was "purely itself" to begin

with! Lautman asserts that mathematical theories are never purely mathematical: they crystallize in

extra-mathematical debris-fields. It would be wrong to pose a thoroughly purified system as the

foundation of always impure crystallizations.

It is not just that mathematics implicates physics. There is a metaphysical skein as well.

Cryptically: "the movement of [actual mathematical] theories incarnate the schema of liaisons of

certain [virtual or metaphysical] Ideas" (Lautman 2011: 183, translation modified). As we will see in

part III, it is this foundational impurity, this necessary permeability, that allows Deleuze to counter

emphatically Bergson's thesis that "duration, as duration, and motion, as motion, elude the grasp of

mathematics"—Deleuze counters this while *preserving* Bergson's critique of all previously existing

philosophies of time (Bergson 2001: 234). For if the foundations of mathematics are not purely

mathematical, they need be neither exclusively quantitative nor extensive.[199] Even if, at present,

quantitative and extensive elements saturate the discourse, this saturation is not final: mathematics is

always an unstable, impure, and provisional synthesis—one only open to alien elements. There may

be non-quantitative and non-extensive eddies operating already within it. Who could say that no

mathematical theories harbor intensive or qualitative seams? Or, if not a seam, then a means of

rapprochement with purely qualitative domains like duration. Bergson was too hasty to dismiss even

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[199] In conversation, Brad Bassler noted that even Brouwer's "temporal" foundation of mathematics is thoroughly quantitative: it invokes "two-ity" as a foundational moment. Bergson would contest, if not the attempt to ground mathematics in temporal intuition, then certainly Brouwer's overtly quantitative conception of temporality.

the possibility of a relation between mathematics and duration. For if the virtual Ideas that "govern" the articulation of mathematical theories are not themselves purely mathematical (but "metaphysical"), and if these Ideas govern not only the articulation of philosophical theories but also the continuous processes of nature (like evolution), then they relate indirectly durative experience, Bergson's philosophy of duration, and mathematical theories that resolve the same problem (posed by an Idea) as the one resolved by a durative experience.[200]

It is this superior metaphysical reality of virtual Ideas that envelops the initial oscillation between an objective aspect and an operational aspect—an oscillation concretized in Lautman's prioritization of theories, with their objective and operational aspects—with a more profound oscillation between a transitional aspect and a problematical (or Ideational) aspect. More succinctly, Lautman's philosophy of mathematics is a clue into the domain of virtual problems:

> we see that the problem of mathematical reality is posed neither at the level of facts, nor at that of entities, but at that of theories. At this level, the nature of the real divides into two. We have shown… in effect how mathematical theories are amenable to a dual characterization, one that focuses on the unique movement of these theories, the other on the connections of Ideas that are incarnated in this movement. These are the two distinct elements whose reunion constitutes in our opinion the reality inherent to mathematics.
> (Lautman 2011: 187)

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[200] As we will see, the foundational dialectical notions that pose the problem are to be conceived of as intensive poles. This intensive foundation underlies as much the articulation of "extensive" mathematical theories as the articulation of extensive physical space. Deleuze charts the procession: from intensive and affective *spatium* to pre-individual transcendental surface to extensive individual.

Deleuze uses Lautman's analyses of mathematical theories and problems as a springboard into the "topological dynamics" of problems themselves. What does Lautman mean by "Ideas"? How do theories involve them? Why are Ideas necessary? These questions will take some time to answer. We've rehearsed Kant's account of how problems generate Ideas. It is time to consider Lautman's account of how problems generate theories. Lautman, despite his focus on mathematics, extends Kant's account of problematic genesis beyond its rather narrow remit. Here's a précis: Theories specify the means of transit between entities. Depending on the theory, these transitions will be transitions from a continuous entity to a discrete entity, from a local perspective to a global perspective, from finite to infinite, etc. But the actual movement between the "polar" entities *within* a theory will be expressive of a virtual movement between inherently problematic and extra-theoretical "dialectical notions" (such as "local" and "global") mediated by Ideas. But what does it mean for an actual theory to express or to incarnate a virtual Idea? What is the nature of this expression? How to pass from a virtual problem to an actual theory? A theory expresses one provisional resolution to the *problem* (posed by an Idea) of the connection between virtual dialectical notions such as "continuous" and "discrete".[201] Every mathematical theory *will have resolved* a problem posed by an Idea, even if the nature of the problem becomes evident only in retrospect, that is, subsequent to the consolidation of a theory. The perception of a problem of connections between Ideas "can arise outside of any [actual] mathematics, but the effectuation of these connections is

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[201] Though of a mathematical vintage, it is crucial that the dialectical poles have a meaning beyond mathematics. And who could deny it? Also, mathematics must not be able to legislate definitively upon the meaning of these poles. A mathematical specification of the meaning of, say, "continuity" is specific to a theory: topology perceives continuity differently from analysis. As specific to a theory, it can be no more binding for all theories at all times than it can for, say, biological resolutions to the problem posed by the continuous and the discrete. What would be a biological resolution to that problem? An animal! It's at once discrete and compromised.

immediately mathematical theory" (Lautman 2011: 28). Lautman casts even the barest perception of a problem as already an attempt at its resolution. There is no encountering problems outside their ongoing effectuation within a theory, however provisional this effectuation. This curious relation of problem to solution will undermine every attempt to install a solid foundation for mathematics. Further, it will provide an explanation for the ineradicable solidarity of (or eerie resonance between) disparately constituted mathematical theories.[202]

If mathematics is privileged over other discourses, it is only because it prioritizes problems. Why does mathematics play "with respect to the other domains of incarnation, physical reality, social reality, human reality, the role of model in which the way that things come into existence is observed" (Lautman 2011: 203)? Because of its monomaniacal fixation upon problems. The curious discursive form of mathematics—purged of almost all ornament, hostile to metaphor, scornful even of images—is an expression of its icy commitment to virtual problems. Already in its rhetorical commitments mathematics announces its willingness to relinquish anything that does not delineate clearly the virtual. If problems ground all things, then that discourse that cleaves closest to problems cleaves closest to the way in which things emerge from this ground. The proximity of mathematics to problems is the reason for the "miraculously" "anticipatory" "applicability" of mathematics to nature. Mathematics concerns itself primarily with problems: not solutions, proofs, or applications. To say that mathematical reality has a non-trivial topology is to say that problems have a non-trivial

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[202] "To put it another way, because the 'sufficient reason' for the diversity and development of mathematical theories, along with their progressive integrations and interferences, cannot be found within mathematics itself, we are obliged to affirm the prior existence of something like the dialectic of Ideas" (Bowden 2011: 111). He adds: "Nor, evidently, can we find this sufficient reason in the theories' greater or lesser abilities to appropriate an already given empirical real" (Bowden 2011: 146, n.33, citing Chevalley 1987: 61).

topology—exactly as Deleuze contends. Mathematics pursues nothing less than the virtual topology of its problematic ground.

It should be clear that Lautman's attack upon analytic philosophies of mathematics (those that seek solid foundations, final reductions, complete analyses, simple objects, and perspicacious operations) is not just another tawdry episode in the philosophy of mathematics. It is a component of a rather ambitious vision of a truly genetic transcendental philosophy (or transcendental Spinozism).[203] Lautman's displacement of analysis with synthesis, of objects with theories, of products with production, is a first step towards the problematic ground. Approaching mathematical reality by the various means of transit absolves us of the need to commit to a definite domain of self-identical objects or static essences.[204] A theory specifies first a means of transit between objects. If theories express mathematical reality more clearly than self-identical static objects, it is because mathematical reality possesses a certain dynamism: mathematical reality *resists* or *obstructs* our essays into it, but its obstructions (its "topological invariants") are variable.[205] Expelling objects from foundations is Lautman's opening move. It opens for him a path into the problematic ground— much as excising individuals and demoting subjectivity led Deleuze to a truly critical vision of the

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[203] Lautman restricts his inquiry into mathematical reality, wagering that mathematics—though not in itself a privileged domain—provides a privileged vantage on the dynamics of problems and solutions. Deleuze, seeking other facets of reality, other clues as to what grounds the genesis of actual beings, adapts Lautman's methods to physical, psychical, chemical, political, and biological domains. Mathematics is a laboratory for studying how things come to be. Similarly, the problem of "philosophical praxis" is a laboratory for studying how radical reorientations might befall us.

[204] This is akin to a shift from set-theoretic to type-theoretic foundations: the domain is unspecified (Bassler 2017: 74). We lose the commitment to logical definiteness. Lautman's "transitional" foundations resonate in part with set theoretical foundations: as a set is indifferent to the kinds of beings that compose it, so the means of transit between objects are indifferent to its objects.

[205] Voevedevsky's univalence axiom enshrines this dynamic perspective for type-theoretic foundations that privilege homotopy: the axiom identifies isomorphic entities with each other. If objects lack specificity, what is it that they contribute? Next to nothing. Their specificity was always the source of their power. What is important is the machinery that enables the transit between objects and domains. Lautman does not so much promote theories over objects as dissolve the purchase of objects upon the ground—much as individuals have no place in the virtual.

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transcendental field.[206] Instead of "descending" to the primitive axioms and simple elements from which "everything" could "in theory" be built (though never in practice!), we immerse ourselves in the dynamic fragments of an evolving milieu. That these milieux are so much more dynamic than those disclosed by set-theoretic foundations primes us for Lautman's claim that mathematics is never purely mathematical. Mathematics involves (minimally) extra-mathematical Ideas, to say nothing of the other discourses contaminating it or of the (non-conceptual) metaphors guiding its (conceptual) constructions. The singular seeds around which theories crystallize are ever mathematically insoluble. Their insolubility provokes only further crystallization.

Supposing that mathematics is purely mathematical is simply dogmatic. A supposition with as drastic a consequence as the following should be abandoned: it makes mathematical physics—that fecund conjunct before which even the most misanthropic must pause—appear as nothing less than *miraculous* (Châtelet 2010). How objectionable! If mathematics is purely itself, how does it find "within itself" expressions of physical systems? How does it secrete architectonics that reveals themselves to be physical? How does it anticipate in itself what it will encounter in Nature? How does mathematics echo so emphatically what is not it? It must be that this supposition that mathematics is "purely itself" is false. Lautman's synthetic vision resists from the beginning this dogmatic separation of discourses. We proceed from dynamic fragment to dynamic fragment, never supposing to have cordoned off anything behind an impermeable membrane.[207] It is not just a

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[206] To focus upon transits over objects affects a qualitative change not unlike the one which occurs when passing from a number system with only addition and multiplication to one with addition, multiplication, *and* exponentiation. Why exponentiation? It is a potent enough operation to produce *intra*-mathematical incompleteness phenomena.

[207] What if mathematics and physics participate in the same virtual problems? What if these problems are the same problems that biological beings attempt to resolve? By their dynamism, mathematical theories present themselves as cross-roads where all manner of intra- and extra-mathematical phenomena converge.

physico-mathematical discourse, but one that is by turns metaphorical and metaphysical—not to

mention practical!

But there is a problem: theories are open-ended, incomplete, in process. How can we begin

with something so indefinite? At least consistent, self-identical, thoroughly isolable objects provide,

it seems, definite parameters for the inquiry into mathematical reality. We must bury this dream of a

logically definite beginning along with that of a fixed foundation of simple elements and operations!

Beginning with mathematical objects only veils the problem: it precludes the possibility of tracing

the *genesis* of mathematics—much as affirming (with Kant) the priority of judgment precludes the

possibility of tracing the genesis of experience. It is not as if an object like an ellipse is any more

definite or complete than a theory like Riemannian geometry. After all, an object (like the ellipse)

expresses novel aspects when embedded in novel theories. At the least, it must be admitted that the

ellipse admits of an indefinite extension: it expresses any number of properties, admits of any

number of theorems, reveals all manner of latent facets. Of course, theories are even worse: besides

collating an indefinite number of entities, each of which is itself indefinite, a theory allows for any

number of transits between these objects and between itself and other theories.[208]

That theories express aspects of objects suggests the priority of the former over the latter.

Lautman is more blunt: objects are provisional eddies of powerful theories, nothing more than

charming detritus drifting occasionally into view. The means of transit of a theory secrete objects.

They should no more detain us than they do mathematicians: the action is in the transformations.

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[208] It is a curiosity of mathematics that even apparently isolable "entities" involve, if not the infinite, then a nebulous
domain that subverts every attempt to fix the distinction between the finite and the infinite. That this distinction is
always relative is a hint that we need a variable concept to map the varying border between the finite and the infinite: this
is the parafinite (Bassler 2015).

How does Lautman establish the priority of theories over objects? **First**, objects are known only relative to theories. A theory does not just explicate a pre-existing essence. In conjunction with extra-mathematical Ideas, it generates a novel aspect upon a problem. If this aspect is unprecedented, we have a new object: as with the "invariant tori" of dynamical systems (Arnold). If not, the aspect will resonate with other aspects of the problem. Objects are collations of such resonances, attaining their illusory solidity only in passing: "a solid [is] six-sided music" (Jonathan Williams). We must resist the temptation to posit static, self-identical essences. Theories do not just transpose the properties of pre-given essences from static eternity to dynamic present. They actualize virtualities—and this actualization is a radically novel genesis inflected uniquely in time. **Second**, identifying mathematical reality with static essences is, frankly, dogmatic. It is an *a priori* decision, one that indulges so many biases—such as those towards identity, immobility, sedentary distribution.[209] We are inquiring into mathematical reality, not projecting it ahead of us. Consider again the ellipse: is it an algebraic equation? conic section? a "locus of points such that the sum of their distances to the foci is constant" (Lautman 2011: 184)? Is it the essence containing all possible properties of the ellipse? If we plump for the latter, we have to commit to the essence being inexhaustible. Who could prove it was exhausted? Who could prove that no forthcoming theory would reveal anything new about it? Mathematical reality would exceed always a discursive intellect. But—and here is the problem with static essences—we cast also these "new revelations" as "not really new": they were contained already within the essence! Its inexhaustibility is not an "objective" feature of the essence, only a reflection of a "subjective" condition. But what grounds this dismissal of novel discoveries if not a *bias* against the

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[209] Deleuze critiques "Rationalism" for tying "the fate of Ideas to abstract and dead essences" rather than affirming their problematic, evental core (Deleuze 1994: 188).

possibility that concepts *evolve* in time? That they are indeterminate not just *for us* but *in themselves*; that they dissipate errantly a coiled force (which is a function of its aspect upon a problem) in time—Lautman refuses to conceive otherwise of mathematical concepts. *Okay, we forgo essences. How about reducing the ellipse to a "canonical" equation?* But that an ellipse is now an equation, now a geometrical figure introduces a certain undecidability. Is one specification "more fundamental" than the other? Who decides? Again, Lautman urges us to take seriously this undecidability: it is expressive of mathematical reality, not just of subjective ignorance. If an ellipse were essentially geometrical, algebraic equations would be derivative, almost inessential. Why prioritize geometry over algebra? For Lautman, such pseudo-problems are symptoms of a tendency to regard mathematical reality as static and complete in itself. The latter is never a trivial assumption.[210] Besides being philosophically portentous, it countermands the very character of mathematics: its love of transformation, its startling surprises, the bizarre complicity of disparate theories. It is almost a living beast. This is why Lautman finds in the *movement* of theories the clearest expression of mathematical reality:

> mathematical reality therefore does not reside in the differences that separate the completed entities from the incomplete entities, perfect entities from imperfect entities. It resides rather in the possibility of determining one from the other, that is, in the mathematical theory that

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[210] To regard mathematical reality as complete is to regard it as a closed system, exempt from further development. This evokes (not coincidentally!) a problem haunting cosmology: whether the cosmos is closed and compact or open will affect our inquiry into it. But we cannot decide this question in advance of our inquiry. What to do?

asserts these connections. Thus we see that the reality in question is not that of static entities,

objects of pure contemplation. (Lautman 2011: 186)[211]

Mathematical reality is dynamic and topologically non-trivial: it is no more homogeneous and inert

than matter or spacetime. Theories describe a complex dynamical figure: they "incarnate" extra-

mathematical Ideas, trace trajectories through problematic fields, and secrete aspects upon these

fields that coalesce into mathematical objects. Theories marshal forces and organize beings—its

"objects" as much as the "subjects" who interface with it.[212] Its dynamics betray its topological

structure. But what grounds its topology?

A theory's "dynamics" describes its trajectory through problematic fields and its manner of

moving from object to object. Its trajectory, its manner of moving between objects, even the objects

themselves—these are all functions of a "superior" set of problems: a theoretical system incarnates a

"superior dialectic" or "schema of genesis" that expresses the extra-mathematical Idea that covers the

problem that the theory attempts to resolve (Lautman 2011: 190).[213] An Idea "envisages possible

relations between dialectical notions" (Lautman 2011: 204). Dialectical notions are non-dissociable

pairs, such as "the continuous" and "the discrete". Or they are different but complementary aspects,

such as "the local" and "the global". Or they are mutually-positing poles, such as "the perfect" and

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[211] That *transit* expresses adequately mathematical reality suggests how to account for what has always vexed philosophers too enchanted by essences: mathematical creativity, the historical character of mathematical development, and the curious harmony that unites these disparate dynamics.

[212] To organize entities is to articulate the connections between them. A theory's organizing operations are more complex than the bare "bracketing" operations of set formation. Why the complexity? It must contend with the (dynamic) underlying topology of mathematical reality, not the (static) ambient space of set theory. The articulation of unique connections between objects differentiates theories. Each theory describes a dynamics.

[213] It is comparable to Leibniz's dynamics: as physical systems are never purely physical, but implicate superior metaphysical systems, so mathematical theories are never purely mathematical, but incarnate a superior dialectic of problems and Ideas. Problems secrete the topology that determines the "extremal paths" within the theory. These paths orbit, for instance, about the "attractors" of that theory: its singular theorems, its common calculations. They indicate the best route to a proof or a result.

"the imperfect".[214] Although it is too strong to say, with Hegel, that the poles mutate necessarily into

one another, it can be said that each posits the other. Dialectical notions are not simply

contradictory terms. Rather, they are paradoxical poles. They inaugurate diverging trajectories, but

do not force a choice between one or the other: attempts to characterize a surface globally might

diverge from attempts to characterize it locally. Though diverging, these attempts inform and

determine one another. It will always be a question—to be resolved provisionally in the construction

of a theory—as to whether "the local" and "the global" are consonant, indifferent, or contrary. There

is no final resolution of this question: *is it always possible to pass from one to the other?* Each theory

answers it for itself. Yet despite the *real* divergences (both within a theory and between theories),

despite the provisional nature of every resolution, a strange solidarity binds together those theories

that attempt to resolve the "same" *problem* (of course, problems are never self-identical). That

theories diverge from each other does not preclude their participating in the same problem. A

problem admits of real divergences amongst its theories even as it enforces a deep complicity

between them.[215]

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[214] Galois theory is a response to the problem posed by "the perfect" and "the imperfect". It answers the question: *how to pass from an imperfect field to a more perfect one?* This question is not restricted to mathematics: Lautman finds that it animates Cartesian metaphysics (Lautman 2011: 125–126). This is far from the sole elision of mathematics and philosophy. For Michel Serres, Leibniz's thesis that "it is always possible to pass from the local to the global" is central for his entire system, infecting alike its philosophical and mathematical components. What to make of this resonance across discourses? Philosophical and mathematical theories can *participate* in the same problems. Through this participation, they establish an *intrinsic* relation: extrinsic relations—such as the analogical or the metaphorical—are not the sole bridge between them. The differential calculus rephrases of itself problems of the "metaphysics" of representation. This philosophical resonance is neither imposed upon it nor hallucinated in it but immanent to it: "It is precisely this alternative between infinite and finite representation that is at issue when we speak of the 'metaphysics' of calculus. Moreover, this alternative, and therefore the metaphysics, are strictly immanent to the techniques of the calculus itself" (Deleuze 1994: 176). "That is why the differential calculus belongs entirely to mathematics, even at the very moment when it finds its sense in the revelation of a dialectic which points beyond mathematics" (Deleuze 1994: 179).

[215] For example, the passage in algebraic topology—itself a hybrid theory composed of the strange interaction of algebraic groups and topological invariants—from a surface to its "universal covering surface" echoes the passage in Galois theory

Dialectical notions have a provocative character: they preclude anything but provisional closure, foster divergence, and—like a syllogism—resist being folded into a whole even as they solicit that enfolding whole. It is no coincidence that dialectical notions evoke Deleuze's conception of sense. In fact, dialectical notions extend Deleuze's account of the structure of the virtual field of sense. We saw with Kant (part I, second rehearsal) that what resists definitive closure even as it solicits such closure discloses an aspect of the unconditioned. But (for Kant) not much can occasion such a disclosure: only the three kinds of syllogistic regress. Though Kant explains *why* the syllogism is as unsettling a fault-line as that at Delphi, he does not establish *that* this power is exclusive to it. Is there nothing else that can disclose an aspect upon the unconditioned? Are there only *three* Ideas of reason? We must not let Kant's parsimonious spirit obscure the dynamics of the unconditioned! The latter cannot be subdued by a three-branched delta. Only a truly labyrinthine channel could dissipate its force.

Deleuze's inquiry into sense has primed us for an affirmation of infinite complexity: as in Leibniz's plenum, ubiquitous vortical eddies pock actuality, drawing every being into the virtual labyrinth that poses it as a spring tide its debris. There is nothing that does not open irresistibly onto inexhaustible and irresolvable virtual problems. As with sense, dialectical notions stage encounters with problems. The meanest perception of a dialectical pair is already a three-leaved palimpsest: to

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from a polynomial to its splitting field (Hatcher 2015). It seems that there is always a "higher-dimensional" space waiting to envelop initially discrete elements. Little might seem to be gained by ascending from a given space to its (often much larger) covering space. Have we not just doubled everything? Is it not like attempting to discern the tonal modulations of a sentence by pursuing its rapidly dissipating echo? But the covering space affords an opportunity to extract properties of the initial space. It is absolutely akin to the ascension (in analytical mechanics) from a given physical system to its state space. Again, aversion leads to immanent deduction: that is the parable of the virtual. That Lautman would analyze covering spaces is not surprising: this analysis resonates with comparable (but not identical) strategies in truly disparate domains.

perceive them is to perceive their inseparability, the problem posed by this inseparability, and the

theoretical response that is already implicit in the scantest perception of this problematic pairing.

Perception is not just always-already an interpretation (Peirce) grounded in a complexly-sieving

praxis (Bergson, see part III) but also "theoretical effectuation" (Lautman 2011: 28). This perceptual

nexus—"confined" in a single moment even as its "leaves" differ in kind—discloses an aspect of the

unconditioned. Rather than the vague notion of the unconditioned, we will speak of *genetic*

surfaces.[216] Like syllogisms, like sense, dialectical notions disclose aspects of genetic surfaces. That by

their very nature these genetic surfaces solicit some structural embellishment (that is, the creation of

a theoretical "scaffolding") motivates Deleuze's characterization of them as continuous manifolds—

for a continuous manifold poses immediately the problem of how its infinitesimal neighborhoods

relate to each other (see below) (Robertson).

If Lautman is vague, Deleuze is emphatic: dialectical notions are not fixed eternally. They are

polarized intensities in a material field (or "depth") crossed by affective forces that *generate* the

problematic virtual complexes that pose Ideas and generate solutions. Deleuze's philosophy "could

never be an overturning of Platonism if it presupposed Ideas outside of a genesis" (Hughes 2008:

110). That solutions are actual, extensive trajectories in the same intensive material fields that pose

the virtual Ideas does not imply that this detour through the virtual complex is gratuitous. *Any*

passage from intensity to extensity must pay tribute by determining the virtual. It is a recursive process:

extensive trajectories acting upon material fields reconfigure the intensive polar eddies in such a way

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[216] The budding surface of Deleuze and Guattari's "rhizome" exemplifies a genetic surface, but only once this rhizome is transposed from actuality to virtuality. It must not be confused with actually existing rhizomes, such as the clonal colonies of aspen trees.

that they affect subsisting virtual problems, provoking by this process entirely novel resolutions that act upon the complex anew.[217]

III.   Problem ye ferst, construct ann aquilittoral dryankle Probe loom!
                                                                          —*Finnegans Wake*, p.286

A problem is what an intellect perceives of a dialectical notion, as constituting the possibility of a relation between its poles. This perception need not belong to a subject.[218] More generally, it is an interpretive milieu's perception of a problematic relation. A problem presses upon a being which has itself already bee constituted as so many resolutions to so many problems. The pressure from a new problem forces the being to incarnate a connection that mediates between the dialectical poles that pose the problem. A problem pursues a body, forcing the latter to dissipate provisionally its problematic force. What is the role of the Idea in this pursuit? An Idea delimits the perception of a problem—as praxis delimits the perception of matter. Ideas filter out enough of the "luminous spectrum" to allow for a delimited perception of an aspect of the problem—as a lens might filter out everything but ultraviolet light. That beings are situated, that bodies have certain capacities and not others, implies that problems are always partially perceived. So long as no actual being is adequate to the force of a problem, so long as problems are always in excess over their solutions, so long as partial beings can only partially resolve problems, there must be Ideas mediating the perceptions of problems. An Idea focuses a problem for a being by selecting, for its uneasy delectation, a small set of relations from the infinitely many possible relations between the poles of a dialectical notion. An

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[217] Recent work with polynomial equations provides a startling image of such positive feedback: feeding successive outputs of an equation back into the equation itself either "diverges" towards infinity or settles into a pattern. The boundary in the complex plane between the numbers that produce divergence and those that produce a pattern is the Julia set. This Julia set can be formed into a surface!

[218] Echoing Spinoza's conception of an attribute: what an intellect perceives of substance as constituting its essence.

aspect of a problem is the object of an Idea, not the problem as a whole—similarly, with Kant, the aspect upon a problem divulged by a specific regress is the object of an Idea.

Lautman generalizes Kant's transcendental dialectic, preserving it in its main lineaments: Ideas are distinct from problems, and both are distinct from dialectical notions. It is an irreducibly triadic complex. Just count the prepositions: an Idea resolves an aspect of the problem posed by a dialectical notion for an interpretive context.[219] If it is possible to distinguish the three moments of the perception of a problem *in thought*, it is not possible to do so *in experience*. Nor is this perception a mere juxtaposition of these three moments. Such a juxtaposition is inappropriately "spatial"; it effaces the essentially durative character of the problematic complex: not only the perception of a problem but the auto-constitution of the problem is essentially durative (part III). The three moments of the perception of a problem interpenetrate one another. They are alloyed in a single perception, even as they differ in kind. Lautman is as committed to the mutual irreducibility of these moments as he is to their mutual interpenetration. They are perceptually inseparable, even as their really different: this heterogeneity is constitutive of the dynamics of the problematic complex.[220] To perceive the possibility of a relation between problematic poles is already to have resolved partially an aspect of the problem: "any effort to provide a response to the problem of these connections is, by

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[219] It is no accident that, in his reading of Spinoza, Deleuze identifies three "triads of substance" (Deleuze 1988a). They are all similar in form to the first: "substance expresses itself, attributes are expressions, and essence is expressed" (Deleuze 1988a: 25). From these triads, he extracts a general "logic of expression" that will hold for Spinoza's substance as well as for Deleuze's problems: "substance is the active determination of its own undetermined essence through the attributes which are its own form of determinability" (Lord 2011: 151). This logic is the logic of intrinsic genesis. Since it characterizes intrinsic genesis, this triadic logic of expression can be said to characterize problems. To conceive of problems *sub specie aeternitatis* is to conceive of them under their productive aspect, which (as with Spinoza's substance) is inseparable from their auto-constitution. Since triadic, the problematic complex is, if not inherently dynamic, then continuous—or so Peirce would insist. If everything constitutes itself as a solution to a problem, Deleuze is right to identify becoming as a continuous process.

[220] We will not approach yet the knot of how *heterogeneity* accords with durative *continuity*, though we spiral about it. This paradox (disclosed by Bergson) will animate the entirety of part III.

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the very nature of things, constitutive already of effective mathematical theories" (Lautman 2011: 205, translation modified).[221] How? Lautman provides many concrete examples. We will focus on one, before considering a dialectical notion not presented explicitly by Lautman: that of "the actual" and "the virtual".[222]

Differential geometry and topology study manifolds, just under different aspects. Differential geometry adopts a local perspective: its "lenses" are infinitesimal neighborhoods and metrics. For it, a manifold is "an amorphous collection of juxtaposed neighborhoods," and each neighborhood "is characterized by the form of the expression which defines the square of the distance between two infinitely near points. This expression is called a quadratic differential form [or metric]" (Lautman 2011: 98; 97). The properties of each infinitesimal neighborhood are determined by its metric, and the properties of the manifold as a whole are determined by how the metric varies along the surface. That "the connection from one neighborhood to the next neighborhood is not defined and can be done in an infinity of ways" affords manifolds a maximum variability (Lautman 2011: 98). In contrast to differential geometry, geometric topology adopts a global perspective: the "lenses" by which it investigates manifolds are the topological invariants of a manifold.[223] Topological invariants are properties that persist under arbitrary deformations; we may "stretch" and "bend" the surface but

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[221] Lautman is concerned with the constitution of mathematical theories, but mathematical activity is not the only activity that constitutes responses to problems. "Spacetime" and "matter" are responses, whether one conceives of them as concepts or as physical things. At the least, they are not pure mathematical theories, though they are amenable (not by coincidence!) to mathematical theorization. Similarly, not just subjects but any being or interpretive milieu can respond to a problem. Again, Lautman's philosophy is not *just* a philosophy of mathematics.

[222] Hamiltonian mechanics constitutes itself in response to "the actual" and "the virtual". Of course, Hamiltonian mechanics responds to other dialectical pairs: it resolves the problem posed by the possibility of constructing the passage between the *local* perspective of efficient cause and the *global* perspective of conservation laws. It thus repeats (with a difference!) Leibniz's resolution of the problem of the correlation of the kingdoms of efficient and final causation. The two theories evoke each other because they participate in the same problem.

[223] Set-theoretic topology, by taking the notion of "neighborhood" as fundamental, is a local theory.

not "tear" it. We have now a problem: how does differential geometry relate to geometric topology?

More exactly: how does the local relate to the global? Perceiving the same object (*viz.*, manifolds) now under a global aspect, now under a local aspect, summons the specter of a dialectical notion.[224]

Dialectical notions are a species of differential relation.[225] We must not reduce this relation to its mathematical expression *dy/dx*. The latter is a species of this more general differential relation. Deleuze investigates the former only to arrive at the latter. In a differential relation, each term in the relation itself envelops a differential relation. Not only does analysis never encounter a self-identical term, but synthesis—as when one generates a line out of differential elements—proceeds without reference to identity. This evasion of identity demands a tribute: Deleuze must forsake the possibility of a certain kind of logical perspicacity (that proceeds by discrete operations from simple, self-identical elements) and affirm instead an irreducible and ubiquitous complexity.[226] What is

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[224] It makes no difference that each pole is already a theory: to resolve the problem posed by it is to construct another theory: "It is perfectly possible that, in a schema of genesis, a same kind of entity plays the role of abstract with respect to a concrete base and is, in another genesis on the contrary, the concrete of a new abstract. Thus, for example, the group space can be conceived both as being abstract with respect to a space of fundamental points, and as a concrete domain with respect to the representations of the group" (Lautman 2011: 155).

[225] "The observation of this duality *naturally* suggests to mathematicians the search for a synthesis" (Lautman 2011: 101, emphasis mine). For Lautman, the mechanism of suggestion is significant: reason must proceed from cause to effect. This is the real order of progression, the only way to ensure the necessity of the genesis. It is to secure the necessity of synthetic creation that Lautman starts not with entities but with the passage between entities. The passage grounds intrinsic genesis: "the essential element in the passage from essence to existence [or, equivalently, from abstract to concrete] is not so much the nature of the role assumed by each kind of entity present, than the very existence of the passage between two kinds of the entity" (Lautman 2011: 155). Lautman resists "any attempts that would deduce the whole of mathematics from a small number of initial principles" (Lautman 2011: 88). Such a "deduction" is not a deduction at all, since it betrays the real genesis of mathematical theories. It is an untenable falsification of a real process. Whatever necessity it has is a purely formal necessity, nothing like real necessity. Yet Lautman himself will abandon the synthetic perspective in one key instance: though they may come into focus only late in the real synthetic movement, problems are always "rationally and logically anterior" to their solutions (Lautman 2011: 222). Of course, much depends here upon the meaning of "logically." Does "logically anterior" mean "really anterior"?

[226] A logic of the differential is a medial logic, one that posits neither first terms nor first principles: "Whenever one believes in a great first principle, one can no longer produce anything but huge sterile dualisms. Philosophers willingly surrender themselves to this and centre their discussions on what should be the first principle (Being, the Ego, the Sensible? . . .). But it is not really worth invoking the concrete richness of the sensible if it is only to make it into an abstract principle. In fact the first principle is always a mask, a simple image. That does not exist, things do not start to

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remarkable is not so much that he accepts this as that he insists that its affirmation is *essential* for

constructing a Riemannian geometry of sufficient reason.

The difference between the terms of a differential relation or, more specifically, between the

poles of a dialectical notion is *real*. It is difficult to envelop a relation in a milieu that will explicate it,

and this difficulty is not just a trivial technicality, arising purely from subjective deficiencies. Not

just any theoretical milieu will resolve the problem posed by topology and differential geometry. We

must perceive adequately the problem and calibrate our milieu by this perception. Worse still, we

must be supple: there is no perception that does not change the whole! The dizzying experience of

trying to prove a theorem expresses well the dynamic climate of this mutating milieu. The difference

between the poles of a problem is more than a troubling gap; it expresses the *resistance* of

"mathematical reality" to the intelligence. What resists does not just impede: like any topological

invariant, it is informative. Lines of resistance register the *intrinsic topology* of mathematical reality:

this reality "is neither simple nor uniform, it has its folds, its edges, its irregularities, and our

conceptions are never more than a provisional arrangement that allows the mind to go further

forward" (Lautman 2011: 88).[227] That the non-trivial topology of mathematical reality is itself

dynamic is not the only expression of the genetic potential of this reality: resistance provokes

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move and come alive until the level of the second, third, fourth principle, and these are no longer even principles. Things
do not begin to live except in the middle" (Deleuze and Parnet 2007: 54–55).

[227] "The poem must resist the intelligence/ Almost successfully" (Stevens). Poetic reality has its topology as well. It does
not passively constrain so much as actively impel. "Beyond the temporal conditions of mathematical activity, but within
the very bosom of this activity, appear the contours of an ideal reality that is governing with respect to a mathematical
matter which it animates, and which however, without that matter, could not reveal all the richness of its formative
power" (Lautman 2011: 189). It is a genetic topology. The *resistance* of mathematical reality to the intelligence expresses
its autonomy (Lautman 2011: 183).

creativity, which is nothing less than the immanent genesis of solutions.[228] Intrinsic topology is a condition for novel creation. The act of creation is not the "successive approximation" of an underlying reality. This would be to revisit the terrain of "pre-critical" metaphysics and, worse, to affirm again a "logic of representation" that separates (representational) solutions from (represented) reality. The decisive change is this: this underlying reality, this problematic ground, changes with every perception of it. Problems and solutions are bound together in a reciprocally-determining pulse: solutions *express* problems, they do not represent them. Solutions are provisional not because they are asymptotic "approximations" but because the problem outpaces them: problems are always in excess of their solutions. This dynamic is the key for understanding how provisional solutions are nonetheless necessary—as binding for its objects as for the subjects posing the solution.[229] But this binding force is only legible once we adopt a *general economic perspective* towards problematic excess: a perspective of genesis is a general economic perspective, that of conditioning a restricted economic perspective (Bataille 1988).

Far from homogeneous and simple, the "domain" of virtual problems is wildly heterogeneous—besides being topologically non-trivial, it is turbulent and irreducibly complex.[230] Not enough can be said about it! But heterogeneity does much more than ground the possibility for

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[228] As we will see in part III, the "creativity" of "nature" is nothing less than the errant and provisional dissipation of an overwhelming virtual excess.

[229] Against fixity, we identify necessity with intrinsic genesis: "the problem is knowing whether the very enterprise of grounding is not quite simply in contradiction with the concept of necessity. By grounding [in its traditional sense], we claim to possess the beginning, to master necessity" (Zourabichvili 2012: 50). Deleuze has a different conception of ground: it metamorphoses rather than fixes.

[230] We saw (in the prologue) that the continuum holds itself always in reserve, keeping a certain indeterminacy. So much more will a purely heterogeneous continuum withhold of itself!

novel solutions: it grounds also their necessity. But how are solutions necessary *and* provisional?

Why are they always inadequate? Aren't these contraries? See appendix!

IV. Not the metaphysics of problems—the *dynamics* of problems

> Following Lautman's general theses, a problem has three aspects: its difference in kind from solutions; its transcendence in relation to the solutions that it engenders on the basis of its own determinant conditions; and its immanence in the solutions which cover it, the problem *being* the better resolved the more *it is* determined.
>
> —Deleuze 1994:178–179

Though autonomous, problems are not static, eternal, or vulgarly transcendent. They are not just sitting there, fully-formed, waiting to be unveiled: they are determined in and by their unveiling. That Lautman locks problems and solutions into relations of reciprocal determination (problems determine solutions as solutions problems) prevents his "schema of genesis" from introducing any kind of dualism—between virtual and actual, problems and solutions, continuous and discrete. Reciprocally-determining differential relations bind their terms in a matrix of mutual (if still asymmetric) affectation. They disport in a unique plane of immanence, even as they remain mutually irreducible. As we will see, the dynamics of the problematic ground obeys a triadic logic of expression. It is true that the mutual irreducibility of problems and solutions, of virtuality and actuality, affords each a quasi-autonomy from the other: each domain describes its own dynamics. Yet these dynamical systems resonate with each other. This inter-animating resonance, this dynamical interpenetration—solutions are generated in and by problems, the structure of problems is articulated by solutions—militates against any dualism: *each acts within the other*.[231] Actuality and

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[231] "The effectively synthetic function of Ideas is presented and developed by means of a reciprocal synthesis" (Deleuze 1994: 172).

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virtuality are not two closed systems. But there is an important asymmetry: the latter is autonomous from the former, but not the former from the latter.

The dynamics of reciprocal determination has no need of identity or convergence. It is not just indifferent to the latter two, it repels them, actively *affirming* difference and divergence: two irreducible elements reciprocally determine one another; in this, they compel each other to affirm their differences in kind; this affirmation provokes further divergence. But this divergence neither cancels nor undermines their relations of reciprocity: asymmetrical movements continue to implicate one another. Whatever the distance, they communicate with one another—this is one of Deleuze's key theses.[232] But how communicate amidst emphatic divergence? Does not divergence increase "distance", dampen communication? This would be true if we were talking about the *extensive* divergence of actual beings. We are talking instead about *intensive* divergence. That divergence occurs within a durative multiplicity implies that it resists every metric: they are not increasing their "distance" because in a durative multiplicity there is no distance. Thus, amidst divergence, there is still "instantaneous" communication: "divergence is no longer a principle of exclusion, and disjunction no longer a means of separation. Incompossibility is now a means of communication" (Deleuze 1990: 174).[233] This is not to posit some occult "action-at-a-distance"! That prohibition

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[232] Zourabichvili comments: "Deleuze's most profound idea is perhaps this: difference is just as much communication, contagion of heterogeneities; in other words, that a divergence never erupts without a reciprocal contamination of points of view" (Zourabichvili 2012: 121). This "most profound idea" is part of a complex of other key theses, preeminently those involving immanence, multiplicities, singularities, and the logic of implication.

[233] Events demand such an "extravagant" conception. For Deleuze, events are comprehensible only if we extend to durative multiplicities this capacity of instantaneous contamination: "the event implies a potentialization, an ordination of existence that fractures the apparently continuous duration into heterogeneous levels, and without which there would be no past. The facts that fill out our life take place in heterogeneous dimensions, and what is called an event is the passage from one dimension to another: an effectuation in bodies sufficiently singular to implicate an intensive mutation on the scale of a life (encounter, separation, etc.). To fall in love, or out of love, *does not belong to any present*" (Zourabichvili 2012: 112, emphasis mine). See appendix on events. The "elements" of a multiplicity "must in effect be

holds in actuality; we are concerned here with virtuality. It is exactly as it was with sense, once we

removed any reference to the forms of identity, positing in its place self-differentiating but mutually

implicating intensive centers: "Instead of a certain number of predicates being excluded from a thing

in virtue of the identity of its concept, each 'thing' opens itself up to the infinity of predicates

through which it passes, as it loses its center, that is, its identity as concept or as self. The

communication of events replaces the exclusion of predicates" (Deleuze 1990: 174). Divergent

explication is the corollary of immanent implication: the more extreme the former, the noisier the

latter. Far from reductive, a philosophy of immanence affirms irreducible complexity.[234] It liberates

difference from identity, continuity from homogeneity, time from space.

A problem solicits serial inquiries, provokes feverish revision, forces migrations, issues

manifestos, fosters any number of divergent developments. The solutions disporting themselves

upon its surface do not escape it: a problem claims its solutions, shores them against itself.[235] There is

consonance amidst divergence. Its topological structure allows it at once to absorb new solutions and

to bind its increasingly disparate solutions to a unique resonant frequency. But what allows it to seize

this incredibly various detritus—these series of resolutions—as that of a *unique* tide? It is the "logical

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determined, but reciprocally, by reciprocal relations which allow no independence whatsoever to subsist. Such relations
are precisely non-localisable ideal connections, whether they characterise the multiplicity globally or proceed by the
juxtaposition of neighbouring regions" (Deleuze 1994: 183).

[234] To conceive adequately of nature, without any residue of the transcendent, we concur with Deleuze: "no shortcut can
avoid the virtual, even and above all in a philosophy of immanence" (Zourabichvili 2012: 107). Even if *every* actual
being is a solution to a problem, no solution is simple: "Everything is a multiplicity in so far as it incarnates an Idea.
Even the many is a multiplicity; even the one is a multiplicity. That the one is *a* multiplicity (as Bergson and Husserl
showed) is enough to reject back-to-back adjectival propositions of the one-many and many-one type. Everywhere the
differences between multiplicities and the differences within multiplicities replace schematic and crude oppositions.
Instead of the enormous opposition between the one and the many, there is only the variety of multiplicity—in other
words, difference" (Deleuze 1994: 182).

[235] Châtelet is right to speak of the "dynasties of problems" animating physics and mathematics (2000: 3, 9). They
preside over novel solutions and emergent problems, binding them together as tributaries of a single reservoir.

independence" of the problem from its solutions that grounds its ability to claim its solutions as *a* set

of solutions and not some ad hoc collection. To understand the communicative aspect of intensive

divergence, we must establish the excess of problems over their solutions. That is, we must establish

their autonomy over every attempt at resolution, even as every perception of a problem is already a

resolution of it.

We have seen how differential geometry and geometric topology pose a problem: they both

focus upon manifolds but adopt different lenses—respectively, local and global. They participate also

in an old problem, one which the concept of "a manifold" itself was meant to resolve. Even as they

pose a new problem, these two theories should resonate with one another because they participate in

an old problem. If so, they will suggest something of the character of this mysterious

"communication amidst divergence" of the series in a problematic complex. The topological lens and

the differential lens pose "the general problem of knowing what the connections are that can exist

between the topological properties and the differential properties of a surface" (Lautman 2011: 103).

Since the metric determines the "differential" investigation of a surface, the problem can be posed

more precisely: "What metric properties are prescribed in advance by the topology of the surface"

(Lautman 2011: 103, quoting Hopf)?[236] Lest this seem like an arcane "mathematical" problem,

Lautman relates it first to biology and second to cosmology. **First**, Hopf's "metrical problem" tries

"to establish a connection between the structure of the whole and the properties of the parts by

which the organizing influence of the whole to which the parts belong is manifested in the parts"

(Lautman 2011: 102). Any attempt to resolve the problem of this connection will be indispensible to

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[236] Lautman quotes a few results: "The metric properties are therefore closely related to the topological class of the total surface…. [Thus] on a closed surface of constant curvature, the sign of the curvature is the same as that of a global topological invariant of this surface, the Euler characteristic" (Lautman 2011: 104).

the philosophy of biology, which "often lacks the logical tools necessary to constitute a theory of the solidarity of the whole and its parts" (Lautman 2011: 102). This is not just a problem for biology: all philosophies of time have failed for a similar "lack" of appropriate tools.[237] If we can resolve the mathematical aspect of the problem, we can attack its biological and temporal aspects: "What is mathematical (or physical, biological, psychical or sociological) are the solutions. It is true, however, that on the one hand the nature of the solutions refers to different *orders* of problem within the dialectic itself; and on the other hand that problems—by virtue of their immanence, which is no less essential than their transcendence—express themselves technically in the domain of solutions to which they give rise by virtue of their dialectical order" (Deleuze 1994: 179). Lautman often details how mathematical problems resonate with philosophical problems—a relation that was obscured by

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[237] Bergson presents a reason for the inability of the intellect to think life, motion, continuity, or becoming: the logic of the intellect is a logic of solids—of inert, self-identical, stable figures and discrete operations upon them. To think virtual problems themselves will require us to abandon these intellectual crutches. Problems are fundamentally durative. Durative processes demand a different approach. Intellectual activity is preeminently analysis: "*the intellect is characterized by the unlimited power of decomposing according to any law and of recomposing into any system*" (Bergson 1983). But besides operating always upon inert solids, analysis can only construct or de-construct discrete step by discrete step: "hence its bewilderment when it turns to the living and is confronted with organization. It does what it can, it resolves the organized into the unorganized, for it cannot, without reversing its natural direction and twisting about on itself, think true continuity, real mobility, reciprocal penetration—in a word, that creative evolution which is life" (Bergson 1983). Analysis is inadequate to the durative processes of nature. To approach problems by means of analysis, to reduce everything to inert bodies, to proceed only by discrete operations upon mutually-external solids in inert ambient space—this is what Deleuze means by posing problems in terms of *space* rather than in terms of *time*: problems involving durative processes must be cast in terms of time ("third rule" of the intuitive method, in Deleuze 1988). It is no wonder that becoming has been flogged so often by a too-intellectual philosophy: "the intellect represents *becoming* as a series of *states,* each of which is homogeneous with itself and consequently does not change. Is our attention called to the internal change of one of these states? At once we decompose it into another series of states which, reunited, will be supposed to make up this internal modification. Each of these new states must be invariable, or else their internal change, if we are forced to notice it, must be resolved again into a fresh series of invariable states, and so on to infinity. Here again, thinking consists in reconstituting, and, naturally, it is with *given* elements, and consequently with stable elements, that we reconstitute. So that, though we may do our best to imitate the mobility of becoming by an addition that is ever going on, becoming itself slips through our fingers just when we think we are holding it tight" (Bergson 1983). It is no wonder that "*the intellect is characterized by a natural inability to comprehend life*" (Bergson 1983). Indeed, "our intellect begins by mechanizing life and is then astonished that this mechanism subdivides indefinitely without the simple ever appearing—it is astonished by a miracle of which it alone is the author! The infinite only induces vertigo when we conceptualize it" (Jankélévitch 2015: 114).

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the ideological conviction that mathematics is a self-sufficient discourse, involving nothing extra-mathematical, and that mathematics can proffer nothing but "metaphors" for philosophy. That biological beings participate in the same problem as mathematical theories suggests a means of resolving indirectly the biological problem: if we succeed in mathematics, we might succeed in biology. No less than Bergson, it would seem that Jankélévitch was too hasty to assert that "this deep organization [of biological beings], this immanent infinity [in which the whole is present in each part], which characterizes the continuous duration of life, escapes all logic" (Jankélévitch 2015: 10).[238] It may be that it escapes all *extant* logic. If life resolves extra-biological problems, there may be a way to establish, through the problem, a structural "isomorphism" between those biological beings and mathematical theories that participate in the same problem. Against Bergson, Lautman suggests to Deleuze a way *to make differential topology safe for the philosophy of time*. That mathematical theories address this implication of the whole in each of its parts suggests that these theories are not radically incommensurate with the structure of living beings. In a living being, each part presupposes the whole: both the purpose of its function and its ability to function presuppose the whole. Bergson himself likens the part-whole structure of duration to the part-whole structure of a living organism

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[238] Lautman would disagree also that "the method this density proper to the matters of the spirit makes necessary cannot but be entirely 'irrational'" (Janekelevitch 2015: 10). Jankélévitch asserts this despite claiming that "*this immanence of everything in everything*" is "the law of the mind" (Jankélévitch 2015: 3)! Of course, this is no contradiction. Who could say that the life of the mind is logical, when—as with Molloy—it suffers intrusions of unknown provenance, that seek only to become subject to obsessive permutation? It may be true that "this mutual immanence horrifies our understanding," as it may be true that "this particularity of the soul requires us to adopt a method that is entirely paradoxical", as in art (Jankélévitch 2015: 6; 8). But Lautman positions the dialectic of problems so that it can dissipate this appearance of utter irrationality.

(Bergson 2001: 104).[239] Bergson is wrong to assert that mathematics reveals nothing of duration. Only Lautman's theory of problems can overcome Bergson's prohibitions.

Second, the relation of Hopf's metrical problem to a cosmological problem illustrates the power of Lautman's synthetic approach. The theory of "general relativity is a Riemannian geometry in which the g_{ij} [the coefficients for the metric] depend at each point of the distribution on the matter at that point. The space of the general theory of relativity however does not present the complete absence of organization that characterizes the most general Riemann spaces" (Lautman 2011: 98).[240] The spacetime manifold must respect certain constraints. Specifically, it must possess a Euclidean connection, whereby "the connection of neighborhoods of different points is no longer [totally] indeterminate ... so that it is always possible to define the parallelism of two vectors issuing from two infinitely near points" (Lautman 2011: 114). We are ready to pose the problem of the relation between "the local" and "the global" in the context of general relativity: "the metric of the universe gives rise to a system of partial differential equations for which Einstein sought solutions without singularity existing in all of space. This would require the knowledge of the topological properties of spacetime taken in its totality, like knowing for example whether it is open or closed"

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[239] Jankélévitch again: "Because the spiritual is in many respects more 'elastic' than it is malleable, that is to say, because it records and perpetuates all the modifications of which it is the theater, it also tends to reconstitute at each moment its own totality: at every moment, we may say, it remains organically complete. But since it has conserved 'adventitious' experiences and bears no trace of profound breaking or plurality, we must admit that it has assimilated, digested, totalized them and that they have modified it as it has modified them. All spiritual reality thus by nature possesses a certain totalizing power that makes it engulf all imported modifications and reconstitute at each step its total but continually transformed organism. And as this totalization applies at every moment to all elements of the spiritual organism, we have to say that the contents of life not only survive themselves in time, they so to speak revive themselves—partially in each of the contemporaneous contents and totally in the spiritual person they express" (Jankélévitch 2015: 6). Of course, much hinges on this curious notion of an immanent, organic "spirit".

[240] "The most general Riemann space is thus presented as an amorphous collection of juxtaposed pieces that aren't attached to one another" (Lautman 2011: 98). Crucially for Deleuze's theory of durative multiplicities, they are "devoid of any kind of homogeneity" (Lautman 2011: 97).

(Lautman 2011: 98). Whether spacetime as a whole is open or closed affects its parts: though they are global properties, openness and closure affect local neighborhoods. This cosmological problem does not just *resemble* the metrical problem posed by differential geometry and topology; it *expresses* their participation in one and the same problem.[241] This intrinsic participation grounds the relation between differential geometry, topology, general relativity, and physical phenomena. Perceiving the latter as temporally various conjugations of a problem would be "to remake the Timaeus—that is, to show, within Ideas themselves, the reasons for their applicability to the sensible universe" (Petitot 13). The osmotic circuit binding mathematics, physics, and phenomena is not grounded in an extrinsic relation like representation, resemblance, analogy, or approximation. Extrinsic relations are too accidental to secure the force of the connection between them—for these connections are often necessary. An extrinsic relation is too weak either to transmit necessity or to preserve the lines of communication amongst divergent series. Mathematics is not the abstract representation of physical systems, something arrived at by successive subtraction. "What does mathematics have to do with this odious term 'abstract'" (Châtelet 2010)? Problems, not convention or accident, ground *intrinsically* the conjunction of "mathematics" and "physics". Each discourse explicates quite differently aspects of problems. These explications resonate unexpectedly because they are grounded in the "same" problems. Again: this has nothing to do with extrinsic relations like "approximation"! Mathematics is not "modeled" upon "extrinsic" phenomena; it explicates intrinsically problems.

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[241] Even if theories participate in the same problem, each will express a unique aspect of it. This unique expression individuates them. That a problem is continuous and heterogeneous grounds its ability to allow for always more individuation. Theories, even as they merge with other theories, remain open, their objects—which they had once all to themselves—possess facets that can be explicated only by the other theories that envelop the initial theory (think of the ellipse). There can be no final envelopment of one theory by another; the heterogeneous continuity of problems ensures that there will be always unique aspects to be expressed.

When physics happens upon the same problems (such as that posed by "the local" and "the global"), it explicates them in its own manner. Though divergent, the resolutions of physics resonate with those of mathematics. This resonant shell is mathematical physics.

V. Autonomy

A problem expresses itself only in and through its solutions (Lautman 2011: 200–201). It is no more possible to perceive a problem in itself—since to perceive it is to attempt to resolve it—than it is to perceive sensible intensities in themselves, since to perceive them is already to explicate them in an experiential milieu (see part I). That a problem cannot appear independent of its solutions, that to respond to a problem is to attempt already to resolve it, makes Lautman's nomination of problems as the genetic ground for Nature all the more strange. If problems are the ground, why do they *depend* so much upon being perceived? Might, rather, this "perceptual effectuation" be a more likely ground? Why are problems imperceptible in themselves? Does this revive old Platonic schemes? Has Lautman introduced another "noumenal" realm where we can bury whatever conforms to our ideologies, exhuming them whenever we need to confirm their (specious) universality? That solutions eclipse the problem, never allowing it to appear in itself, does not mean that the latter is derivative of the former. In fact, it is the opposite: solutions are derivative of problems. Though acted upon by their solutions, problems remain autonomous.[242] Lautman models this curious mixture of immanence, autonomy, and perceptual effectuation on transcendental conditions: like the latter for experience, problems are immanent in solutions but independent of

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[242] As we will see, the *continuity* of the problematic complex grounds its autonomy and its irremediable excess.

them.[243] That (as we have argued) transcendental conditions are variable weds them further to problems: a problem's topology is as mutable as its set of solutions.

Problems infect all modes of actuality: phenomenal, experiential, perceptual. Conversely, these modes of actuality determine reciprocally the problem. Does this relation of reciprocity vitiate the autonomy of problems? After all, it is only after being perceived that a problem begins to admit the solutions that determine its virtual structure. In themselves, problems are indeterminate: there is no encounter with a purely indeterminate problem. Every such encounter is already a provisional resolution of it, and to resolve it is to determine it: progressive resolutions in interpretive milieux articulate virtual structures.[244] We ask again: if a problem is in itself indeterminate, acquiring determinacy only when it is drawn into a perceptual matrix, in what sense is it autonomous? To be autonomous, but only so long as it lacks all determinations—that is not a robust autonomy. Would Lautman and Deleuze argue for such a thin autonomy, one that is merely that of an undifferentiated morass? If a problem articulates its structure only *subsequent to* successive perceptions of it, is it at all *a priori*? If it grounds the necessity or, equivalently, the intrinsic genesis of its solutions, it must have some *a priority*.

Lautman identifies this *need* to have resolved the problem, this *concern* for finding a solution, this catalytic reaction within perception, as the "*a priori* element" of problems (Lautman 2011: 189). This concern, this exigency, is the kernel of its anteriority. It manifests itself *in experience* as an

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[243] Lautman insists that its intrinsic genesis of solutions is "transcendental and not empirical" (Petitot 13).

[244] Think of Heidegger's analysis of the problem of being: it forces one to have always already resolved it, however inadequately. Problems transmit simultaneously a need to improvise a response and a need to improvise again: no solution will suffice.

"exigency" that is *logically* "anterior to the discovery of any solutions" (Lautman 2011: 189).[245]

Crucially, this *a priori* element is only ever "relative" to the singular environment that occasions a unique encounter with the possibility of establishing a connection between dialectical notions (Lautman 2011: 189; 204). This *a priority* neither precedes nor succeeds the experiential encounter; it is co-constituted with it. Singular encounters with problems are as variable as the environments staging this encounter: we cannot put constraints in advance on the encounter, the perception, or the environment. Doing so would be dogmatic. Problems cannot prescribe anything in advance, since problems are constituted in and by these encounters. Since the character of this *a priori* element is relative to its environment, it too will be variable. There is a kind of triadic feedback loop: uniquely variable environments condition the *a priori* element—that is, a problem's *need* to be resolved, its *conatus*; this *a priori* element conditions the character of the solutions; the solutions determine variably the problem that then poses itself anew, soliciting further solutions. Environment, *conatus*, and solutions all act ceaselessly upon each other, impelling unforeseen mutations and multi-linear refractions. The three elements fuse in a single perception, even as they differ in kind.[246] One's own need to resolve a problem—whether that be to minimize its surface tension, to find a niche in an ecosystem, to dissipate an excessive influx—is inseparable from its own

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[245] It is not just "subjects" that are transfixed by the problem of a connection between dialectical notions. Neither the transcendental field nor this *a priori* "concern" is coupled exclusively to the form of the subject.

[246] But how can irreducible elements fuse in a single alloy? Again, Bergson is an inspiration: It is a "capital error" that "sees only a difference of intensity instead of a difference of nature, between pure perception and memory. Our perceptions are undoubtedly interlaced with memories, and, inversely, a memory, as we shall show later, only becomes actual by borrowing the body of some perception into which it slips. These two acts, perception and recollection, always interpenetrate each other, are always exchanging something of their substance as by a process of endosmosis. The proper office of psychologists would be to dissociate them, to give back to each its natural purity; in this way many difficulties raised by psychology, and perhaps also by metaphysics, might be lessened. But they will have it that these mixed states, compounded, in unequal proportions, of pure perception and pure memory, are simple" (Bergson 1988: 66–67). But though they fuse in a "single intuition" they are not simple (Bergson 1988: 73). They retain their mutual irreducibility, making this single intuition complex.

conatus, its desire to preserve itself. In an encounter, a problem's need to be resolved resonates with a being's need to resolve that problem. There is no being that does not have a *conatus*. This *conatus*, Spinoza argues, is not a mysterious inner urge (which would be contrary to his focus on exterior relations) but an aspect upon those problems that provide sufficient reason for its existence. This "*a priori* element", this need to resolve a problem, expresses that problem's topological structure. The latter grounds its autonomy. One last comment: if it seems strange to identify the *a priori* element in the resolution of a problem with *conatus*, recall that Deleuze couples *necessity* to intrinsic *genesis*: necessity is inseparable from a genetic *conatus* (part I).

We have sketched the dynamics of solutions: acting and reacting upon each other, provoking further resolutions, they express the structure of their animating problem, this expression determining it further. For Deleuze, separating the dynamics of problems from that of solutions is essential for the Riemannian geometry of sufficient reason. Once separate, we can clarify the curious efficacy of problems—an efficacy which will not be unrelated to the mysterious "efficacy" of time (Bergson 1983). This "independence" (of problems from solutions) is no vulgar transcendence: we delineate no architecture beyond this world, only a dynamics active within it.[247] The dynamics of problems is preoccupied with the distribution of singular points: "Their distinctive character—in other words, the *distinctness* of Ideas—consists precisely in the distribution of the ordinary and the distinctive, the singular and the regular, and in the extension of the singular across regular points into the vicinity of another singularity" (Deleuze 1994: 176). How is the distribution of singular

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[247] Leibniz oscillates between (mechanical) efficient cause and (metaphysical) final cause, Deleuze between the local conception of analytic functions—which relate to their domain in the way that solutions relate to problems—by analytic continuation and the global conception of analytic functions by integration (Lautman 2011: 96). The relation between a differential equation and its solutions express clearly the relation of a problem to its solutions: the former is irreducible to the latter, even as it is better known the more the latter are known.

points efficacious? It determines the virtual topology that constrains what resolutions will satisfy it while binding these solutions in *a* set.

Solutions articulate the lineaments of a problem, trace upon it interminably variable passages, and present labyrinthine emblems of the mutable problematic surface. But the problem tends to its own topology. It articulates it of itself, though this articulation is inflected by the extant solutions that condition its future resolutions.[248] Why must a problem determine autonomously its own topology? Its topology constrains *in advance* the field of possible solutions. That this constraint is independent of every resolution, even as it modulates with the progressive resolution of a problem, expresses its autonomy and its dynamical contribution. Its topology is unimpeachably anterior to its solutions, even as the latter act back upon it.

The variable interaction of an anterior topological form, successive interpretive milieux, occasions of exigency, and variable sets of ever-provisional solutions is inseparable from a problem's self-articulation. That the space of solutions is so variable, and that the structure of the problem modulates with the "space" of its solutions, implies that the problem exists in a comparable state of variability. And this variability will not be confined to one or two regions of the problem: the entire problematic complex will be haunted by an incurable (if progressively sequestered) indeterminacy.[249] Each change changes the whole! This indeterminacy grounds both the autonomy of problems and the possibility of further solutions. The indeterminacy of a problem does not threaten the consistency of (or solidarity amongst) its solutions. The topological structure of a problem binds

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[248] A resolution is always simultaneously the genesis of an actual solution and the determination of a virtual problematic structure.

[249] This ubiquitous variability compels Deleuze to identify the structure of problems with, first, the structure of duration and, second, with continuous manifolds. Bergson's continuous multiplicities are just specific kinds of problems, and the structure problems is expressed by differential topology.

them together: to be a solution to a problem is to have been constrained by its topology. Their

mutual responsiveness to a set of constraints binds together a set of solutions. Solutions *qua* solutions

are confined to actuality, but they owe their *actual being* to a constraining virtual topology. It is as in

Hamiltonian mechanics: an actual trajectory of a physical system bears the marks of the continuum

of virtual trajectories that comprise its state space.[250]

A problem appears only in and through its solutions. Its *actual* existence depends entirely

upon its solutions. But the problem is never reducible to actuality. Its topological structure, its

indeterminacy, its continuity all attest to an autonomous virtual reservoir, one that can never be

confined to actuality or exhausted by it. Problems submerge themselves in the virtual, to crest only

in the disparate locales haunted by their solutions.[251] This inexhaustibility is its "transcendence": a

problem remains "transcendent" to its solutions, subsisting virtually in them even as solutions exist

only by orienting themselves "ecstatically" towards it (Lautman 2011: 205).[252] This is no

supernatural transcendence; it is very much *of* Nature: who could reduce Nature to the efficient

interactions amongst presently actual beings? No less than a book, an ecosystem is a host of solutions

to disparate and non-actual problems. *Qua* virtual, a problem has its being independent of any set of

solutions or even of any criterion of solvability. A problem is not a retroactive projection from a set

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[250] True, the discursive expression of a differential equation is *already* a resolution of an antecedent problem—even before we present any solutions to this equation! The solutions to a differential equation are at a tertiary level. If we return repeatedly to physics, it is to answer *yes* to Deleuze's question: "the Epicurean atom still retains too much independence, a shape and an actuality. Reciprocal determination here still has too much of the aspect of a spatio-temporal relation. The question whether modern atomism, by contrast, fulfils all the conditions of a structure must be posed in relation to the differential equations which determine the laws of nature, in relation to the types of 'multiple and non-localisable connections' established between particles, and in relation to the character of the 'potentiality' expressly attributed to these particles" (Deleuze 1994: 184).

[251] David Bohm's conception of a "pilot-wave" more than resonates with this.

[252] "A problem does not exist, apart from its solutions. Far from disappearing in this overlay, however, it insists and persists in these solutions" (Deleuze 1994: 163).

of solutions—unlike "possibilities"! How could the solutions be taken as a set, if they were not already bound by a problem? Even if it is always belatedly discerned, a problem is the imminent cause. It is a genetic field, not a sterile reconstruction: "The problem is at once both transcendent and immanent in relation to its solutions. Transcendent, because it consists in a system of ideal liaisons or differential relations between genetic elements. Immanent, because these liaisons or relations are incarnated in the actual relations which do not resemble them and are defined by the field of solution" (Deleuze 1994: 163). The topological structure of a problem may constrain its solutions, but do solutions come to be by intrinsic geneses? They must, not only if they are to be *necessary* solutions, but also if they are to be adequate to the exigency of a problem: to be adequate is to express the occasioning cause, and the exigent cause is this *a priori* element. For solutions to be adequate to problems they must be necessary solutions. But if everything is a solution to a problem, is everything necessarily so? Are the geneses of solutions always intrinsic? Spinoza again! Just as ideas are not *either* true or false (bipolar logic) but *more or less* adequate—this adequacy indexed to a relational web more or less expressive of Nature—so solutions are not more or less necessary but more or less adequate, expressing that aspect of the problem they would resolve. Is necessity "the sole affection of being, its sole modality" (Deleuze 1988a: 167)?

VI. Intrinsic Genesis

> We cannot accept that the grounded remains the same as it was before, the same as when it was not grounded.
>
> —Deleuze 1994: 154

That the appearance of the problem is coupled necessarily to the articulation of a solution will be crucial for, first, the possibility of intrinsic genesis of solutions and, second, for the liberation of the transcendental from the empirical. Conditions are no more to be projected from conditioned than

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problems from solutions.[253] But how does a problem generate its solutions? Aside from claiming a set

of solutions as *its* solutions—demarcating thereby a theory, cordoning off the niche of an organism,

or differentiating one desert from another—why do we need this phantasmal problem at all? True,

we encounter problematic exigency, but since only solutions ever appear, it seems that the

contribution of the problem *qua* problem to the intrinsic geneses of solutions must remain hidden—

obscured, as it were, by the solutions. Lautman is acutely aware of the apparent extravagance of

positing an autonomous domain of virtual problems.[254] He insists that mathematicians need neither

to countenance this domain to do mathematical work nor even to perceive the problem before

constructing a theory: "Even if, historically or psychologically, it is the existence of the response

which suggests the Idea of the question (the existence of mathematical theories allow the

identification of the dialectical problem to which they respond), it is in the nature of a question to be

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[253] The illusions generated by these projections are like those generated by the composition of time from instants, motions from moments, or perception from simple sensations—the problem of analysis detailed above. These are so many species of retrospective illusion. Against them, we install ourselves at once in problems, subject ourselves immediately to a totality. Bergson argues that retrospection (a function of the abstracting intellect) has obscured especially the nature of living: "The vice of retrospective arrangements is that they only make sense in the *future perfect* and never according to the true future….Explication thus gets ahead of the action to be explained and, in a way, tells it what to do. It's not about being true but simply about *being in order*, conforming to the grammar of life and concealing the black logic, the shameful logic of our acts with the noble reasons of an official logic controlled by the pilot-intellect. It is the illusion of retroactivity that governs this inversion of the real chronology…. Our entire life, encumbered by parasitic reconstitutions, disappears underneath such a piling up of logic. The profound and central significance of freedom becomes impenetrable for us. We end up living a second life, a retrospective life, always lagging behind the life really lived—the life we should have lived to serve as models for others or simply to be able to connect our actions with a certain conventional type that figures in books alone" (Jankélévitch 2015: 51).

[254] Lautman anticipates the objections to this extravagance in a manner comparable to Leibniz, who countered objections to reintroducing final causes into physics by insisting that physics can function perfectly fine without final causes. Physics can (pretend to) restrict itself to the purely mechanical descriptions of efficient causation. But something will be lost by such a restriction, if this restriction is even possible! Not only will the metaphysical structure of reality—whose substances are individuated by robust appetitive principles—remain opaque to mechanics, but the possibility of certain kinds of deductive elegance will be lost to it. For a physics that pursues such a reduction, Fermat's principle will be at best a heuristic principle, its implicit use of final cause making it physically inadmissible. For Lautman, mathematics need not countenance this superior dialectic of problems, Ideas, and dialectical notions. Indeed, it is very much beyond the purview of mathematics. It remains transcendent to it, dabbing at its edges and along its horizon forms that can entrance only a philosopher.

rationally and logically anterior to the response" (Lautman 2011: 221–222). And: "The order implied by the notion of genesis is not about the order of the logical reconstruction of mathematics, in the sense in which from the initial axioms of a theory follow all the propositions of the theory, because the dialectic is not part of mathematics, and its notions are unrelated to the primitive notions of a theory" (Lautman 2011: 203–204).[255] A problem is neither first principle nor determinate precedent. It is an indeterminate field, one saturating the past, suffusing the present, and infecting the future. Its indeterminacy is indispensible for Deleuze's rehabilitation of sufficient reason: where Leibniz affirms the principle of sufficient reason only by excising all indeterminacy from Nature, Deleuze grounds his rejuvenation of sufficient reason in the indeterminacy of problems. It is time to abandon the notion that indeterminacy or insufficiency implies deficiency. The indeterminacy of a problem is a condition of possibility for its genesis of solutions. The Riemmanian geometry of sufficient reason asserts: knowing a thing is knowing the problem it attempts to resolve. Perceive a being as a solution of a problem is tracing its genesis from this problem. This is a very Spinozist conception of sufficient reason: knowing a thing is knowing it from its cause(s).

Though remaining indeterminate, problems admit—locally *and* globally—of progressive determination. Progressive determination "unites in the same continuous movement the processes of reciprocal determination and complete determination…. It constitutes the total figure of sufficient

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[255] What Spinoza says of "the order of ideas" could be said, *mutatis mutandis*, of the order of problems: "The order of ideas is thus that of their actual production; this order is necessary, not by virtue of a rule-bound obligation, which could only be satisfied in a contingent manner, but by reason of the intrinsic causality of the true idea, which determines the idea in the course of producing the totality of its effects, that is, all the ideas that depend on it" (Macherey 2011: 45). The "effects" of a problem would be the *solutions* that depend upon it. Deleuze's conception of "necessity" is consonant with Spinoza's conception of it.

reason, into which it introduces *time*" (Deleuze 1994: 180).[256] (The relation between this

introduction of time and the dynamics of problems will be crucial for part III.) Locally, a problem

admits of endless elaboration: that an ever-variable whole is present in each part ensures that there is

always more to elaborate. And even if *locally* unadorned, to the point of complete indeterminacy, a

problem will be *globally* determined—much in the manner of a topological space.[257] Global

invariants—such as the Euler Characteristic—persist through arbitrary and continuous deformations

of a manifold. Its capacity to be progressively (if never exhaustively) determined is as essential as its

insistent indeterminacy. Both qualities affirm its genetic cast: the indeterminacy of a problem allows

it to preserve its excess over every solution. This turbulent but productive indeterminacy makes it

irreducible to its solutions, which tend in themselves towards complete determinacy.

A problem injects indeterminacy into the Ideas that obscure it: "the Ideas that constitute this

problematic are characterized by an essential insufficiency, and it is yet once again in this effort to

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[256] Galois theory and the qualitative theory of differential equations present quite clearly the interplay of the two aspects of progressive determination: "On the one hand, complete determination carries out the differentiation of singularities, but it bears only upon their existence and their distribution. The nature of these singular points is specified only by the form of the neighboring integral curves—in other words, by virtue of the actual or differenciated species and spaces. On the other hand, the essential aspects of sufficient reason—determinability, reciprocal determination, complete determination—find their systematic unity in progressive determination. In effect, the reciprocity of determination does not signify a regression, nor a marking time, but a veritable progression in which the reciprocal terms must be secured step by step, and the relations themselves established between them. The completeness of the determination also implies the progressivity of adjunct fields. In going from A to B and then B to A, we do not arrive back at the point of departure as in a bare repetition; rather, the repetition between A and B and B and A is the progressive tour or description of the whole of a problematic field" (Deleuze 1994: 210). Indeed, "by virtue of this progressivity, every structure has a purely logical, ideal or dialectical time. However, this *virtual time* itself determines a time of differenciation, or rather rhythms or different times of actualisation which correspond to the relations and singularities of the structure and, for their part, measure the passage from virtual to actual. In this regard, four terms are synonymous: actualise, differenciate, integrate and solve. For the nature of the virtual is such that, for it, to be actualised is to be differenciated" (Deleuze 1994: 210–211, my emphasis). What a virtual problem gains in structure it loses in symmetry: progressive determination is a cascade of broken symmetries (DeLanda).

[257] This dialectic of ineradicable (if controllable) local indeterminacy amidst global determinacy grounds Deleuze's identification of problems with continuous manifolds. The "infinitesimal orientation" in the theory of manifolds maximizes "local indeterminacy" so as to provide the maximal flexibility needed for variably curved spaces (Weyl). By contrast, a topological orientation discerns globally invariant determinations.

complete the understanding of the Idea, that more concrete notions are seen to appear relative to the entity, that is, true mathematical theories" (Lautman 2011: 204). The indeterminacy of the problematic field is a **first necessary condition** for intrinsic genesis. This is why Châtelet, in his analyses of mathematical and physical theories, identifies the indeterminate margins of such theories, the curious eddies that solicit further determination, as expressions of the virtual problems that at once ground these theories, impel their evolution, and stage the interactions with other theories that provoke higher-order syntheses. But indeterminacy is not the only necessary condition: the **second necessary condition** for intrinsic genesis is reciprocal determination. What emerges acts upon the conditions by which it emerged, as these varying conditions continue to act variably upon it.[258] Reciprocal determination will preoccupy us in part III. It is the key to understanding how durative processes are at once continuous and absolutely heterogeneous. That a problem never relinquishes its claim upon its solutions, and that these solutions inflect the claim of the problem upon them, grounds the cycle of reciprocal determination. In explicating the implicit structure of the problem— *what kind of solution does it solicit? what will it admit?*—solutions do not trace simply what is "already there" but, in constituting themselves, constitute the structure of the problem *in time*. A new resolution presents a new aspect of a problem, and a new aspect requires a new response: the problem obliges this demand by soliciting a new resolution, which elaborates further the structure of

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[258] We have seen this relation in part I: a proposition maintains a relation of reciprocal determination to its problematic sense. To query the sense of a proposition just is to generate another proposition. Rather than encompass or exhaust the sense of the initial proposition, this new proposition simply inflects it further. Each new attempt to express sense definitively has a similar effect. To determine sense is to perceive its methods of evasion but also its genetic capacity. The lack of privileged orientation, the dissonance of aspects, the inexhaustibility of every surveying path, all express acutely the problematic character of sense. But even if they cannot force a definitive orientation or fix a determination exempt from further mutation, such attempts at a survey are not in vain. With them we have a more robust perception of its problematic essence—and this is its true ground, even if it neither emerges from a self-identical object, nor witnesses its trajectories converge to a single point on a single screen, nor settles into a clear and distinct representation.

the problem. That future resolutions of the problem must respect its present state of resolution, that

present resolutions provoke demands for new resolutions, expresses the fact that a problem is a

durative whole (equivalently, a continuous multiplicity). No durative whole can help but to

modulate incessantly.[259] One might think that a continuous multiplicity would be a totally

undifferentiated morass. This would be a mistake: so open a whole is not incompatible with it being

uniquely structured. But the price for preserving robust uniqueness amidst wild turbulence is an

extravagant affirmation of the virtual: the pure past. The differential relations between the elements

of a problematic complex prevent this complex from collapsing into an undifferentiated morass

(even as it remains in unseemly flux) *only because these elements differ in kina.*[260] This infinitely

complex, inter-animating beast is a first figure of the continuous processes of Nature. In part III, we

will see how the reciprocal determination of elements in a durative whole allows it to be robustly

continuous and absolutely heterogeneous. Bergson's overly severe strictures on using mathematics in

the philosophy of time prevented him from squaring explicitly this circle. It was left to Deleuze to

overcome Bergson's prohibition without departing from his main lines. If we belabor the dynamics

of problems, it is to reconcile heterogeneity and continuity in durative wholes.

The **third necessary condition** for intrinsic genesis is effective topology.[261] A problem's

topology constrains its sets of solutions. Problems are "topologically" distinct from each other. More

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[259] As we will see in part III, the structure of a durative whole affirms a radical exteriority—and it does so from within that redoubt of "inviolable interiority", immediate experience. Bergson begins "within" the latter, only to explode it. Like Spinoza, Bergson installs himself at the center of a system to turn it against itself, corroding it until it can revel only in its contraries: from inviolable interiority to radical exteriority, from closed system to open whole. A durative whole is as viciously disseminated as Orpheus: tied to each of its parts, wholly present in even the most vaporous of its manifestations, a change to the least of its parts changing instantaneously the whole.

[260] Complicating Bergson's diagram of the cone, Deleuze discerens three "dimensions" in a problematic complex: vertical, horizontal, and depth (Deleuze 1994: 187).

[261] "Being virtual" means "having an efficacious topology."

precisely, their global difference is a function of their distribution of singularities. The qualitative approach to differential equations makes this quite concrete:

> Poincaré established a classification of these singularities according to the bearing of the integral curves in the neighborhood of these points. He distinguishes: saddle points, through which two and only two curves defined by the equation pass; nodes, in which an infinity of curves come to be crossed; foci, around which the curves turn by drawing constantly closer to a logarithmic spiral; centers, around which the curves present themselves in the form of closed loops enveloping each other and surrounding the center. (Lautman 2011: 259)

A problem admits of divergent sets of solutions, but not of every possible solution. The "trajectories" of solutions must respect both a problem's global invariants and its distribution of singularities. A solution articulates a path in a problematic field. This path is novel, though it will have been constrained by the distribution of singular points. That a problem satisfies these three conditions—indeterminacy, reciprocal determination, effective topology—suggests that it can ground an intrinsic genesis of solutions. Indeed, that any continuous multiplicity satisfies these conditions authorizes Bergson's insight that *time is productive*.[262]

Everything hinges upon the delicate passage from virtual problems to actual solutions. It must be done without introducing any form of identity, without precluding communication along divergent lines, without establishing a surreptitious transcendence, without reinstating any

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[262] "As for the determination of conditions, it implies, on the one hand, a space of nomad distribution in which singularities are distributed (*Topos*); on the other hand, it implies a time of decomposition whereby this space is subdivided into sub-spaces.... There is always a space which condenses and precipitates singularities, just as there is always a time which progressively completes the event through fragments of future and past events.... Solutions are engendered at precisely the same time that the problem determines *itself*" (Deleuze 1990: 121). What constitutes itself as a solution to a problem constitutes itself necessarily even if its genetic occasion was accidental.

dualism.[263] In crystallography, singular points are thresholds between heterogeneous but still interacting orders: "The seed—which is to say, an impurity, intentionally introduced in the case of artificial crystallization—must intervene in order to be able to play the role of catalytic singularity bearing information. It is this that Simondon calls a problematic disparation: an emergent tension of problematic heterogeneous elements, which requires the production of a new dimension in order to resolve the disparity" (Sauvanargues 2012: 60). A genesis, though intrinsic, points always beyond itself: besides implicating heterogeneous orders, besides articulating its asymmetries—which, by Curie's principle, generate the phenomenon—only in reference to various virtual symmetries, a genetic trajectory must respect the inassimilable singular points distributed in its path by its problem. Solutions are inflected by singular points. The latter are not solutions. In phase diagrams, they are the points through which no solution can pass (they are the "strange attractors" of non-linear dynamics). And yet they are still *of* the phase diagram, appearing in it along with the solution-curves even if it is not itself a solution: this concrete image expresses the interaction of virtual problems and actual solutions.[264] Singular points are not quite actual, but neither are they simply virtual. If singularities remain virtual in relation to the paths that represent actual trajectories, they

[263] "If the specification of the points already shows the necessary immanence of the problem in the solution, its involvement in the solution which covers it, along with the existence and the distribution of points, testifies to the transcendence of the problem and its directive role in relation to the organization of the solutions themselves. In short, the complete determination of a problem is inseparable from the existence, the number and the distribution of the determinant points *which precisely provide its conditions* (one singular point gives rise to two condition equations)" (Deleuze 1994: 177). It is typical of Deleuze to affirm the heterogeneity of dimensions and to insist upon a threshold between them. Signals may pass through this threshold but not without being transfigured.
[264] The language of the qualitative theory of differential equations peppers Deleuze's explication of the dynamics of problems: "we have seen how the existence and distribution of singular points belongs entirely to the Idea, even though their specification was immanent in the solution-curves of their neighboring regions—or, in other words, in the real relations in which the Idea is incarnated" (Deleuze 1994: 189).

(though never being actual) influence actual trajectories.[265] Though of a different order than any

solution, they "appear" in the field of solutions. The geometry of solutions must respect the topology

of problems:

> The existence and distribution of singularities are notions relative to the vector field defined
>
> by the differential equations. The form of the integral curves is relative to the solutions of
>
> this equation. The two problems are most certainly complementary because the nature of
>
> singularities of the field is defined by the form of the curves in their neighborhood. It is no
>
> less true that the vector field on the one hand, and the integral curves on the other are *two*
>
> *essentially distinct mathematical realities.* (Lautman 2011: 259–260, cited in Deleuze 1990:
>
> 344–345, n. 4, emphasis mine).[266]

Distinct distributions of singular points distinguish problems from one another. Within a particular

problematic field, this distribution distinguishes solutions from one another. Because of singular

points, problems are topologically non-trivial. As Poincaré—whose qualitative approach to

differential equations is so important for Deleuze—would advise, before resolving a problem it is

necessary to consider, first, the distribution of singularities and, second, the topology of the space of

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[265] This leads to a crucial thesis: if—following the work of Negri and others—we conceive of the multitude as "an ensemble of singularities, a multiplicity of irreducible activities" whose "life" does not hide "difference behind identity and repetition", then we must insist that the singularities that at once structure and animate this multitudinous sheet are themselves irreducible to the actually active centers—themselves irreducible to one another—that provisionally embody these singularities (Negri 2004: 73-74). Both the vertical axis (the passage from singularities to bodies) and the horizontal axis (the passage from activities to activities) express irreducible relations that do not preclude conjugation. One's singularities are never one's own, even if they cannot be anyone else's. One is occasioned by them, but they withhold something of themselves from every occasion. Even in the depth of one's life an impersonal dimension abides. So foreign is possession and ownership to the multitude that it is impossible to interpolate it even here, where my embodiment is incontestably mine.

[266] But why would the qualitative theory of differential equations illuminate the dynamics of the problematic ground of Nature? Deleuze affirms the foundational significance of differential equations: "Weyl will state that a law of nature is necessarily a differential equation" (Deleuze 1993: 47). See appendix on differential equations. A differential equation itself expresses non-linear interactions between various *orders* of differentials (Bassler, in conversation).

solutions: "This qualitative study is therefore essentially a topological study of curves in which one tries to determine their saddle points, their nodes, their foci, their centers" (Lautman 2011: 176).[267]

VII. Theory and structure of problems

> Ideas always have an element of quantitability, qualitability and potentiality; there are always processes of determinability, of reciprocal determination and complete determination; always distributions of distinctive and ordinary points; always adjunct fields which form the synthetic progression of a sufficient reason. There is no metaphor here.... It is not mathematics which is applied to other domains but the dialectic which establishes for its problems, by virtue of their order and their conditions, the direct differential calculus corresponding or appropriate to the domain under consideration. In this sense there is a *mathesis universalis* corresponding to the universality of the dialectic. If Ideas are the differentials of thought, there is a differential calculus corresponding to each Idea, an alphabet of what it means to think.[268]
>
> —Deleuze 1994: 181

For Deleuze, problems are ubiquitous: everything is a solution to a problem. If they *constitute* the virtual, they infect the actual.[269] But infection is not omnipresence. Problems are *never* actually present. It is not possible even to *re*present a problem, for oneself or for others.[270] To represent is to

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[267] "Learning evolves entirely in the comprehension of problems as such, in the apprehension and condensation of singularities and in the composition of ideal events and bodies. Learning to swim or learning a foreign language means composing the singular points of one's own body or one's own language with those of another shape or element, which tears us apart but also propels us into a hitherto unknown and unheard-of world of problems. To what are we dedicated if not to those problems which demand the very transformation of our body and our language" (Deleuze 1994: 192)?

[268] A fluid mosaic of dynamic problems: "Ideas are complexes of coexistence. In a certain sense all Ideas coexist, but they do so at points, on the edges, and under glimmerings which never have the uniformity of a natural light. On each occasion, obscurities and zones of shadow correspond to their distinction. Ideas are distinguished from one another, but not at all in the same manner as forms and the terms in which these are incarnated. They are objectively made and unmade according to the conditions which determine their fluent synthesis" (Deleuze 1994: 186–187). That Ideas ground this new sufficient reason precisely by militating against "natural light" and classical logic echoes Whitehead's critique of Russell and all bewitched by static discretion (part II).

[269] It is not just a matter of proving (somehow) that everything is a solution to a problem. We must also relate problems to solutions in a way that respects the constraints of immanence (Salanskis 2006: 51).

[270] It's a ubiquity expressed best by the "explosive metaphors" of someone like Nicholas of Cusa—the most famous: *God is a circle whose center is everywhere but whose circumference is nowhere* (Blumenberg 2010). Or it's as in a noir: if not exactly a hallucination, it's a collective *fata morgana*, a publicly purloined letter drawing the various narrative threads to a point. To one not in its grip, say: "You remind me of someone who is looking through a closed window and cannot

actually form: a representation is a determinate image of an implicit structure—that is, it's a solution. To respond to a problem—and a representation clearly constitutes a response—is to trace a trajectory through a "solution-space"; and though it acts upon "problem-space", solution-space differs in kind from it: "*it happens that any effort whatsoever to outline a response to this problem is ipso facto the fashioning of mathematical theories* (Lautman 223)."[271] A problem is non-representational. Solutions express problems, they do not represent them—much like propositions their sense: sense "inheres, subsists, or persists in propositions" but remains "transcendent" to them (Deleuze 1990: 123).

But aren't problems just dissolved by their solutions? Why attribute autonomy, let alone agency, to the problem itself? Isn't a problem just an image of a lack of understanding? How can Deleuze posit a autonomous domain of virtual problems, each of which remains transcendent to every attempt at a resolution? To deprive problems of their autonomy is not just an arbitrary decision. It is a decision that accedes to the dogmatic image of thought: "problems and questions must no longer be traced from the corresponding propositions which serve, or can serve, as responses. We know the agent of this illusion: it is interrogation which, in the framework of a community, dismembers problems and questions, and reconstitutes them in accordance with the propositions of the common empirical

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explain to himself the strange movements of a passer-by. He doesn't know what kind of a storm is raging outside and that this person is perhaps only with great effort keeping himself on his feet" (Wittgenstein).

[271] "The Ideas of this Dialectic are certainly transcendent (in the usual sense) with respect to mathematics. On the other hand, as any effort to provide a response to the problem of these connections [*between* contrary dialectical notions] is, by the very nature of things, constitution of effective mathematical theories, it is justified to interpret the overall structure of these theories in terms of immanence for the logical schema of the solution sought after. An intimate link thus exists between the transcendence of Ideas and the immanence of the logical structure of the solution to a dialectical problem within mathematics. This link is the notion of [intrinsic] genesis" (Lautman 2011: 203–204). Problems withhold themselves: solution-space is never symmetric to problem-space.

consciousness" (Deleuze 1994: 157).[272] It is not a matter of simply affirming the autonomy of

problems. Such an affirmation would impose a novel but no less dogmatic image of thought (of

course, it would be not be *the* dogmatic image of thought anatomized by Deleuze).[273] Usually,

problems are adjudged legitimate or illegitimate by a criterion of resolvability: if it can't be resolved

it's not a real problem—"as though problems were only provisional and contingent movements

destined to disappear in the formation of knowledge, which owed their importance only to the

negative empirical conditions imposed upon the knowing subject" (Deleuze 1994: 159).[274] Why

should problems be judged solely by whether or not they could possibly be resolved? This

appearance of *possibility* is no accident: assessments of "resolvability" reflect an uncritical acceptance

of present affairs. Judging a problem by its resolvability, projecting a problem from its solutions,

repeats the error haunting Kant and animating "all of the postulates of the dogmatic image of

thought": that of tracing the transcendental from the empirical (Deleuze 1994: 154). We must

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[272] No less than sense, problems have their own logic—one that like the logic of sense differs in kind from the (classical) logic of empirical consciousness.

[273] We've heard a lot about the dogmatic image of thought. What "counter-image" does Deleuze propose to replace it? Why is there no comparable anatomy of this counter-image? What would be its postulates? Deleuze *does* anatomize it, but it is not immediately recognizable as an image of thought. There are several reasons for this. For one, the dogmatic image of thought was recognizable: it was the thought of a subject, with the usual stipulations of interiority and perspicacity. But since Deleuze despises this image, the counter-image will not have the familiar coordinates of subjective thought. It will seem less like an image of thought and more like a topological space. It is nothing less than the plane of immanence: "the plane of immanence is not a concept that is or can be thought but rather the image of thought, the image thought gives itself of what it means to think, to make use of thought, to find one's bearings in thought" (Deleuze and Guattari 1994: 37). The plane of immanence is an image of multiplicitous thought—a thought that does not admit of the form of identity or of individual elements, though it does give rise to identities and to individuals. Though it lacks any form of identity, it is not an incoherent welter. It has its own coherency and consistency, though neither of these refer to forms of identity. Here as elsewhere, "multiplicity must not designate a combination of the many and the one but rather an organization belonging to the many as such, which has no need whatsoever of unity in order to form a system" (Deleuze 1994: 182).

[274] "And just as solutions do not suppress problems, but on the contrary discover in them the subsisting conditions without which they would have no sense, answers do not at all suppress, nor do they saturate, the question, which persists in all of its answers. There is therefore an aspect in which problems remain without a solution, and the question without an answer. It is in this sense that problem and question designate ideational objectivities and have their own being, *a minimum of being*" (Deleuze 1990: 56).

unlatch thought from its dogmatic frame. Freeing problems from solutions is a condition for

attaining a genetic perspective. Further, recasting *Ideas* and what it means to *participate* in Ideas is

crucial for part III. Intrinsic geneses and non-spatial relations is crucial for Deleuze's attempt to

undermine Bergson's prohibition (noted above) upon drawing mathematics into the inquiry into

time.

VIII. Return to Conditions and Intrinsic Genesis

If Deleuze trespasses upon the virtual—attempting to adduce its existence, its autonomy, its

structure, its agency—it is not just *with* Leibniz's permission but *by* Leibniz's paths. Deleuze and

Leibniz agree: even if we expand the actual beyond what is punctually present by, say, conceiving of

it as a vaporous *interval* of infinitesimal thickness, this will not be enough to attain a genetic

perspective upon Nature—that is, an adequate philosophy of Nature, one that thinks *with* Nature

and not simply of it. Physics and biology presuppose a vast virtual reservoir whose topology acts

ceaselessly within the actual without ever becoming entirely actual:

> Delueze does not ask why there are bodies—he asks if it is possible to account for their
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> effectuations and their relations without invoking the virtual, which is to say the process of
>
> actualization. The question is the following: in the name of the concrete, of existence and of
>
> becoming, is it not necessary to have recourse to a perspectivism of intensive dimensions, and
>
> to the concept of a necessarily virtual heterogeneity? (Zourabichvili 2012: 107)

This virtual domain is autonomous; it is not parasitic upon the actual, either for its structure or in its being.[275] *Difference and Repetition* orbits about the questions: *What is the structure of this virtual realm? How does it relate to the actual realm? What is the dynamics of this relation?* These questions color Deleuze's often abrupt eruptions:

> It is sufficient to understand that the genesis takes place in time not between one actual term, however small, and another actual term, but between the virtual and its actualisation—in other words, it goes from the structure to its incarnation, from the conditions of a problem to the cases of solution, from the differential elements and their ideal connections to actual terms and diverse real relations which constitute at each moment the actuality of time.
>
> (Deleuze 1994: 183)

If problems ground all things, they must, **first**, generate their solutions intrinsically and, **second**, compel its genetic conditions to vary occasion to occasion. There is a moral, one that is crucial for any Stoicism without subject: *One can't drown twice in the same problem.*[276]

Lautman identifies the various genetic schema that govern the passage from problem to solution. Imagine this passage an incandescent cascade—convulsing through refractive screens, pooling momentarily in turbulent basins, fouling precise delineation. It is best to start in the middle of this cascade, with dialectical pairs. It matters *which* dialectical pair poses the Idea, which discloses the unconditioned problem: *Is it the local and the global? the imperfect and the perfect?* Whichever it is, it will leave its mark on the means of generating solutions: different dialectical pairs, different genetic

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[275] "The virtual is not a second world, it *does not exist outside of bodies* even though it does not resemble their actuality. It is not the ensemble of possibilities, but that which bodies implicate, that of which bodies are the actualization. The abstraction begins once bodies are separated from the virtual they implicate, retaining only the disincarnated appearance of a pure actuality (representation)" (Zourabichvili 2012: 107).

[276] David Antin prefers Kratylos' quip: "you cant step into the same river once" (Antin 2005: 151).

schema. Take this example from mathematics:[277] certain "imperfections" can obstruct the attempt to discern the properties either of a surface or of a function defined upon a surface. If a surface is not compact, certain theorems are inapplicable. What to do? Add a point at infinity and "compactify" it! If a surface is not closed, we cannot integrate a function over it. What to do? Attach a "cap" and close it, then subtract the difference. It is best to think of obstructions not as deficiencies but as virtual potencies: they solicit the construction of a surface free of the obstruction. If this construction is intrinsic, drawing upon nothing extrinsic to the surface, it suggests that, far from being static, mathematical entities implicate a virtual ground that affords ever new aspects upon them. As we explicate the potencies implicit already in the original surface—each time attaining a new aspect upon a problem, each time acquiring more traction for our inquiry—it becomes clear: we have to do in mathematics not with objects but with resonant aspects upon the roiling problems animating our inquiries.

Lautman seems to countermand his "dynamic" perspective when he claims that the intrinsic genesis of new from old "is only possible if the structure of the entity from which the other entities proceed was brought to a certain prior state of perfection" (Lautman 2011: 131). Does this not summon the specter of eternally perfect and static essences? Everything hinges upon the term *prior*. It denotes not an essential priority, one always already preceding the construction of the surface. Perfect mathematical entities do not perch patiently in an aviary awaiting the "finite" beings who will only mangle them. Surfaces are not inherently perfect but variously *perfectible*. If anything

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[277] Lautman privileges mathematics because it allows him to extract the schemas of genesis that govern geneses in very disparate domains: "mathematics thus plays with respect to the other domains of incarnation, physical reality, social reality, human reality, the role of model in which the way that things come into existence is observed" (Lautman 2011: 203).

precedes us, it is not static essences but dynamic processes, virtual potencies: structures appear as

provisional eddies within genetic movements constrained by a prior distribution of singular points.

More perfect states—or, better, the genetic trajectories circumventing the intrinsic obstructions of a

surface—are virtually implicit, awaiting the problem that solicits them.[278] That the problem is the

catalyst implies that there is something objective in the problem itself: the problem is no more a

projection of the deficiencies of reason than implicit surfaces are phantasms of a febrile reason. It is

suspicious: they cast problems as now deficient, now febrile…. Stripping problems of their

autonomy deprives us of any explanation for the resonance of rational constructions with natural

processes. To sum up: if we ask a question of a surface but it obstructs our inquiry, we can, catalyzed

by the problem, depart for the more perfect surface solicited *by the obstruction itself*. This new

surface, already implicit in the original, will lack this obstruction. It is not so much a new surface as a

new aspect upon a problem, one that will allow us to answer our question. If the original surface

presented once an adequate aspect upon a past problem, it presents now an inadequate aspect upon

the present problem. Surfaces are implicit one in the other if their aspects upon a problem resonate

with each other. Resonance is a function of the problems of which the various surfaces (so many

solutions) are aspects. Whether the *genetic schema* are simple or complex (see below), we confront the

same situation: "the discovery of the existence of an entity often presupposes the existence of a set

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[278] A classification theorem does not *reduce* all manifolds to surfaces of genus k; it *indexes* a form implicit in manifolds, that is, it suggests a transformation that a manifold may undergo if a problem so compels it. The process of perfection that solicits itself is a function of the problem conditioning the perception of the obstructions of a surface. More perfect states are not latent essences but implicit genetic trajectories that can deposit us in a more adequate perception both of the animating problem and of the present state of resolution. For a perfect state to be "logically prior" to the present state is for a virtual whole, at the site of the obstruction, to solicit the gesture that would allow us to overcome the resistance that we experience in trying to answer our question (*how could we integrate this?*). For an imperfect state to implicate a more perfect state is just for it to be permeated by a virtual whole.

that contains the entity being sought after even before one knows to see it there" (Lautman 2011: 170). If the genetic process seems to be a random walk, we glimpse later the lineaments of the virtual whole that guided every step. The virtual whole initiates a movement that it awaits at the end. It solicits the processes that articulate not just a solution but its own structure, as its solutions develop aspects upon it.[279] Crucially, the problem is no more static than its solutions: weather swirls in every niche of the problematic complex.

Solicitation is a technical term: the virtual problem *solicits* the processes that resolve it. Solicitation is one of three moments in the triadic logic of intrinsic resolution. All of the moments are functions of the catalytic problem: first, the perception of an indeterminacy; second, the solicitation of a constructive trajectory; third, following it out. Where the problem allows for great variability in the conditions impinging upon the occasion of the perception, it constrains severely the genetic trajectory. It is as in a vector field: the initial conditions can vary greatly but, once they are set, we are condemned "to flow" along one line and not another. For Lautman as for Deleuze, indeterminacy is neither liminal—as in: *Exactly where does this thing end? What is its precise boundary?*—nor compositional: *Is this a part of it?* These latter kinds of indeterminacy take identity as prior.[280] In the first case, a being is supposed to have an identity: it is just a matter of clarifying the

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[279] That the whole be present in every part of a process is a condition for the process to be intrinsic. If intrinsic, it expresses revolving aspects of a changing whole. Every intrinsic genesis implicates a whole that it can neither exhaust, survey, nor realize definitively but upon which it depends at every moment. The whole remains irreducible to it, no matter how exhaustive the survey.

[280] Let me be clear: it is not that we *must* do away with the categories of identity and the form of the individual. They are not to be deposed, only the *tendency* of the intellect to prioritize them. It is like starting with classical logic and demanding that everything abide by it. To think becoming—which would be the correlate of thinking intrinsically, that is, necessarily—we would do well to start neither with individuals nor even with the becoming of individuals but only with the becoming of the *processes* of individuation. Further, we must not endorse what Simondon calls the "hylomorphic schema" (Combes). This schema would have us conceive of the principle of individuation as a static form imposed upon a pliant matter. By removing the process of individuation itself from becoming, it makes the becoming of

delimiting conditions for identification. In the second case, the challenge is to determine whether or not the being in question can be identified. If it does not conform to the canons of identity, it is dismissed as an indeterminate being—barely a being at all, since it cannot be crisply identified. But Deleuze cannot accept this: only a dogmatic decision can prioritize the form of identity—no self-professed "critical philosopher" can accept any decision. Is it possible to formulate a concept of indeterminacy that does not refer to identity? Yes: indeterminacy is a *capacity* to admit of a determination. To be indeterminate is to be determinable under some aspect.[281] Indeterminacy is not the contrary of determinacy. It is not the simple negation of order.[282] Determinate and indeterminate do not express, respectively, sufficiency and insufficiency. They are not inertly opposed contraries but productive dialectical poles. They solicit intrinsic geneses: *Does this indeterminacy obstruct us? What determinate state does it solicit? Can we arrive there by intrinsic methods?* There is no more absolute indeterminacy than absolute determinacy: only the capacity to be determined further.[283] Indeterminacy is no threat to sufficient reason. In fact, if the sufficient

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individuals as unintelligible as the being of the principle of individuation. How does the latter come to be "applied" to the former? By conceiving of the becoming of the process of individuation as something that emerges from a pre-individual milieu—one that is not unstructured (and certainly not pliant!) but highly differentiated, in that it is pocked by polarities, vortical tensions, implicit intensities, non-local relations, irreducible complexities—"Simondon's work opens on to a new conception of time as ontogenesis, such that becoming is no longer conceived as the becoming of individuated being, but rather as the becoming of the individuation of being" (Sauvanargues 2012: 57). He marks a rigorous and complementary attempt to liberate metamorphosis from the individual, the categories of identity, and the form of the individual.

[281] For Peter Lewis, something is *indeterminate* if it is determinable but lacks a determinate property (Lewis 2015).

[282] For Bergson, such conceptions are the height of metaphysical error. Instructively, he links such errors to the dogmatic devotion to the concept of possibility: Bergson argues that "there is not *less,* but *more* in the idea of nonbeing than that of being, in disorder than in order, in the possible than in the real…. In the idea of disorder there is already the idea of order, plus its negation, plus the motive for that negation (when we encounter an order that is not the one we expected). And there is more in the idea of the possible than there is in the idea of the real: 'For the possible is only the real with the addition of an act of mind that throws its image back into the past once it has been enacted'" (Deleuze 1988: 7).

[283] It is the expression of a *power* to be affected. Thus, indeterminacy is no less a positive property of a whole than its determinacy. Indeterminacy is not something to fear: it is just the ubiquity of *power*—the capacity to affect and to be affected. That indeterminacy is ubiquitous in the actual world—to be actual is to have a degree of power—suggests that

reason of a thing is inseparable from perceiving it as a solution to an inexhaustible problem; if to perceive it as a solution to a problem is to trace its intrinsic genesis from that problem; and if the intrinsic genesis of a solution is always the progressive determination of the objective indeterminacy of the problem, then indeterminacy is *essential* for Deleuze's Riemannian geometry of sufficient reason. In this, Deleuze could not be further from Leibniz: for Leibniz, the principle of sufficient reason demanded the absolute determinacy of the plenum. Deleuze demands only a capacity for indefinite determinability.

Passing from a less perfect to a more perfect solution depends critically upon the curious being of the problem: that each part implicates the whole; that a change to any part changes instantaneously the whole; that each part implicates every other part—the profligacy of problems and the dynamics of intrinsic genesis depend upon these three "invariants" of durative being (see part III). Genetic movements involve always the virtual. Even if we operate only upon a given surface—each operation discrete, under control, leading us by evident steps to a new surface—we involve the virtual. Intrinsic genesis implicates always a problem. Of course, it is an illusion to suppose that the "initially given surface" is a pure bit of actuality, uncontaminated by any problem. As much as the operations of the construction, as much as the new surface, the initial surface was constituted in response to a problem.

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problems will be virtually present everywhere in actuality. To be actual is to be subject to ceaseless determination, and every process of determination implicates the problem that solicits this process and guides it. This ubiquity of indeterminacy is not restricted to the actual world, it extends also to the virtual domain: every problem has a unique affective spectrum, that is, its kind of indeterminacy. The power of a solution is a correlate of the topological structure of its problem. "Metrizability" exemplifies productive indeterminacy. A *metrizable* space solicits a metric, but it allows for some variability in the choice of that metric: the topology of a space constrains this choice. We can see the three moments of intrinsic resolution: a problem leads us to perceive the lack of a metric, the space solicits a metric, its topology constrains the choice of the metric.

A genetic trajectory does not just generate a new entity. The latter is not the most important effect of the infecting problem. It is the pliable schema (soft architecture) preserving the imprint of the genesis. A new surface is not as important as the means of constructing it: *can this construction be replicated?* The genetic schema is the principle mark of the animating problem:

> The solidarity of the whole and its parts, the reduction of relational properties to intrinsic properties, the passage from imperfection to the absolute, here are so many attempts at structural organization that confer on mathematical entities a movement towards completion by which it can be said that they exist.… It happens to be that the completion of an entity is at the same time the genesis of other entities, and it is in the logical relations between essence and existence that the schema of new creations is inscribed. (Lautman 2011: 137)

What is a genetic schema? It is a pliable form preserving a constructive path, that it might be traced again. In the simplest genetic schema, the product will be "homogeneous" to its domain. In the more complex, the product might be "heterogeneous" to its domain—thereby requiring a different kind of schema. Lautman refers to more complexly-mediating schema as *mixes*.[284] By preserving the

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[284] Lautman makes a suggestive identification: in "requiring the adaptation of radically heterogeneous realities to one another, mathematics recognizes in its own development the logical necessity of a mediation, comparable to that of the schematism of the Transcendental Analytic, intermediate between the categories and intuition" (Lautman 157). Again, it should not be surprising to find an *echo* of a philosophical problem in mathematics. This echo is intrinsic to the mathematical theory, not something imposed upon it by zealous exegetes. Mathematical and philosophical theories resonate thusly when they participate in the problem. He refers to this passage in Kant: "Now it is clear that there must be a third thing, which must stand in homogeneity with the category on the one hand and the appearance on the other, and makes possible the application of the former to the latter. This mediating representation must be pure (without anything empirical) and yet intellectual on the one hand and sensible on the other. Such a representation is the transcendental schema. The concept of the understanding contains pure synthetic unity of the manifold in general. Time, as the formal condition of the manifold of inner sense, thus of the connection of all representations, contains an a priori manifold in pure intuition. Now a transcendental time-determination is homogeneous with the category (which constitutes its unity) insofar as it is universal and rests on a rule a priori. But it is on the other hand homogeneous with the appearance insofar as time is contained in every empirical representation of the manifold. Hence an application of the category to appearances becomes possible by means of the transcendental time-determination which, as the schema of the concept of the understanding, mediates the subsumption of the latter under the former" (A 138/B 177).

form of an intrinsic genesis, a genetic schema presents a figure of necessity. The form of becoming specific to a problematic complex is an invariant of its dynamics. We have encountered already a theory whose passage from "essence" to "existence" requires a more complex schema: analytical mechanics. To find the equations of motion governing the evolution of a physical system, one decamps to a higher-dimensional space—specifically, the continuum of paths traversing the state space of the system. The system's actual path will be the one that extremizes a certain quantity. The genetic schema captures the means by which this state space of virtual paths "selects" the actual path, determining thereby the equations of motion. What is interesting about analytical mechanics is that its genetic schema is constituted not just in response to the dialectical pair of "essence" and "existence" but also in response to that of "the local" and "the global":

> in the determination of the existence of a mathematical entity by considerations of an extremum, the logical schema of a novel solution to the problem of the passage from essence to existence is realized, in which, as in the schemas of previous chapters, essence and existence are concerned with distinct mathematical entities. When an entity is determined by the properties of maximum or minimum, it is necessary in effect to consider it as *embedaed in a whole* and then to show that the structure of the whole is such that it allows the entity sought after to be distinguished. (Lautman 2011: 172, my emphasis).

The global structure of the state space determines the selection of the actual path.[285] That is, the topology of problems determines the geometry of solutions. Lautman asserts emphatically that the

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[285] "It is not a question of seeking to totalize the diversity of the real or of 'deducing' individuals from the horizon-*amplum,* but of cutting out the continuum (of trajectories, but also of spaces, of metrics and of multiplicities of all kinds) so that the constraints echo in the most perfect way in the form of creative virtualities and so that one thus ensures the

passage (captured by a genetic schema) from virtual to actual transcends the mathematical theories

that constitute themselves in response to it, even as this schema remains immanent in it.[286] It

organizes the passage in a way that exceeds the capacities of a "purely mathematical" theory—much

as Leibniz insisted that purely geometrical bodies that admit of only local, efficient interactions could

never coordinate the global conservation of energy. Even if physical interactions *are* always local, we

would still require—as Leibniz argues—a "metaphysical" realm to coordinate global conservation

and local processes of individuation. Processes are irremediably contaminated: awash in singular

points, held to thresholds that are not in the care of actual beings.

It should not surprise us that any attempt to resolve "the continuous" and "the

discontinuous"—the dialectical pair animating this dissertation—involves always complex schemas.

The pair poses a problem that can be covered only by labyrinthine Ideas. A mathematical theory that

attempts to resolve the problem of the relation between the continuous and the discontinuous "will

receive its entire meaning from the fact that it is incarnated in the more abstract schema of genesis,

in which the passage from the continuous to the discontinuous happens through the intermediary of

mixes whose fecundity results from the properties of their dual nature" (Lautman 2011: 167). This

complexity grounds the ineradicable indeterminacy of the continuum: its indeterminacy registers not

a subjective deficiency but a perfectly objective property (see prologue, "Forecast"). Any attempt to

resolve the labyrinth of the composition of the continuum inherits its tortuous complexity from the

objective complexity of the Idea itself. It is unavoidably labyrinthine. One need only to consider

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'natural' selection of individuals that are increasingly capable of secreting their own condition of existence" (Châtelet
2000: 69).

[286] "One of the main theses of this essay asserts in effect the necessity to separate the supra-mathematical conception of
the problem of the connections that support certain notions and the mathematical discoveries of these effective
connections within a theory" (Lautman 2011: 173).

Cantor's composition of the continuum to appreciate the difficulty of any theoretical resolution of this problem. It must be emphasized: it is not that our "deficient" intellect fails to bring the problem into focus. The dialectic of problems prepares a labyrinthine face for every attempt to compose the continuum. Complexity, intractability—these are objective properties of the problem, which infect any world crossed by continuous processes.

IX. *Don't be a part of the solution, be a part of the problem*

> Ideas are thus multiplicities with differential glimmers, like will-o'-the-wisps, "virtual trails of fire", from one faculty to another, without ever having the homogeneity of that natural light which characterizes common sense.
>
> —Deleuze 1994: 194

Subject to an encounter, impelled by an occasion, abducted by an errant flow: these are marks of necessity, not of contingency. Of the virtual trajectories coiled within an occasion, actualize one— your deviation from present constraints will be itself constrained. Ebb then with superior necessity for new strata. *But once submerged, how to endure it? How to follow a flow-line?* Everything depends upon the questions one asks. Questions express the adequacy of one's perception of the problem— and perception is a function of praxis (part III).[287] A solution, no less than a subject, becomes itself by answering immanently posed questions. It will have been solicited by that path that only it could

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[287] Each solution has its necessity, but only to the degree appropriate to it: its necessity is a function of the adequacy of its praxis. Ask always: Does this praxis perceive adequately its problem? Does it perceive Nature *sub specie dynamica*? Is it attuned to its problematic dynamics? Is this praxis metamorphic? Or does it prop up a febrile identity? Is it emancipatory? Or does it perpetuate exploitative systems? Of course, dynamics is not somatics (Grant 2006)!

trace.[288] The bodies and forces of the milieu that clusters about a problem pour into the opening cut

by the question posed to the problem by that milieu, coagulating then in a new solution.

The relation between problems and solutions is asymmetric: if a solution determines itself, it

is only in and through its problem. But this relation must be also reciprocal. What do solutions

contribute to the dynamics of the problematic complex? First, a solution determines how it inflects a

prior problematic sense, that is, how it expresses a unique aspect of the problem. A solution selects its

series—foregrounding some, obscuring others—in accord with the topology of its problematic

field.[289] Here is the key to understanding the contribution of solutions to the dynamics of the

problematic complex: if the problematic topology (*viz.*, the distribution of singular points) precedes

a solution, the "local geometry" encasing it does not: the act of resolution is contemporaneous with

the genesis of its (local) conditions. Like Kant's transcendental subject, a solution is subject to its

conditions. Unlike Kant's conditions, these conditions are local and variable. An act of resolution

determines always locally (but never finally) the geometry of a problem. A solution is a variable

function of this geometry, and the geometry a function of the vagaries of the ongoing resolution,

itself subject to the problem's antecedent and superior topology: no solution ever final, no problem

ever exhaustively determined. With this, Deleuze has displaced the transcendental conditions of

experience with the local geometry of problems.[290] A problem secretes an actual solution along with

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[288] We hear of a problem only what we can resolve of it: not the full spectrum, but a selection of it. Remember: Ideas sieve the light of problems. If it seems that we could never free ourselves from the cage of present praxis, remember: the problem is indeterminate, and praxis unstable (praxis just a slick upon a pelagic past (part III)).

[289] These fields "are not simple essences, but multiplicities or complexes of relations and corresponding singularities" (Deleuze 1994: 163). The "free group presentation" in algebraic topology presents a surface in terms of its generators and the relations amongst them (Hatcher 2015). Generators function in algebraic topology in the way that singularities function in Deleuze's theory of problems.

[290] This clarifies one sense in which problems are immanent in but transcendent to their solutions: the conditions secreted locally by the problem are immanent to the solution, but the singularities constraining globally the secretion of

the "transcendental" conditions that make it *a* solution to *this* problem. This local complex will have

emerged by a question—one posed by the solution (more precisely, by the disparate elements of a

milieu that cohere soon in a solution). Having posed the question, the solution articulates the local

structure of the problem—this is its contribution: interrogating a prevailing problem determines it;

following the lines of force articulates its architecture.[291] Constraining solutions is equivalent to

marking them as *its* solutions: constraints create *a* field. But even if constrained, solutions articulate

of themselves the local geometry of the problem. In themselves, problems are largely *indifferent* to

geometry: they abide every local arabesque. Far from a deficiency, this "indifference" is a positive

condition for reciprocal determination: indifference allows solutions to act upon an otherwise

superior problem. If the *kind of relation* between problem and solution is a condition for intrinsic

genesis, asymmetry and reciprocity are themselves conditions for this relation.[292] The virtual must be

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conditions (equivalently, the becoming of the process of individuation) are transcendent to every resolution. The former are geometrical, the latter topological.

[291] Of course, interrogation and survey must respect the prior distribution of singularities: the latter precedes every resolution, even as it modulates by the process of progressive resolution. Global topology acts upon local geometry, and vice versa. The conditions that the solution establishes for itself *will have been* the conditions specific to that region of the problematic field. That the problem and the solution co-constitute each other does not tarnish the problem's real anteriority: precedence does not preclude co-constitution. It is as in the qualtitative analysis of differential equations: resolution solicits still more solutions, determining the problem as they are determined by it. Determination splits into two levels: geometrical and topological. Since this process is ever variable, resolution is no more a rote exercise than a problem is an inert projection from a set of solutions.

[292] Deleuze's critique of Spinoza centers not so much upon the lack of *structural symmetry* between substance and modes but upon the lack of *dynamical reciprocity* between them: modes do not inscribe themselves in the being of substance in the way that solutions inscribe themselves in the being of problems. Modes express substance, but not vice versa. To construct a purer immanence, Spinoza needs "to make substance turn around its modes" (Deleuze 1994: 304). This would not mean that the modes depend no longer upon substance. That modes express substance would not change. Only now the articulation of substance would depend in part upon its modes. Their relation would be one of reciprocal determination rather than one of unidirectional determination. As it is, substance and modes do not reciprocally determine each other, though attributes and substance do: "attributes and substance are inseparable to the extent that they cannot be conceived without one another, outside one another, and this reciprocal dependence expresses nothing other than the fact of their real unity" (Macherey 2011: 94, citing EIP19-20). For Deleuze, problems generate solutions as solutions articulate problems. One can trace simultaneously both lines, without lapsing into an extrinsic perspective that would project one from its disparate others or subordinate these others to its one. It is clear why Spinoza would

"inseparable from the movement of its actualization" (Deleuze 1988: 43). Without this reciprocity, we lose all necessity, lapse back into the inert opposition of domains, and court a vulgar dualism.

The dynamics of the problematic complex stages an asymmetric but ceaseless dialogue between variable local regions and invariant (but mutable!) global distributions. An auto-amplifying dynamic catalyzes heterogeneous planes: that these planes are inter-animating prevents them from falling out of flux. It is no wonder that Deleuze identifies problems with manifolds, those "patchwork spaces" of Riemannian geometry: a manifold is an "amorphous collection of juxtaposed pieces that can be joined together in an infinite number of ways: we see that patchwork is literally a Riemannian space, or vice versa…. The smooth space of patchwork is adequate to demonstrate that 'smooth' does not mean homogeneous, quite the contrary: it is an amorphous, non-uniform space" (Deleuze and Guattari 1987: 476–477, translation modified).[293] *But then each occasion will have its own logic! How could there be so many?* That Riemann unleashed *infinitely many* geometries must have seemed the pinnacle of extravagance. Worse still (at least for those horrified by the uncouth), these geometries can be consigned to pure ideality only at the cost of idealizing spacetime itself—for

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conceive of a singly directed dynamic: his stated desire to proceed from cause to effect. He conceives of the latter as uniquely directed.

[293] Intensive spaces are "nonmetric, acentered, rhizomatic multiplicities that occupy space without 'counting' it" (Deleuze and Guattari 1987: 371). And: "Riemannian space is pure patchwork. It has connections, or tactile relations. It has rhythmic values not found elsewhere, even though they can be translated into a metric space. Heterogeneous, in continuous variation, it is a smooth space, insofar as smooth space is amorphous and not homogeneous. We can thus define two positive characteristics of smooth space in general: when there are determinations that are part of one another and pertain to enveloped distances or ordered differences, independent of magnitude; when, independent of metrics, determinations arise that cannot be part of one another but are connected by processes of frequency or accumulation. These are the two aspects of the nomos of smooth space" (Deleuze and Guattari 1987: 485). "A reasonable way to think of [a manifold] is that it can be built up in some means, by the piecing together of a number of coordinate patches in this way, but then we choose to 'forget' the specific way in which these coordinate patches have been introduced. The manifold stands on its own as a mathematical structure, and the coordinates are just auxiliaries that can be reintroduced as a convenience when desired" (Penrose 2004: 222)

spacetime *realizes* many of these geometries.[294] If the geometries are "merely ideal", what of the patches of spacetime that realize them? Deleuze's geometry of sufficient reason is "Riemannian" in part to free the transcendental field from dogmatic constraints upon the "logic" of its "categories". But to liberate it is not to strip it of all structure: that there is no *fixed* set of universal conditions is perfectly consistent with there being (topological) invariants that constrain the continuously varying local conditions. Fine structure amidst infinite flux: it is the height of rationalism. Once acted upon by solutions, virtual problems improvise a local geometry that secretes a logic—thus affirming the 20th-century tendency to "geometrize" logic (see part I). But if problems ground logic, what of our earlier thesis that time grounds logic? No worry: problems are essentially durative, duration essentially problematic (part III). The ground is ambivalent—a ground as furtive and turbulent as this only upends the traditional "metaphorics" of ground (Blumenberg 2010). That everything acts ceaselessly upon everything else—the whole is virtually present in each part, each change changes the whole, soliciting anew further processes of self-articulation—implies that there can be no eternally fixed set of categories constraining the kinds of syntheses by which a solution becomes a solution. Conditions vary continuously and reciprocally but asymmetrically. To this wavering quilt of Nature, to the pullulating, somnolent, turbulent problems that impel its metamorphoses, we say: "may their quilt guild lightly over its somnolulutent form" (Joyce 1999: 76).

Transition to part III

> First, thought proved to be dependent upon an encounter, on the emergence of an
> exteriority: sense, implicated and explicated in the sign, put heterogeneous dimensions into

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[294] There are restrictions on the geometry appropriate for spacetime manifolds. But there are still infinitely many kinds of geometries for spacetime. Einstein's field equations relate the distribution of matter to the metric. As there are an infinite number of such distributions, there are an infinite number of metrics—and a metric determines exhaustively the geometry of a space (Weyl 1952: 87). See appendix on manifolds.

contact. This was the transcendental hypothesis of a field of forces. But this field now merges with Time as internal difference or multiplicity, the complication of differences or irreducible intensive points of view.

—Zourabichvili 2012: 112

With the dynamics of the virtual delineated, we turn to a problem vexing Bergson's philosophy: how is duration continuous if its elements are absolutely heterogeneous? It is our contention that, if Deleuze appears to betray Bergson's philosophy, it is only to resolve this problem. Where is the Minotaur in Deleuze's "monstrous" reading of Bergson? It lurks in the wholly "illegitimate" identification of Bergson's continuous *multiplicities* with Riemann's continuous *manifolds*: manifolds are irremediably geometrical, but Bergson argues that geometry can have nothing to do with the philosophy of time! Though perverse, this identification expresses an implicit tendency in Bergson's philosophy, one that he unjustly foreclosed.

CHAPTER 4

PART III

THE TEXTURE OF FOLIATED TIME

Everything works so long as to this homogeneous character of space we oppose the heterogeneous character of duration. According to this structure of opposition, we must conceive the heterogeneous domain as discontinuous, the antithesis of homogeneous continuity. But there the difficulties begin, for two ways of grasping the heterogeneity of duration intertwine and overlap.

—André Robinet, *Bergson et les métamorphoses de la durée* p.27–28

As we know, the paradox that we must exalt the qualitative heterogeneity of states of consciousness to honor, finally, their unbreakable continuity, is very instructive.

—Jankélévitch, *Henri Bergson* p.123

The reader will note that Bergson has no difficulty in reconciling the two fundamental characteristics of duration: continuity and heterogeneity.

—Deleuze, *Bergsonism* p.37

This "reader" may note it, but he does not understand it. It would be strange if Bergson, always

exhorting us to experience things directly—even if this experience will be *at best* distorted by its later

philosophical expression—expected of us only acquiescence. This "paradox" is no static icon,

something before which to genuflect. It is dynamic, propelling us across various philosophical

systems, not just those of Bergson and Deleuze: the labyrinth of the continuum has one beast left in

its chamber.[295] Once out, this beast cuts first a diagonal across Bergson's system, not undermining it so much as volatilizing it, with the aim of exorcising a specter that haunts post-critical philosophy. If this labyrinthine "reconciliation" of continuity and heterogeneity has set its traps for us, it has set a special one for Bergson: it illuminates a subtle dogmatism underlying his prohibition against using any formal language to approach duration. Like so many others, Bergson has not properly inoculated himself against the corrosive force of the continuum.

I. Introduction

No problem without a triadic logic of expression: **first**, a field of solutions expresses its problem, determining further the problem by expressing it; **second**, this progressive resolution affects the distribution of singular points within the problem, altering the latter's topological structure; **third**, each new constellation of the problem *must be* expressed—the virtual outpaces the actual, which can never discharge fully its force, though it must attempt to do so.[296] That a problem cannot be exhaustibly determined implies that it will continue to mutate, accruing an "internal explosive force" that it "detonates" in the lines of actualization that mark variously errant attempts to dissipate this

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[295] "Exalting" heterogeneity amidst "unbreakable continuity" is indeed paradoxical—but paradox is generative, not terminal. Music poses well this paradox of durative wholes: if it resolves in part the problem it expresses, it makes the most heterogeneous sounds interpenetrate. It is only by being contaminated by a problem, and exploiting that problem's innumerable non-local connections, that these sonic strands can be at once heterogeneous and reciprocally-modulating— that is, continuous. If the elements of a durative whole are contaminated by a problem, the heterogeneity of the parts becomes a *condition* for the continuity of the whole. How can time reconcile a "dialectical pair" (*viz.*, continuity and heterogeneity) that, at least for the intellect, is only irreconcilable? Whatever the form of this "reconciliation", it will not be one of "static quiescence"—it can be only dynamic. What do we nominate as a ground? Neither the actual nor the virtual, just their dynamic interaction. The curious structure of durative continuity lets Deleuze extend the spirit of Bergson's philosophy by betraying its letter.

[296] It is no coincidence that Peirce develops a triadic logic. Nor is it coincidental that Peirce insists upon the irreducibility of triadicity to unity, duality, or any combination of the two. The various "triads" in the *Ethics* leads Deleuze to his own triadic logic of expression: "Part One of the *Ethics* may be seen as the unfolding of three triads, which all find in expression their principle: those of substance, of absolute and of power" (Deleuze 1990b: 95).

force (Deleuze 1988: 94; 107).[297] The controversial notions of "creative evolution" and "freedom without free will" can be given a first formulation: an errant dissipation of virtual force inflected by "external causes" (Deleuze 1988: 94). Creativity is no more the activity of a transcendent artificer, freedom no more the function of a "will" miraculously exempt from deterministic laws.

We have not addressed the third moment of the triadic logic of expression.[298] This third moment—the imperative—explains *why* virtual problems actualize themselves by errant means. The logic of expression is calibrated to evade equilibrium: what is subject to it will never resolve into a simple figure, alight upon a homogeneous path, or settle into a periodic orbit. There are only errant and irreducibly complex trajectories. The progressive resolution of a problematic complex cannot be represented by homogeneous figures. It fluctuates wildly, absorbing and issuing elements beyond all measure: no linear evolution, no arithmetic progression—only a furrowed, jagged, tilting, ramifying spiral bearing the whole in each part.[299] And yet it is continuous. How? To answer this we must change scale—move from a problem to a life. Two things remain constant: first, a virtual problem and a life are both "organic wholes"; second, the moments in the progressive resolution of a problem "succeed" one another no more linearly than the moments of a life. This "succession without

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[297] "Freedom has precisely this physical sense: 'to detonate' an explosive, to use it for more and more powerful movements" (Deleuze 1988: 107). Freedom without free will, involuntaristic creativity: such unpredictable "upsurges of reality" infect all of nature, not just conscious beings (Deleuze 1988: 18). The errant character of durative processes blocks their reduction to "external causes" such as environmental pressures, genetic mutations, and efficient interactions. Deleuze and Bergson's anti-reductionist position depends upon this errancy.

[298] It should not be surprising that an imperative mood infects interrogation. Problems are an explosive conjunction of interrogative and imperative moods. Before it, philosophy can adopt only a "middle voice" (Fletcher 2004).

[299] Problems explicate themselves through the complex, reciprocal, but asymmetrical interaction between the actual and the virtual. The asymmetry between the virtual and the actual fixes the former's excess over the latter. Here, Deleuze injects Curie's principle into the logic of expression: *asymmetry generates solutions, not symmetry* (Simondon 2005: 88; Deleuze 1994: 234; Lautman 2011: 230). Asymmetric reciprocity is a necessary condition for intrinsic genesis, as irreducible heterogeneity for durative continuity. It is no coincidence that durative wholes satisfy the conditions for intrinsic genesis. Virtual spaces (problems, the past) secrete beings *intrinsically*, that is, necessarily. Necessity is coupled no more to eternity; it is the sole modality of what exists in time.

distinction" is differs radically from the familiar "spatial" succession of mutually external elements (Bergson 2001: 101). Mutual externality of elements is a mark of spatial domains. The elements of temporal domains are never mutually external: there is only "a mutual penetration, an interconnexion and organization of elements, each one of which represents the whole, and cannot be distinguished or isolated from it except by abstract thought" (Bergson 2001: 101). Life unfolds as a desperate improvisation upon problematic themes. Wildly disparate elements contaminate each "moment"—elements of lived-history, species-history, the pure past. Life is at once meager—stalked by a problematic sun, drawing what it can from rare encounters, in an actual desert whose blasted forms are planed only further down—and inundated: desperate to dissipate a force that only outpaces it. Lived experience is inseparable from its futile attempt to dissipate a problematic force.

Problems have a *conatus*—to articulate themselves, to solicit solutions. They endure, they resolve themselves in time.[300] But what is time? If problems ground a life, what does a life express of problematic dynamics? Does its durative core express the durative structure of problems? Are there "invariants" of duration, present wherever there are durative processes? A key thesis: the temporal structure of lived experience is isomorphic to the temporal structure of the determination of problems. It is no accident that Deleuze's theory of problems resonates with Bergson's theory of duration: reciprocal determination, mutual interpenetration, differential implication—these properties characterize alike problematic dynamics and durative processes. No experience of time is ever homogeneous: it is marked by ruptures, colored by discordant tones, indivisible yet infinitely complicated. If it is bearable, it is so only by subterfuge: now arid, now metastable—on the point of

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[300] Its *conatus* is its urge to amplify its power, where its power is its capacity to affect and to be affected.

de-phasing, to carve in collapse a secret Lechugilla. And so perhaps with time, if there is such a thing as time in itself.

II. From First Person to Middle Voice

First Problem: *Time exists only for us, but we don't exist!*

<u>North star for this problem</u>: What does lived experience reveal of duration? Can we generalize these revelations beyond lived experience? The "logic" of continuous multiplicities is a more adequate "physical logic" than that of discrete multiplicities only if duration is "in" nature.

<u>Method</u>: aperiodic orbit[301]

<u>Problem 1, Orbit 1</u>: Bergson—now sequestering time, now liberating it. Why?

Not just every image of time—*time is a line, time is a circle, time is a palimpsest*—but every conception of it falsifies it. Anything other than immediate experience—an experience without a self to reflect upon it or to refract it—distorts duration. Why? First, images are homogeneous under some aspect, and homogeneity is the mark of a merely "symbolical image of real duration" (Bergson 2001: 125). What is the mark of real duration? Irremediable heterogeneity. But is there no image of heterogeneity? It would not do to present a "chaotic image" such as a fractal. Such images are spatial, and time is not space (it may be that physical space is not even "spatial" in Bergson's sense). This is

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[301] With each pass, we extract something new. If we repeat, it is with a difference. If we precess, it is both because the debris field mutates with each pass and because past paths weigh upon the present—subject to such force, no orbit could be homogeneous. Only so jagged a procession could cut the adamantine figure of durative continuity. Bergson valorizes orbital movements over linear ones. *Matter and Memory* opposes "a *linear* conception of interpretation to a *circular* one. The linear conception is that of associationists who think of the interpretive or intellective movement as a procession of the mind in a straight line starting from the alphabet of sensation. I'll add that intellectual atomism, in its concern with savings and didactic clarity, needs generally to provide itself with these purely progressive linear series without turnarounds…. The approach of the mind, on the contrary, whether it perceives, recognizes, recalls, understands, or invents, is always a *circuit*" (Jankélévitch 2015: 91). Orbits and lines—the latter protects abstract intellection, the former welcomes "the genesis of intuition in intelligence" (Deleuze 1988: 111). "Mind & Eye, the solar system, galaxy/ are spirals coiled from periphery" (Johnson: *ARK* 11): "we are all our lifetime reading the copious sense of this first of forms" (Emerson).

why, second, concepts only betray duration. Concepts arise from the intellect and, as we will see, the intellect *spatializes* everything: it cannot do without surreptitiously constructing an inert space and positioning mutually external objects within it—or so Bergson argues. Every attempt to formalize duration, every attempt to express it discursively, will fail, in this sense: it decamps from a heterogeneous flux where all elements mutually interpenetrate for a homogeneous medium filled by mutually external elements: "it is extremely difficult to keep in check our Euclidean kinetic-corpuscular subconscious which is the depository of our daily individual, as well as ancestral, experience" (Capek 1971: 58). Duration resists discursive presentation (Bergson 2001: 122, 128).[302] But how is Bergson, normally averse to rigid stipulations, so sure of his account of the intellect? Does the intellect spatialize necessarily? Can there be no formal discourse that *complements* the immediate experience of flux—that can express rather the structure of duration without distorting it? Certainly, durative flux must not be assimilated to extensive flux or, equivalently, phenomenal or actual flux. As virtual, durative flux admits of instantaneous leaps between orders, a leap that establishes communication between these orders without cancelling their absolute heterogeneity.

It is hard to resist the (very philosophical) temptation to denigrate something apparent to consciousness but resistant to every means of expression. Yet it is precisely duration's *resistance* to discourse that (like Lautman's "mathematical reality") prevents it from being dismissed as a subjective illusion or a discursive residue. Even if it is present *for us* only in immediate experience, it

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[302] Since they emanate from the intellect, language and logic only deform real duration: "Vain, therefore, is the attempt to range such states beside each other on the ego supposed to sustain them: never can these solids strung upon a solid make up that duration which flows. What we actually obtain in this way is an artificial imitation of the internal life, a static equivalent which will lend itself better to *the requirements of logic and language*, just because we have eliminated from it the element of real time" (Bergson 1983: 4, emphasis mine). "A flux is something intensive, instantaneous, and mutant" (Deleuze and Parnet 2007: 50). Duration is far more fundamental than intuition or praxis (Deleuze 1991: 31).

is incommensurate both to the discourses that emerge from this experience and to the discourses that might condition this experience. How could we hallucinate it, if we can neither imagine it nor cognize it? How could it arise from discourse, if it's incommensurate with every discourse? Precisely because time does not allow itself "to be seen, but only to be lived" it remains alien to us—in this attesting eloquently to its reality, even its autonomy (Bergson 2001: 191). However strange it is to ground everything on an experience so intimate and yet so alien, Bergson does it anyway. If we aspire to complement Bergson's inquiry into duration with mathematics, it is not to domesticate duration—and certainly not to displace the first-person experience of it. It is to amplify the alien otherness of time. Why mathematics? Will it really amplify the alien character of time? More than Cage's *I–VI* or Tarkovsky's *Stalker*? Does not mathematics, like Bergson, separate us from habitual images—alienating us now from "inert space" (General Relativity), now from "formless matter" (the Standard Model)? Even as it extends the intellect, mathematics might be alien to it—as alien as duration. Deleuze casts organic wholes and virtual problems as continuous multiplicities. This identification lets him circumvent Bergson's prohibition upon using mathematics to inquire into time. Topology was indispensible for divining the dynamics of problems. Problems are structurally isomorphic to organic wholes. Thus, topology expresses something of the dynamics of duration.

Duration grounds lived experience, but it is a hidden ground. It is obscure not simply because intellectual accretions occlude it. It has the bearing of a problem one cannot face. There is always a "self" to eclipse it. The stable self is "a symbol intended to recall unceasingly to our consciousness the artificial character of the process by which the [intellect] places clean-cut states side by side, where actually there is a continuity which unfolds" (Bergson 1983: 4). But why obscure

duration? Why generate symbolic selves? Answer: to orient ourselves in the world. Eclipsing duration

is doubly productive: first, it bequeaths to us a "self" stable enough to anchor practical intentions;

second, it allows this self to project outwards a "spatial diagram" that carves up reality and

coordinates its actions in the world. It is not as if there is an "authentic self" beneath these superficial

selves, one coinciding with the durative ground (though Bergson sometimes speaks this way). It is

rather that this ground, once we follow it beyond "the turn" that separates personal experience from

impersonal experience, repels every form of identity—much like the transcendental field (Bergson

1988: 184; Deleuze 1988: 27). Approaching this ground is not without cost: it demands, as a

condition for perceiving it, a total dissolution of anything self-identical. Self-identity is as alien to

heterogeneous flux as every logic of identity. Why adopt—even *universalize*—a logic that would

only alienate us from this ground? Classical logic cannot ground thought. It separates us from every

ground, embalming us in some symbolic space. But neither does a durative ground fix thought or

experience, only opens them to unaccountable metamorphoses. Far from grounding duration, the

self is a laughably odd excrescence flitting about it.[303] Self-identity is knit of images—specifically,

those that arose to orient praxis. These images are an expedience—a vital one, but an expedience

nonetheless. Worse still, images are spatial: they necessarily falsify the durative core. As for latter,

nothing is

> more resistant nor more substantial.[304] For our duration is not merely one instant replacing
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> another; if it were, there would never be anything but the present—no prolonging of the past
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> into the actual, no evolution, no concrete duration. Duration is the continuous progress of

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[303] There is nothing "wrong" with this superficial self, only the attempts to ground everything upon it. The self accretes about a selfless durative core, anchoring the diagrams that orient us in the world.

[304] How can duration be "substantial"? Is not everything substantial also "spatial"? Not if it's a Spinozist substance!

the past which gnaws into the future and which swells as it advances. And as the past grows

without ceasing, so also there is no limit to its preservation. Memory… is not a faculty of

putting away recollections in a drawer, or of inscribing them in a register. There is no

register, no drawer; there is not even, properly speaking, a faculty, for a faculty works

intermittently, when it will or when it can, while the piling up of the past upon the past goes

on without relaxation.[305] In reality, the past is preserved by itself, automatically. In its

entirety, probably, it follows us at every instant. (Bergson 1983: 4–5)

Despite ourselves, we remain tethered to a radically alien durative domain. It is not "our" duration at

all: we do not possess it, we are possessed by it. Does duration ground only lived experience? If life

was a condition for duration, instead of duration a condition for life, duration would be essentially

inexistent: by every measure—cosmological, geological—life is vanishingly rare. Is duration only "in"

us?[306] It is difficult to maintain that duration exists only *for* living things. Duration differs in kind

from extension. How did an "intensive domain" (pure duration) that differs in kind from the

"extensive domain" (space, filtered by the supple diagrams of praxis) get "in" us at all? Do we really

have the power of generating a domain that differs in kind from the extensive world? Is duration

then "in" nature? If it is in nature, we confront another problem: we encounter duration only in

immediate experience. There can be no *mediate* experience of real duration: mediating mechanisms

only distort durative structure. So if nature is possessed of time, how to grasp it? Can we "generalize"

our experience of duration? But the means of generalization only falsify it. It seems that the only way

out is through. Deleuze's wager: *beyond the turn, once it becomes impersonal,* "our" duration expresses

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[305] For Bergson, "*forgetting rather than remembering* needs an explanation" (Capek 1971: 156).
[306] The pure past—autonomous, impersonal, continuous, complete—grounds the interior experience of duration.

the structure of whatever duration infects nature.[307] "How do we pass from this inner time to the time of things" (Bergson 1965: 45)? If lived experience is the first clue, durative continuity is the true key. The structure of durative continuity is a structural invariant of all durative processes. Effacing the differences amongst the *elements* of a durative flow does not annul all of its structure. There is still the structure of its continuity: if we retain "of it only the continuation of what precedes into what follows and the uninterrupted transition, multiplicity without divisibility and succession without separation, [we] rediscover basic time" (Bergson 1965: 44). This kind of continuity is a structural invariant of duration, one "*inherent in* and *temporally co-extensive with* its dynamic content" (Capek 1971: 170). It is a "concrete universal" of duration, something "inseparable from and inherent in all" durative processes (Capek 1971: 173).[308] Deleuze's next wager: this continuity secretes a logic adequate to nature.

Duration is a condition for life, not the converse. Lived experience is inseparable from duration, but duration is not reducible to lived experience: organisms are durative *modes*.[309] Something lives if its past is virtually present for it—present not as an inert sack trailing behind it

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[307] Following Pierre Trotingnon's *L'Idee de vie chez Bergson*, Brad Bassler characterizes Bergson's trajectory thus: *Time and Free Will* is a ground-clearing work. It is largely diagnostic and critical, giving no positive account of freedom. If *Matter and Memory* excavates our durative condition, *Creative Evolution* generalizes it. Only once we have generalized duration can we complete the first two works by providing an account of "intuition".

[308] Is this "concrete universal" not an essence? And are not essences *forms of identity*—precisely what Deleuze claims has no place in continuity multiplicities? No: Bergson directs his critique against "those 'forms' or 'essences' which were artificially separated from their concrete, dynamic content and whose fictitiously static character is due precisely to their being artificially 'lifted' out of the stream experience" (Capek 1971: 170). This continuity is a concrete universal because it is invariant *under arbitrary transformations*. It has not been divorced from change.

[309] Bergson defines life in terms of duration: something lives if "the duration in which it is said to develop is a duration whose moments permeate one another" (Bergson 2001: 133). Duration is a problem that lived experience variably resolves. Alternately: living beings resolve the problem: *How to act presently on matter?* Similarly, matter resolves its own problems. Habitual and memorial contractions endow each organism with a unique rhythm. Crucially, matter can be conceived in contractile terms. Though it would be inconceivable to *Time and Free Will*, *Matter and Memory* argues that matter (concrete extension) is a qualitative heterogeneity, one not homogeneous under any aspect. Its elements are intensities individuated by the degree of tension they dissipate presently.

but as a force overflowing its vaporous presence. Defining life in terms of durative force suggests that duration has a being independent of life. The profligacy of life—its endlessly ramifying evolutionary lines, its fathomless individuals—expresses only its *inability* to actually exhaust virtual duration: the latter is always in excess of the former.[310] Life could no more contain all modes of durative being than one species could resolve every aspect of the problem of Life. The organic world presents itself as "one great effort; but most often this effort turns short, sometimes paralyzed by contrary forces, sometimes diverted from what it should do by what it does, absorbed by the form it is engaged in taking, hypnotized by it as by a mirror" (Bergson 1983: 127). Do not condemn matter for resisting the *elan vital*: material resistance to the discharge of virtual excess is a condition its creativity. Resistance amplifies the errant character of the material channels diffusing virtual force: "creative evolution is the detour that a vitality weighed down by matter had to take" (Jankélévitch 2015: 186).[311] Life-forms don't birth duration, to cloister it within themselves; duration impels life. The inexhaustibility of virtual force is a condition for the efficacy to time: "The universe *endures*. The more we study the nature of time, the more we shall comprehend that duration means invention, the creation of forms, the continual elaboration of the absolutely new" (Bergson 1983: 11). But forget

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[310] Deleuze welcomes Schelling's naturphilosophy not just for its focus on virtual productivity over actual productions but for its emphasis on virtual excess. Favoring virtual productivity over corporeal products, Schelling "pursues this 'Proteus of nature' throughout the 'ever changing forms and innumerable phenomena', that is, through the 'discrete phenomena', in which it recurs. Innumerable phenomena are the necessary consequence of an infinitely outflowing force because, *qua* infinite, it is not exhausted by any possible number of productions, so no limit can be set to the number of production events to follow from productive nature" (Grant 2006: 144).

[311] If becoming is radically indeterminate, it is because it avails itself of this inexhaustible force. A metamorphosis is not the elaboration of what is actually present. One metamorphoses *out of* and *away from* oneself, drawing upon a virtual dimension that repels any form of identity. Deleuze's conception of becoming liberates duration from the interior of exceedingly rare life-forms. In his first work, Bergson insists that "succession without distinction"—every moment permeating every other moment—is very much "inside of us" (Bergson 2001: 227). By his last work it is ubiquitous, if nowhere actually present.

the *efficacy* of time—it is not clear how to establish its *reality*.[312] We must pass from the immediate

experience of concrete duration to a vision of productive duration impelling the whole of nature.

Problem 1, Orbit 2

We begin again from the middle, with lived experience. But just as we should not make the intensive

extensive, project time onto space, or transpose cause into effect,[313] so we should not identify the clue

with the ground, project personal onto impersonal, or inscribe consciousness at the heart of

duration, even if it attests eloquently of it. Even if personal experience is an indispensible first clue, it

discloses a ground that corrodes every form of identity. Thus, it can be only a first clue; durative

continuity is the true key. An impersonal force radiates already through the personal tint of *Time*

and Free Will's inquiry into durative experience. We leave this anteroom, to pursue duration beyond

the turn in experience. No self can endure an intensive sea whose essence is to mutate at speeds and

frequencies beyond every form of identity.[314] This will be the key to de-coupling duration from lived

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[312] What does Bergson mean by creative? For something to be creative is for it to be "productive of effects in which it expands and transcends its own being" (Bergson 1983: 52). If creativity involves "transcendence" at all, it is in the manner of solutions and problems: a solution transcends itself, but towards a problem that is at once irreducible to it but immanent in it. That is, creativity is "transcendent" in Lautman's sense of the word. This transcendence is inseparable from the *failure* to resolve definitively a problem. Here the problem is Life, whose solutions can be only inadequate to it: "the force which is evolving throughout the organized world is a limited force, which is always seeking to transcend itself and always remains inadequate to the work it would fain produce" (Bergson 1983: 126). "Time is efficacious" means that virtual problems provoke the solutions that will diffuse durative force.

[313] Bergson attacks the uncritical transposition of properties pertaining to extensive causes to the domain of intensive effects (Bergson 2001: 68). It's not clear that the differences between intensive sensations is "like" the "arithmetical differences" between extensive phenomena (such as differences in wavelength). We cannot allow "the idea of contrast [to] melt into that of arithmetical difference" (Bergson 2001: 68). The introduction of any extensive properties into intensive domains is illegitimate. To even speak of a "distance" between sensations or memories must be understood as "only a metaphor"—and an inappropriate one at that, since it is geometrical (Bergson 2001: 58). This bars all of mathematics and all of logic. Indeed, language in all of its forms—and not just formal language—is suspected of being inherently "extensive". Every act of intellection is inadequate to time. But despite being impervious to language, time has a structure. And since it has a structure, it might have a logic. But this logic cannot come from outside of it. It will have to be a structure that secretes intrinsically a logic uniquely adequate to it. Do we know of any topological multiplicities that secrete intrinsically their logic?

[314] It is not just embryos that lack identities. They are an organic limit case, but they are not exceptional. What self could "survive" the cascades of embryonic change? "Beneath the actual qualities and extensities, species and parts, there are

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experience (first problem). But *how* does lived experience undermine every form of identity? That is

our second problem. We use Bergson's distinction between continuous and discrete multiplicities to

frame these problems. Though the term "multiplicity" is really only prominent in *Time and Free*

Will, the *intrinsic logic* that he extracts from each multiplicity remains central in all of his work: they

are, respectively, a logic of expression and a geometry of solids. Of course, Bergson would insist that

the "logic of expression" is not a logic at all! Logic is *inherently spatial*, and so incommensurate with

continuous multiplicities: for him, logic *just is* the geometry of solids, and no such logic can be

adequate to a continuous multiplicity, let alone intrinsic to it.[315] Using classical logic to inquire into

time is akin to Kant's use of Aristotelian syllogistics to inquire into the categories. It is a subtle

capitulation to empirical fact, and thus inappropriate for transcendental inquiry.[316] So far Deleuze

agrees with Bergson: classical logic is incommensurate with duration. But Deleuze does not agree

that every logic is *necessarily* a geometry of solids. He insists that the logic of continuous

multiplicities is a non-spatial logic. It governs the part–whole relations within the multiplicity—

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spatio-temporal dynamisms. These are the actualizing, differenciating agencies. They must be surveyed in every domain, even though they are ordinarily hidden by the constituted qualities and extensities. Embryology shows that the division of an egg into parts is secondary in relation to more significant morphogenetic movements: the augmentation of free surfaces, stretching of cellular layers, invagination by folding, regional displacement of groups. A whole kinematics of the egg appears, which implies a dynamic. Moreover, this dynamic expresses something ideal. Transport is Dionysian, divine and delirious, before it is local transfer. Types of egg are therefore distinguished by the orientations, the axes of development, the differential speeds and rhythms which are the primary factors in the actualisation of a structure and create a space and a time peculiar to that which is actualised" (Deleuze 1994: 214).

[315] "Thibaudet justly compared Bergson's intellectual effort to free the human mind from the obsession with pictorial and mechanistic thought to the effort of Lobachevski and Riemann to emancipate our thought from being exclusively dominated by the geometry of Euclid" (Capek 1971: 62).

[316] "One of the central… theses of his epistemology is that the sensory elements of our macroscopic experience are subtly and insidiously present even on the highest level of logical and mathematical abstraction. This is the meaning of his claim that our logic is the 'logic of solid bodies' and that the operations of conceptual thought, at least in its classical form, betray the influence of our macroscopic perception of solid bodies as well as of our technique by which these bodies are manipulated" (Capek 1971: 56). The logical operations governing proof construction have exact analogues to the geometrical operations governing Euclidean constructions—isometries (rigid transformations) and constructive acts (Shifrin 1996).

though it is misleading to speak of "parts" (problem 1, orbit 3)—but without any spatializing it. In ruling out the possibility of a non-spatial logic, Bergson himself capitulates to empirical fact. Deleuze provides the critical correction.

Bergson characterizes lived experience as an "organic whole" or, equivalently, a continuous multiplicity (Bergson 2001: 128; 100). In a discrete multiplicity, a part can be detached without changing the nature of the whole. Conversely, a part can be separated cleanly from the whole: the part does not express the whole.[317] In a continuous multiplicity, nothing is isolable: not only does every part express the whole but the very act of isolating a part changes the whole in its entirety. In a continuous multiplicity mutation is total and constant. Unlike a discrete multiplicity it does not admit a logic of "container and contained" (Bergson 2001: 72; Bergson 1988: 149). That lived experience repels the mereology of classical logic undermines the assumption that "identity" is a central category in the philosophy of nature.[318]

That (in a continuous multiplicity) the whole is present in each part, that each change changes the whole, that—as with problems—to perceive it under any aspect is to alter it irrevocably, is true of lived experience and of duration in itself.[319] These properties are indispensible for every durative structure: *they are constitutive of its kind of continuity*—and this continuity is a structural invariant of durative flux. But we have not yet passed from duration *for us* to duration *in itself*. Has

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[317] Number is a preeminent example of a discrete multiplicity. The set-theoretic conception of an ordinal number exemplifies it. We must respect though the difference between the constructed set (with its mutually external elements) and the constructive act, which is dynamic (Capek 1971: 179).

[318] Our need to orient ourselves in the world inclines us towards inscribing forms of identity in every foundation. It seduces us into, **first**, making the *decision* to prioritize certain empirical forms (such as the self) and, **second**, disavowing that it is anything more than a decision. This prioritization of the forms of identity suggests that classical logic is the only logic and that these "laws of thought" are universal. We saw this with Kant in part II. But there are no more universal laws of thought than there are universal praxes or universal forms of life.

[319] For Bergson, "the word 'Whole' has a sense, but only on condition that it does *not* designate anything actual. He constantly recalls that: the Whole is not given" (Deleuze 1988: 127–8).

our inquiry into lived experience brought us any closer to its impersonal ground? *Time and Free Will*

tarries with the personal experience of duration in order to discern the invariants of continuous

multiplicities. Bergson wagers that these invariants will survive the passage (in the limit) from lived

experience (or duration *for us*) to impersonal duration (duration *in itself*). Only the three mutually-

implicating "moments" (listed in the first sentence of this paragraph) that constitute the "intrinsic

logic" of a continuous multiplicity will survive the limit-passage from the personal to the impersonal.

A logic adequate to durative continuity "falls out" from their triadic interrelation. It is as in

categorical logic: logic is "relative to" the geometry—specifically, the continuity—of a process.

Problem 1, Orbit 3

> Creation is the very law of duration, the gushing forth of an always complete and always new existence. Fabrication is not creation, and there is something divine in the constant innovations of duration that in vain we would seek in the servile fabrications of an anthropomorphic intellect.
>
> —Jankélévitch 2015: 182

In lived experience, successive states "melt into and permeate" one another (Bergson 2001: 104). We

encounter these intensive states not as quantifiable objects but as "living things, constantly *becoming*,

as states not amenable to measure, which permeate one another and of which the succession in

duration has nothing in common with juxtaposition in homogeneous space" (Bergson 2001: 231).

The elements of a continuous multiplicity cannot be juxtaposed in a containing space. They

permeate one another, and the whole each of them.[320] It would be a mistake to suppose that, since its

elements are not mutually external to one another, a continuous multiplicity is an undifferentiated

morass. It is highly structured, even if certain aspects of it remain indeterminate. Each element is

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[320] Discrete multiplicities do not exist for immediate intuition. They emerge in practical engagement with the world.

absolutely itself—even as the whole is continuous! *But how? Doesn't the mutual irreducibility of intensive states imply that they're discontinuous? If they are unique and irreducible, how do they "melt into and permeate one another"?* This "paradox" (see the epigraphs) haunts Bergson's conception of durative continuity. But there is a way, if not to resolve this paradox, then to amplify its power. *Continuous multiplicities continually mutate*: this phrase at once concentrates the paradox and affirms the divergent paths radiating from it. To reconcile continuity and heterogeneity is not to neutralize the tension between them, it is to bind it to continual metamorphosis. Each continuous multiplicity relies upon this tension between continuity and heterogeneity: the latter are dialectical poles of a problem it attempts to resolve in every moment. They ground the multiplicity by impelling its metamorphoses; the multiplicity resolves them provisionally by exploiting their tension. Each moment is new only by distinguishing itself from its past (Capek 1971: 128). *In nuce*, this constitutes the dynamic resolution of continuity and heterogeneity: a continuously-persisting ground is a condition for the continual eruption of novelty.[321] Each successive moment bears the *quality* of novelty. How else could it announce itself as a term in a succession? This qualitative mark is not attributable to mutually external, isolable moments. It is legible only because the past endures. Continuity of the past, heterogeneity of each present—these are indispensible for any concrete duration: without the former, no mark of novelty; without the latter, no mark of succession.

Continuous multiplicities are inordinately sensitive: each change changes the whole, eliciting further change. There is no arresting this flux—which is one of Bergson's central theses: to conceive

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[321] Mathematically, we could formalize it like this: each moment, since irreducibly novel, adds a free abelian generator to the already infinitely-complex "space" of the past. It changes the latter's structure in the way that adding a new hole to a torus changes the torus' structure. This change is instantaneous, since it changes its homology class.

of it statically is to falsify it, since it is inseparable from continual mutation.[322] The "virtual presence" of the whole in each part ensures that a change to the smallest part changes instantaneously the whole. As the whole changes, so its elements must change, since each element expresses the whole. This shared agitation binds the elements to a continuously-unfolding continuous whole without effacing the real heterogeneity between them.[323] Each element of a continuous multiplicity expresses uniquely the whole. It is not that the elements constitute the whole or the whole its elements. Rather, they are co-constituting: elements are constituted by the whole that they constitute, as the whole is constituted by the elements it informs. By now, it should be no surprise that the intrinsic logic of continuous multiplicities forsakes the law of excluded middle. Rather than exclusive aspects, we have communicating divergences; rather than a single plane, heterogeneous orders; rather than bounded summation, exponential recursion. Processes are not constituted by mutually external linear orders but by reciprocally-interpenetrating complexes. They articulate themselves only in ampliative processions. The inter-relation of its orders, the interpenetration of its elements, the presence of the whole in each part dynamizes the multiplicity, binding it continuously together. Far

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[322] This incessant metamorphosis is evident in memorial and musical experience. To recall a singularly empty evening is not to represent it as it happened but to encounter it from a unique aspect, one inflected by everything that has intervened: rather than a faithful representation of the evening "as it was", we have an entirely new perception from the curious vantage of the particular section of the past that has coalesced around the evening. That all aspects of continuous multiplicities are caught up in this ceaseless dynamism is even more evident in musical experiences. To punctuate near-silence with a dissonant noise (as in Takahiro Kawaguchi and Taku Unami's *Teatro Assente*) affects the silence as much as the noise. A once "homogeneous, indiscernible" silence is now precisely differentiated. Bergson prizes musical experience for its exemplification of the logic of duration.

[323] Leibniz resolved the problem of motive continuity by insisting that the motive interval was non-uniform. This gives us an infinitely agitated plenum, one pulsating like a ctenophore. If not exactly an organism, the plenum has the kind of duration of an organism—or so we argue. Its riotous dissonance undercuts every attempt to impose a static logic of identity, to affirm self-identity anywhere in anything, and to reduce reality to actuality.

from threatening the continuity of the continuous multiplicity, the heterogeneity of its elements

secures it. Continuity and heterogeneity are complicit in continual mutation.[324]

Though diverging, the "lines" explicating a continuous multiplicity still communicate: the

whole remains present in each part. This "communication" binds together (virtually) its deviant lines

even as it fosters further divergence between them, impelling also newly divergent lines. The

continuity of this dynamic explication never dulls a line's insistence upon the uniqueness and

irreducibility of its expression; continuity only amplifies the latter, elevating heterogeneity to

productive noise.[325] The relation between communication, continuity, and heterogeneity

underscores a central property of durative continuity: *the reciprocal interpenetration of elements.*

Almost of itself, this property implies that the triadic logic of continuity is not a logic of identity.

Why is reciprocal interpenetration so central? It grounds the dynamism of durative wholes. Indeed,

two fundamental characteristics of every durative process presuppose the "reciprocal interpenetration"

of elements: pure heterogeneity and "endlessly continued creation" (Bergson 1983: 178). First,

mutually implicating elements resist any attempt to resolve their complexity into simple figures. At

every scale, one perceives only infinitely complex eddies. Why? Each element expresses uniquely the

whole; the whole is changed by this expressive act—a change not only registered by each aspect but

one which, in being registered, changes instantaneously the whole. That this unique whole changes

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[324] In music, "individual tones dynamically *cohere* in spite of their qualitative differences, and this coherence, far from being static and timeless,… is inseparable from novelty" (Capek 1971: 120). More generally, "the qualitative differences 'separating' two successive moments at the same time *joins* them" (Capek 1971: 130).

[325] The heterogeneous character of this continuous flow is a key to the mysterious "productivity" of duration: heterogeneous continuity grounds creative dynamics. Only a heterogeneous but non-denumerable continuum could provide an inexhaustible ground for creation. Similarly, mathematical constructions rely upon the inexhaustibility of the generic. If mathematics clarifies the problem of production, it is only because it expresses the character of the extra-mathematical problems that ground all processes.

ceaselessly implies that the aspects that express the whole "can never turn away from it". Ceaseless

mutation binds mutually irreducible aspects to a unique whole. Second, that each change changes

the whole implies that each change must be accommodated by every aspect. These endless acts of

accommodation impel continual creativity.

<u>Problem 1, orbit 4</u>

We must not allow the presence of the word "part" in Bergson's logic of continuity to seduce us into

taking it as another spatial logic. Recall: a spatial logic is a logic that admits of discrete operations

upon self-identical, mutually external elements. It's rare for a philosopher, but classical logic is more

of an enemy for Bergson than imagination! Bergson does not fetishize syllogistic argument, allowing

it to eclipse other modes of rationality: there is rationality apart from classical logic, and rigorous

thought apart from any logic.[326] Is an interrogation any less rational than a syllogism? Which is the

more valuable? *Abandon spatiality, all who enter here*: qualities and intensities can be experienced in

themselves only on condition that we do not decamp for spatial climes. We must maintain ourselves

in immediate intuition. It is not a comfortable place to inhabit. Its turbulence, its hostility to spatial

logic, its contempt for every form of identity corrodes the phantasmal grids that orient our being-in-

the-world. We can intuit immanently or not at all.[327] And this is doubly challenging: it forces us to

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[326] Bergson avoids inherently spatial discourses like classical logic, and so uses often metaphors: conscious states "melt into" one another. Having forsaken formal systems and discursive concepts, having condemned every act of intellection as inadequate, what besides metaphor could express the structure of duration?

[327] "Quality draws all its value from itself, from its own irreducible specificity, and in no way from its relation to something it is not; it demands to be known in itself. We need to speak the language of quality with the sui generis and incomparable originality of quality. For their justification, the facts perceived [in immediate experience] no longer await the investiture of some transcendent authority, the sanction of an absolute entity: they are justified by the irresistible force of their presence alone, by the irreplaceable value with which effective and actual experiences are endowed. The philosopher thus effortlessly surrounds herself with unshakable truths and persuasive evidences; she leaves the burden of proof to those who contest them and prefer to beg from apodictic reasoning the alms of an always meager and fragile

disengage from the world and to abjure the homogeneous grids that orient us in the world. Bergson

counsels: to enter the durative stream, set aside your variously superficial selves. But this "setting

aside" is no "transcending"—it is a dissolution, akin to a meteorite breaking up in the atmosphere.

For Bergson, a self is indexed to a mode of engagement. Engagement presupposes an orienting grid.

Orienting grids induce a minimum of homogeneity in experience. How could they orient us, if they

didn't impose some stability? Selves are not interior phantoms but exterior diagrams. They coincide

with perception, which is itself always indexed to engaged praxis: "The lines we see traced through

matter are just the paths on which we are called to move. Outlines and paths have declared

themselves in the measure and proportion that consciousness has prepared for action on unorganized

matter" (Bergson 1983: 188).[328] Unadulterated duration emerges only at night, once praxis has gone.

Disengaging from the world and dispelling the specter of orienting grids is a condition for

encountering durative flux. It is in this sense that duration is antagonistic towards forms of identity.

Selves, orienting grids, perception—none of them can survive durative flux.

Immediate intuition is an experience without intellectual, practical, or perceptual elements.

At the limit, intuition forsakes the diagrams that orient us in the world, abandoning also all

intellection—which emerges anyway from praxis. But to abandon all intellection is not to abandon

all reason. Intuition has its own method; Deleuze lists its "rules" in the majestic first chapter of

Bergsonism. The intuitive method guards against spatializing time and reducing differences in kind to

differences by degree, countermanding the tendency to replace concrete duration with a spatial

symbol. This method will lead us to a sufficiently robust conception of duration, becoming, and

certainty. Only lived experiences comprehend themselves" (Jankélévitch 2015: 29). But what grounds this unique and "incomparable originality of quality"?

[328] Matter "is therefore, pre-eminently, the plan of our possible action on things" (Bergson 1983: 157).

nature.[329] Even if immediate intuition immerses itself in durative flux, what can we say of this

immersive experience? Can we express anything of it without spatializing it? The "succession without

distinction" of durative flux confounds utterly every spatial logic (Bergson 2001: 101).[330] How can

moments succeed one another without being mutually external to one another? How is each

moment immediately present to every other moment? Worse still, "succession without distinction"

constitutes the *continuity* of duration—and we intend to explicate the "logic" of this continuity.

Bergson only sharpens J.A. Wheeler's provocation: *Adopt rigor or adopt the continuum?* Leaving aside

"rigor", it is not clear what it means to "adopt" continuity.[331] Is it a bare affirmation of its priority?

Or does continuity propose its own logic, one that departs from the canon of rigorous systems? Why

is this heretical "logic" not rigorous? What of the swaths of physics and mathematics that marry

continuity with a rigorous formalism? Wheeler himself is clear: "No continuum in mathematics and

therefore no continuum in physics" (Wheeler 1989: 314).Bergson answers differently: there is no

question of the intellect adopting continuity. It is trapped in the variously rigorous schemes of

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[329] "There is no 'intuition' yet in *Time and Free Will*: there, it is enough to eliminate the entirely negative symbolics of space to find oneself face to face with one's true self.… But what is tragic is precisely that duration cannot express itself without perishing; we will learn later that it is nonetheless knowable, albeit by other means than by discourse. But intuition properly speaking does not appear at all before *Creative Evolution*" (Jankélévitch 2015: 40). Intuition forsakes perception to purify itself of all intellectual elements. Once immersed in the durative element it can think time without admixture of space: "below homogeneous duration, which is the extensive symbol of true duration,… a duration whose heterogeneous moments permeate one another; below the numerical multiplicity of conscious states, a qualitative multiplicity; below the self with well-defined states, a self [*sic*] in which *succeeding each other* means *melting into one another* and forming an organic whole" (Bergson 2001: 128).

[330] "Thus in consciousness we find states which succeed, without being distinguished from one another; and in space simultaneities which, without succeeding, are distinguished from one another, in the sense that one has ceased to exist when the other appears. Outside us, mutual externality without succession; within us, succession without mutual externality" (Bergson 2001: 227). That durative succession is not extensive succession implies that durative continuity is not extensive continuity—shades of the incommensurability of motive continuity and geometrical continuity in Leibniz's system!

[331] Analytic philosophy, despite its absurd pretensions, has no more a monopoly on "rigor" than it has on "clarity". That different mathematical disciplines have different criteria for what constitutes a proof indicates that rigor is a point of contestation even in those disciplines idolized by analytic philosophy.

formal logic. The intellect "cannot, without reversing its natural direction and twisting about on

itself, think true continuity, real mobility, reciprocal penetration—in a word, that creative evolution

which is life" (Bergson 1983: 162). Symbolical rigor for the intellect, dynamical rigor for the

intuition. As concrete succession differs in kind from its symbolic representation, real continuity

differs in kind from every symbolic representation of it. We will consider below this curious "non-

spatial" continuity of durative flux. This much is clear: to conceive adequately of life and duration,

we must conceive adequately of "non-spatial" continuity.[332] The latter is central for Deleuze's

Riemannian geometry of sufficient reason, which grounds discontinuity in durative continuity. If

Deleuze is right, nothing will not metamorphose, even Wheeler's question: it passes from an

"either/or" disjunction to a "both/and" affirmation.

In (abstract) extensive succession moments are mutually external to one another. They can

be juxtaposed, they are variously distant from one another. But in (real) durative succession

moments are not mutually external to one another: no concrete duration is the "sum" of mutually

external moments. A continuous multiplicity does not arrange its past like a taxidermist; it transmits

a mounting dissonance that never relents, only mutates.[333] No moment ever encapsulates the whole;

the latter always exceeds the former. Far from a cause for despair, this ineliminable excess is a

condition for the prolongation of a life: a life prolongs itself by creating anew. For Bergson, time is

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[332] Part of Deleuze's program for "overturning Platonism" is rejecting Bergson's residual Platonism! Orthodox Platonism would insist upon the strict unintelligibility of every flux. If Bergson accepts Plato's arguments that becoming is unintelligible, he insists that it is accessible to the non-intellectual faculty of intuition. Deleuze does not accede to the stark Platonic duality: if becoming is inaccessible to an intellect, it is inaccessible to an intellect *in the thrall of the dogmatic image of thought*. If we abandon the diktats of representational thought, we might discover a non-intellectual thought adequate to flux—one that only extends the insights of intuition. This non-intellectual thought is no more a negation of it than non-Euclidean geometry is a negation of Euclidean geometry.

[333] As Spinoza would say, one's power is constant, even as its internal structure (the relations between passive and active affects) only mutates: there is "no growth but only a luxurious squandering of energy in every form" (Bataille 1988: 33). Whence this influx of force? It emanates from the luminous problems to which one is subject.

creation, and creation is continual. If continuous multiplicities (equivalently, organic wholes) pulsate

continually anew, there must be something in excess of every moment: "Bergson's creation is neither

a creation ex nihilo nor a mechanical rearrangement of old elements but, in contradictory fashion, it

is a continually inventive immanence, an always-beginning improvisation among the *innumerable*

plenitude of preexistences" (Jankélévitch 2015: 179, emphasis mine). The inexhaustible fund

authorizing this radically novel pulsation is immanent in organic wholes but irreducible to them. It

is virtually present—in part its problematic ground, in part its past: its excess is not its own.[334] An

organic whole's way of being foregrounds this enveloping excess: accommodating new moments

evokes the past moments most altered by the present act of accommodation. This shadowy evocation

complicates the already complex present. There are patterns, but no periodic ones: if there is

recursion, it is ampliative and unstable—better to speak of recursive amplification. The circuits

forged by "succession without distinction" are ampliative circuits. A mounting complication forces

one to improvise even more sophisticated methods of present absorption. The past only complicates

itself, and the present *must* keep pace. Letting this imperative color the present accords with the third

"moment" of the logic of expression (see the introduction).

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[334] Far from an impediment to creative discharge, viscous virtual plenitude is a condition for it. It does not impede crystallization but catalyzes it: "Nor are humans mental zeroes. Their liberty is not made from an illusory void that would set itself up between present and future. It is made, on the contrary, from plenitude and continuity. It is not a substantial and arbitrary creation. And nonetheless it is a renewal. For just as the number of lived experiences on which it draws is infinite, the combinations it imagines, the arabesques it unfolds, become radically unforeseeable. The most brilliant musician uses, in chords, intervals, groupings, and figures, a sonorous matter that existed before him. What will always be new is the order he introduces among these elements" (Jankélévitch 2015: 178). "Like the will, creative evolution and open ethics operate in full plenitude!" (Jankélévitch 2015: 184).

Organic wholes, as they endure, only complicate themselves. Time is an occasion for exponentiation.[335] Organic wholes are fragile: the slightest change alters instantaneously its relation to itself and its relation to its past—think of the experience of music. The *experience* of music is an organic whole: a subtle sonic modulation transforms immediately the present experience as well as the relation of this present to its past. Some errant sound passes through without a trace—and yet the whole is changed. And can this change really be restricted to the past experience of *this* music? Might it implicate the whole of the past?[336] In a continuous multiplicity, every part is immediately present to every part. But no part is present to every other in the same way: the way that a part is present to every other part is unique to it.[337] Further, each part expresses uniquely the whole. That each state of a continuous flux involves every other allows the whole to prolong itself "in an endless flow" (Bergson 1983: 3).[338] The reciprocal implication of elements is the *first property* of durative continuity. It is *nearly* equivalent to two other properties. Together, these three properties

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[335] The iteration of polynomials is a suggestive analogy. The boundary of the Julia set is an "image" of the kind of recursive amplification characteristic of continuous multiplicities. It presents a heterogeneous continuity that evades any definitive representation (you can always magnify further) and never resolves into simple shapes.

[336] The "fragility" of organic wholes expresses an immense power. A being's power is a function of its actual bearing and its virtual ground: actual individuals are only indexed to virtual force. Affective sensitivity is a correlate of creativity, since creativity is a desperate and inept response to excessive virtual force. To be creative is to be subject to a virulent dynamic, one ruthlessly impelling metamorphosis. Virtual excess is a condition for creation.

[337] The elements of a multiplicities maintain "reciprocal relations which allow no independence whatsoever to subsist. Such relations are precisely non-localisable ideal connections, whether they characterize the multiplicity globally or proceed by the juxtaposition of neighboring regions. In all cases the multiplicity is intrinsically defined, without external reference or recourse to a uniform space in which it would be submerged" (Deleuze 1994: 183). They are immediately present to one another not *qua actual* but *qua virtual*—that is, not extensively but intensively. Penrose tiles might provide an interesting image of reciprocity: the placement of a tile affects the placement of every subsequent tile, no matter how distant the latter from the former.

[338] A state is a flow-line upon a mutating surface that, though its levels are mutually irreducible, forms a purely heterogeneous continuum. The problem this poses to Bergson is similar to the one that the total determinacy of every moment of motion (place and velocity are always determined) poses to Leibniz: the latter does not countermand the continuity of motion only on condition that motion is nowhere uniform. We orbit through Bergson's philosophy, trying to grasp the relation of pure heterogeneity, continuity, and mutual irreducibility. It is as difficult as perceiving how, in Spinoza's *Ethics*, mutually irreducible attributes constitute a unique substance. The interrelations amongst these three properties indicates that a continuous multiplicity *just is* the dynamic resolution of the tension between continuity and heterogeneity.

characterize durative continuity. This first property implies the *second property*: each change changes instantaneously the whole. Similarly, the second property implies the first: that each change changes instantaneously the whole implies that each part must express uniquely the whole. This leads to the *third property*: perceiving any part of a continuous multiplicity changes it in kind. As we will see (orbit 6), a perception "parcels out" reality: one perceives what solicits future action. Perception accents certain aspects of reality and suppresses others. One "divides" what one perceives, and a continuous multiplicity "changes in nature at each moment of the division" (Deleuze and Guattari 1987: 483).[339] That the perception of a part changes instantaneously the whole implies that the whole must be virtually present in each part, which is the first property. The near-equivalence of these three properties reflects their organization around a common theme: reciprocal interpenetration. The reciprocal interpenetration of the elements of an organic whole constitute its continuity: it is by this property of "interpenetration" that intensive inner states—which are distinguished from one another not by a quantitative difference but by a "qualitative sign" (their unique expression of the whole)—constitute "the continuous evolution of a free person" (Bergson 2001: 229). The uniqueness of each expression does not threaten the continuity of the unfolding whole. To the contrary: that each expresses uniquely *a* whole binds them in their expression; that they express *a* whole subjects them to a unique dynamical regime. Subjection to a dynamical regime,

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[339] "For Bergson, duration was not simply the indivisible, nor was it the non-measurable. Rather, it was that which divided only by changing in kind, that which was susceptible to measurement only by varying its metrical principle at each stage of the division" (Deleuze 1988: 40). This is a troubling leap: Bergson argues that multiplicities admit of no measure and that every division changes it in kind. But to be non-measurable is different from varying the metric point to point. Riemannian manifolds are metrizable. A manifold that varies its metric point to point is a Riemannian manifold. We cannot follow Deleuze here. We must insist upon the non-Riemannian character of durative multiplicities. A manifold may lack a metric. If there is a relation between manifolds and Bergsonian multiplicities, it does not involve metrics. Only by excising metrics can we establish a connection between manifolds and duration. Rather than Riemannian manifolds, we can use symplectic manifolds. They lack a metric, but have a globally-defined volume form. The phase spaces of Hamiltonian dynamics are symplectic manifolds.

reciprocal interpenetration of elements—these ground any understanding of how a continuous

multiplicity endures by posing anew each moment a resolution to the problem of how to

continuously explicate a heterogeneous whole. Any attempt to *think* durative continuity in itself,

without any admixture of space, must involve the virtual dynamics of the whole and the reciprocal

interpenetration of elements. Bergson doubts that this is possible, claiming that only "discontinuity

is thought for itself; it is thinkable in itself; we form an idea of it by a positive act of our mind; while

the intellectual representation of continuity is negative, being, at bottom, only the refusal of our

mind, before any actually given system of decomposition, to regard it as the only possible one. *Of the*

discontinuous alone does the intellect form a clear idea" (Bergson 1983: 154).[340] Even if the latter is

true, we resist reducing *thought* to *intellection.* Deleuze elaborates the method of intuition precisely to

skirt Bergson's absolute prohibition upon *thinking* durative continuity. There is thought apart from

the intellect, logic apart from spatial logic.

Problem 1, Orbit 5

> "Time is out of joint", time is no longer coiled up in such a way that it is subordinated to the
> measure of something other than itself, such as, for example, astronomical movement. Time
> has ceased to be the number of nature, time has ceased to be the number of periodical
> movement. Everything happens as if, having been coiled up so as to measure the passage of
> celestial bodies, time unrolls itself like a sort of serpent, it shakes off all subordination to a
> movement or a nature, it becomes time in itself for itself, it becomes pure and empty time. It
> measures nothing anymore. Time has taken on its own excessiveness. It is out of its joints,

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[340] Bergson insists that continuity is "this possibility of decomposing matter as much as we please, and in any way we please…; but this continuity, as we see it, is nothing else but our ability, an ability that matter allows to us to choose the mode of discontinuity we shall find in it. It is always, in fact, the mode of discontinuity once chosen that appears to us as the actually real one and that which fixes our attention, just because it rules our action" (Bergson 1983: 154). Deleuze intends for his Riemannian geometry of sufficient reason to counter Bergson here: discretizing processes must be grounded upon a prior continuity, and this continuity is not reducible to matter's capacity to accommodate our discretizing acts.

which is to say, out of its subordination to nature; it's now nature which will be subordinated to it.[341]

—Deleuze, Lectures on Kant I, p. 14, quoted in Voss 2013: 214, translation modified

Of course, this "pure and empty time" is neither structure-less nor inert…. Where are we? We're in the fifth orbit about the **first problem**: *time exists only for us, but we don't exist!* Bergson intends to liberate time from human consciousness: "there is no one rhythm of duration; it is possible to imagine many different rhythms which, slower or faster, measure the degree of tension or relaxation of different kinds of consciousness" (Bergson 1988: 207). But does he intend to liberate time from all consciousness? Is organic life a condition for time, or time a condition for life? Deleuze is clear: Bergson *must* liberate time from life. To displace a static perspective with a genetic perspective, to trace the immanent genesis of real experience, to perceive the productivity of pure time, Bergson's philosophy must ground time without reference to life—time does not supervene upon bodies, nor is it reducible to motion, nor is it kept by some transcendent being.[342] To ground time, we need a concept of impersonal duration, that is, a duration that can be articulated without reference to lived experience. *Isn't this impersonal time the time of physics?* No! Impersonal duration is not the

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[341] "Deleuze identifies a great revolutionary moment with Kant's new conception of time. Time is no longer defined as a cosmological or psychological time, but as a 'form of interiority', a pure and empty form of time. There ensue two important consequences which Deleuze summarizes by means of the somewhat cryptic formulas 'time is out of joint' and 'I is an Other'" (Voss 2013: 212, cf. Deleuze 1994: 58). The "interiorization" of time liberates it—from space and from bodies: "According to Kant, succession is only a *mode* of time. Equally, coexistence, which for Leibniz was supposed to define space, is just another mode of time. 'Time, [Kant] tells us, has three modes, duration or permanence, coexistence and succession. But time cannot be defined by any of the three because you cannot define a thing through its modes'. Instead, 'time is the form of interiority. It's the form under which we affect ourselves, it's the form of auto-affection. Time is the affection of self by self'" (Voss 2013: 218, cf. Deleuze LK I, p. 15). Auto-affection is auto-alienation: it precludes any identity. See part II.1 n. 66 of this dissertation.

[342] Many of Bergson's arguments ask us to accept our experience of duration as an incontrovertible *fact*. This appeal to the evident experience of time has a purpose: to support the diagnostic strain of Bergson's philosophy, which seeks to undermine the various temptations to replace time with space. But we need not rest with this fact. We can inquire into the genesis of durative experience, asking: *How is time "inside" of us without being "of" us?* To refuse this line of inquiry would be to betray Deleuze's critical project: seek always the genesis of real experience.

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"homogeneous and independent Time" of physics (Bergson 1988: 207). Indexing the heterogeneous time of organic life to the homogeneous time of physics in no way approaches impersonal duration. Even if independent of consciousness, physical time is homogeneous. Bergson and Deleuze insist: time must be heterogeneous *under every aspect*; its irreducibly complex "moments" are reciprocally-interpenetrating, never mutually-external. Irreducibly heterogeneous flux, reciprocally-interpenetrating elements—these are durative invariants: every conception of duration must include them. No less than personal duration, impersonal duration is nowhere uniform. What introduces any homogeneity, what allows for a quantitative comparison of qualities, what interjects any differences by degree, is not adequate to duration. Durative elements are heterogeneous, qualitative, and different in kind or they are not at all. This is not to say that a concept of time that injects homogeneous aspects is useless! One of duration's crucial properties is that it *can be perceived* (albeit inadequately) as homogeneous under certain aspects. But these aspects cannot replace an adequate aspect: symbolic representations only obscure concrete duration. Homogeneous time is only ever a useful approximation: it *expresses* nothing of its real being, since it sacrifices heterogeneity to expediency. However excellent the four-dimensional spacetime of general relativity, it betrays concrete duration.[343] That general relativity spatializes time, substituting a pacific homogeneity for a wild heterogeneity, is not its worst sin. Its worst sin is to strip *duration* of its genetic capacity, even as

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[343] "And in the same way that abstract simultaneity, however inhuman it may be, still borrows from intuitive simultaneity the semblance of reality it conserves so, mathematical time, more generally, which is already so little, would be nothing at all if true becoming were not there to perpetually 'temporalize' it, to infuse it with a little warmth and life. The crude symbolism that so gravely adulterates our inner truth in turn lets itself be taken by the beneficent contagion of intuition. The 'fourth dimension' thus subsists only thanks to a diminished vitality for which it goes begging from veritable intuition" (Jankélévitch 2015: 30). Intuition is not the ground of time. It is a first clue into the nature of duration and an immediate (for us) emblem of impersonal duration. Any conception of duration must draw upon intuition, even if intuition itself draws upon a more fundamental durative ground.

it endows *spacetime* with one: worse than coupling time to space, worse than reducing time to one of

the four dimensions of a manifold, worse even than assimilating time to a homogeneous dimension,

is to efface the creativity of duration. That homogeneous time be unproductive, this is unforgiveable.

True, against the Newtonian conception of space as a passive container, general relativity dynamizes

space: space tells matter how to move, matter tells space how to bend.[344] But if spacetime is active, its

activity is not durative activity: it can be represented quantitatively. Even J.A. Wheeler's geometro-

dynamics, which knits *all phenomena* of empty spacetime, suppresses durative creativity. Durative

dynamics differs in kind from spatial dynamics: there is no resemblance between the two.[345] Durative

flux is not at all like physical flux: the latter admits of a quantitative aspect. Bergson intends for the

former to envelop the latter. More comprehensive dynamical flows, involving virtual and actual

elements, ground physical flows. Leibniz's dynamics informs every attempt to alloy virtual and actual

in an irreducibly complex conception of nature. Leibniz's dynamics harmonizes a qualitative

metaphysics of the virtual *spatium* with a quantitative physics of actual bodies. Deleuze uses Leibniz

against Bergson: a dynamics adequate to the virtual is adequate also to duration.[346] The virtual is

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[344] We should be careful: Einstein's "field equation expresses a lawlike connection between the structure of the gravitational field, i.e., the intrinsic geometry of the spacetime, and the distribution of mass-energy throughout that spacetime.... Should we view the equation as telling us that the intrinsic geometric structure of spacetime is *caused* by the distribution of mass-energy throughout the world? A little reflection will show that this can be quite misleading.... It is more enlightening to look upon the equation as giving a lawlike 'consistency' constraint upon the joint features of the world—spacetime structure and mass-energy distribution. The equation tells us that given both a certain intrinsic geometry for spacetime and a specification of the distribution of mass-energy throughout this spacetime, the joint description is the description of a general-relativistically possible world only if the two descriptions jointly obey the field equation" (Sklar 1974: 75).

[345] Virtual dynamics is in excess of actual dynamics, and this excess (or, this asymmetry) is a condition for the creativity of duration. I.H. Grant has devoted essential pages to explicating Schelling's insistence upon the need of any true philosophy of nature to knit together the asymmetry between (virtual) productivity and (actual) products, the productive charge generated by this asymmetry, the inexhaustible excess of the virtual over the actual, how the virtual and the actual are present in physical processes and how asymmetry and irremediable excess are conditions for the immanent genesis of the processes of individuation. See especially Grant 2006: 168–170.

[346] Deleuze also bucks Leibniz. He refuses harmony, to pursue a darker program: *larval envelopment* (orbit 7).

inseparable from duration, and duration from the virtual. If dynamics uses mathematics to express the virtual, why not use it to express duration? It is dogmatic of Bergson to insist that mathematics can express nothing of duration. Of course, Deleuze will have to recast Leibniz's dynamics—and not just in the light of contemporary physics and Bergson's critique of the spatialization of time: Leibniz's subordination of difference to identity cannot survive a critical reckoning. Deleuze's dynamics marries Leibniz's critique of mechanics—it exploits a virtual domain it cannot countenance—with Bergson's critique of homogeneous time. So long as variational principles remain at the heart of contemporary physics, attesting eloquently to the virtual, Deleuze's philosophy has work to do: "I feel that I am Bergsonian—when Bergson says that modern science has not found its metaphysics, the metaphysics it needs. It is that metaphysics that interests me" (Deleuze 2007: 41). Movement, creation becoming, duration—all involve the virtual: a central property of organic wholes is that the whole is virtually present in each part. Processes that take time involve the virtual. And what physical process does not take time? Consider causality: it covertly presupposes a more robust time than its representation of time as a line composed of mutually external moments. It is fine to symbolize time this way; it serves a practical purpose. But our conception of time need not subordinate itself to this purposeful representation. Temporal processes are complex. Their complexity expresses their virtual dimension: there is "an irreducible element of succession in the history of things. It is this historical residue that prevents the physicists' causality from completely resembling an identity" (Jankélévitch 2015: 41).[347] Against physics, we affirm a

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[347] Physics can have neither the first nor the last word on duration. The continuity of the state spaces of analytical mechanics that envelop physical systems cannot eclipse the heterogeneous continuity of the virtual "spaces" that envelop bodies in motion. As with continuity, so with virtuality: never replace a thing with its representation!

heterogeneous time; against Bergson, we insist that topology expresses something of its structure.[348]

Coupling pure heterogeneity to radical impersonality supports Bergson's most radical theses: the persistence of the whole past, the solidarity of all moments of time, the heterogeneity of the levels of the past. To defend these theses, we must explicate the concepts of intensity, tension, concrete extensity, and lived experience. They are central to the argument that there is an impersonal duration different from the homogeneous time of physics.

How to understand this mysterious efficacy of time? How does "duration mean invention, the creation of forms, the continual elaboration of the absolutely new" (Bergson 1983: 11)? That it seems insane to attribute a creative capacity to duration attests to the hegemony of spatial thought. If duration is efficacious, it can appear so only once it sheds its spatial skin. Beneath this skin, concrete duration attests eloquently to its virtual ground. Durative efficacy is a consequence of the dynamics of this ground: efficacy is a function of an *imperative* (directed at actual beings) to respond to the never-trivial, always-mutating topology of a problematic virtual domain—equivalently, creativity is a function of a need to dissipate excessive virtual force. We arrive at a crucial thesis: the structure of virtual dynamics expresses the structure of impersonal duration. This is why we insisted above on melding virtuality and duration. We have encountered already the principle components of virtual dynamics: events, series, and singular points. Their ceaseless interaction so roils the virtual spaces enveloping bodies that no form of identity can persist—much as the tempo of embryonic mutations annuls identity (Deleuze 1994: 214). Self-identity is an idol, one eclipsing the virtual ground of a life whose moments

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[348] We must resist "that homogeneous and impersonal duration, [which is] the same for everything and for every one, which flows onward, indifferent and void, external to all that endures. This imaginary homogeneous time is, as we have endeavored to show elsewhere, an idol of language" (Bergson 1988: 207).

are not arranged end to end but constitute different planes, with leaps or ruptures from one to another: a life does not unfold from beginning to end in the present. Is it a question solely of events, of contents of time, rather than time itself? Certainly not, since the event implies a potentialization, an ordination of existence that fractures the apparently continuous duration into heterogeneous levels, and without which there would be no past. The facts that fill out our life take place in heterogeneous dimensions, and what is called an event is the passage from one dimension to another. (Zourabichvili 2012: 112)

Durative wholes admit always of other dimensions.[349] This *power of augmentation* will attest to the reality of impersonal duration (orbit 9).

If virtual dynamics differs in kind from actual dynamics, how do they interact? Through *movement*: movement relates them without annulling their difference in kind.[350] This motive relation allows us to pass from one to the other. It authorizes the passage from interior duration to exterior duration. How does movement allow us to pass from the virtual to the actual? How does physical movement involve virtual and actual elements? Movement constitutes the "exterior" and the "interior" world: material flows mark the former, experiential flows the latter. Whether these two flows are at all comparable is unclear. If they are, they must both involve virtual and actual elements. We have analyzed interior flux. It is time to consider exterior flux. *Does it possess the same invariants as lived flux?* The affirmation of an impersonal duration depends crucially upon finding in exterior flux the invariants of interior flux. To do this, Bergson refuses to reduce motion to its symbolic

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[349] "*Disparity* is the name Deleuze gives to this system in which heterogeneous dimensions communicate, and which conditions every event: nothing would appear, nothing would exist, if there had not been unequal relations, if the calculations of 'God' had always been correct" (Zourabichvili 2012: 116, citing Deleuze 1994: 222).

[350] "While the laws of nature govern the surface of the [actual] world, the eternal return ceaselessly rumbles in this other [virtual] dimension of the transcendental or the volcanic *spatium*" (Deleuze 1994: 241).

representation. This reduction identifies a motion with the space traversed (Bergson 1988: 190).

Bergson never misses an opportunity to denounce this identification. Unlike the projection of

movement onto space, real movement is a *whole* composed of irreducible and inhomogeneous

"indivisibles which occupy duration" (Bergson 1988: 202). That it admits of qualitative and

quantitative aspects expresses its implication of virtual and actual elements. Though indivisible,

motive elements are not punctual: possessed of duration, they have an ineradicable thickness. These

indivisible elements neither juxtapose themselves in space nor settle in a homogeneous line. Motion

as a whole and in each of its indivisible elements is heterogeneous: that it takes time banishes all

homogeneity. Real movement is incommensurate to any geometrical figure; even fractals induce a

minimum of homogeneity.[351]

Yet real movement is continuous. It is a continuity alloyed "of variable quality which cannot

be without some *likeness* to the continuity of our own consciousness" (Bergson 1988: 202–203,

emphasis mine). But how can there be any "likeness" between two heterogeneous flows—*viz.*, real

movement and lived experience—whose every element is unique? This much is clear: this "likeness"

cannot be a resemblance, since resemblance affirms a difference by degree. We cannot understand

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[351] Movement is no less labyrinthine than concrete extensity: "Complex heterogeneity is not suppressed by any refinement of focus, nor are simplicity, autonomy, elementariness, ever approached…. When woven into the labyrinth all substantiality succumbs to an unconceptualizable implosion; becoming the mere cypher for the unresolved precision of porosity…. Something happens that is like a becoming, liquefying matter/space into a mutating complexity of flows, with differentiated vectors and speeds, still recursively conserving detail. Currents drift across the omnisurface, and within the currents are sub-currents, and within the sub-currents . . . with each seeming to float on a pseudo-volume generated by unresolved involutions of the sponge-plane…. Sponge-space is the positive impossibility of resolvable boundaries, and thus of discrete entities, decidable actions, unproblematic vectors, logical identities, and adequate representations. There are no representations of any kind, but only floating plates or scales, immanently distanced from each other by an indeterminably convoluted surface…. Reason is rotted to bits in sponge-space, because all the polar concepts which provide its structure depend upon the repression of scaling differences" (Land 1991: 161–166). It is striking that Bergson would endorse this vision of nature, agreeing even with the inability of reason to conceive adequately of it. Deleuze does not suppress any of this complexity, only counters that there may be a thought adequate to it.

this "likeness" until we understand qualitative continuity. It *grounds* the likeness of interior and exterior. If this continuity injects durative invariants into interior and exterior flux, we have a means of passing between them. Real movement and lived experience have a common ground in the qualitative continuity of duration.[352] Let's focus on the elements of movement and experience, in the hope of finding some mark of this "likeness". The "indivisible" elements of movement are akin to complex "point-folds": each element has a duration; it implicates heterogeneous orders (Deleuze 1993: 18; 23). The elements of lived experience are similarly complex intensities. They are pulses on the point of budding. What takes time implicates orders it cannot contain: qualities can no more exhaust the intensities that they "dissipate" or "distend" than our various selves can diffuse the past that flows in, around, and over them. Virtual excess overflows alike material and experiential flux— this is itself a kind of invariant. Further, material and experiential flux are both complex alloys of virtual and actual elements. We have seen that the dynamic of a durative whole binds together its elements. Excess is a correlate of this binding force: it flits about every intensity, scornful of the discretion that might prize apart the whole. But if this excess leeching out of intensive elements blurs every boundary, do we not confront in lived experience and real movement nothing but an undifferentiated morass? How do the intensive elements remain individuated amidst violent mutation? Here the idea of *tension* makes its contribution. It is by this idea that we "overcome the opposition between quality and quantity" (Bergson 1988: 247). This is crucial: we *overcome* their

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[352] Continuity: the rising tide that sinks all boats. Qualitative continuity—whose quantitative presentations, even if useful, are only ever violent reductions—expresses impersonal duration freed from personal experience, a duration encountered only beyond "the turn" in experience, a duration existing prior to being sieved by various forms of consciousness, prior to any diminution of its multiplicity by the forms of identity, prior to any division of it into interior flow and exterior undulation.

opposition, we do not *dissolve* their difference in kind. We modulate the relation between quality

and quantity so that it is no simple opposition but a complex differentiation.

The elements of real motion and the qualities of lived experience are intensities. An intensity

individuates itself by its mode of contracting time and dissipating virtual force. A quality is

indivisible, singular, and irreducible. Neither simple nor punctual, it is "complex but not

composed," this complexity flowing in part from "its indivisible correlation" with its past (Capek

1971: 134). An intensity is "repeated and successive vibrations, bound together by an inner

continuity" (Bergson 1988: 203). This inner continuity is tensed, in two senses: it takes time (it has

a tense) and it expresses a degree of tension. It is not too much to say that this degree of tension is an

intensive degree, so long as we understand "degree" as indexing intensive qualitative force rather than

(*pace* Kant) an intensive magnitude. For Bergson, it is inappropriate to speak of an intensive

magnitude: "This conception of intensive magnitude seems, indeed, to be that of common sense, but

we cannot advance it as a philosophical explanation without becoming involved in a vicious circle"

(Bergson 2001: 2). Degrees of tension are derivative of unique qualitative forces: the former is a

function of the latter. Intensive force is primary, intensive magnitude secondary. Bergson insists that

number is incommensurate with intensive force, since the differences between intensities are

differences in kind.[353] Mapping intensive differences onto a quantitative scale only distorts them.[354]

We can quantify the effects of intensive force. But an adequate conception involves cause, and so it

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[353] "Pure duration, that which consciousness perceives, must thus be reckoned among the so-called intensive magnitudes, if intensities can be called magnitudes; strictly speaking, however, it is not a quantity, and as soon as we try to measure it, we unwittingly replace it by space" (Bergson 2001: 106). Better to speak of intensive *force*.

[354] Intensive differences cannot be assimilated to a quantitative continuum. The problem is not the continuum but the reduction of the continuum to its quantitative expression (Bassler). Intensive differences may be expressed adequately by a *qualitative* continuum. Of course, the quantitative representation of the continuum anchors our knowledge of it. It is hard to reason about continuity without a quantitative aid. Algebraic topology recognizes this!

cannot be reduced to a quantitative aspect. The elements of a quantitative scale are mutually external to one another, but intensities reciprocally implicate one another. Deleuze notes rightly that "the critique of intensity in *Time and Free Will* is highly ambiguous. Is it directed against the very notion of intensive quantity, or merely against the idea of an intensity of psychic states? If it is true that intensity is never given in a pure experience, is it not then intensity that *gives* all the qualities with which we make experience?" (Deleuze 1988: 91–92).[355] To the last question, *yes*: qualities explicate intensities, and intensive force drives the process of explication. A quality's tension is a function of intensive force. Bergson left the critique of "intensive magnitude" ambiguous for a reason: it does not apply simple to psychic states. Adequately conceived, interior and exterior flux implicate intensities; their elements—respectively, the qualities of lived experience and the elements of real motion—are inseparable from intensities. Dissipating an intensity's tension individuates an element within its flux. Lived experience and real motion share a common structure; this structure involves intensities, intensive force, dissipation, degrees of tension. But if qualities differentiate themselves by contracting and dissipating tension, does this not establish *one* aspect under which they differ by degree? Bergson "recognizes intensities, degrees or vibrations in the qualities that we live as such outside ourselves and that, as such, belong to matter. There are numbers enclosed in qualities, intensities included in duration. Here again, must we speak of a contradiction in Bergson" (Deleuze 1988: 92)? This problem will haunt Bergson's concept of concrete extensity. Does differentiating

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[355] This critique of intensity establishes a crucial argumentative precedent: from a difference in kind (say, between perception and recollection) he affirms the existence of two radically distinct grounds for each tendency (respectively, matter and memory), since "only *tendencies* differ in kind" (Deleuze 1988: 22). "The critique of the idea of intensity in *Time and Free Will* already taught us that everywhere, Bergson's naturally dualist philosophy substitutes qualitative heterogeneity [for instance, the difference in kind between matter and memory] for differences of intensity" (Jankélévitch 2015: 79).

movements by their *degrees* of tension establish a difference by degree between matter and memory,

since the latter have, respectively, zero tension[356] and continuum-many degrees of tension?

>Is Bergson not reintroducing into his philosophy everything that he had condemned—the
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>differences in degree and intensity that he so strongly criticized in *Time and Free Will?*
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>Bergson says in turn that the past and the present differ in kind and that the present is only
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>the most contracted level or degree of the past: How can these two propositions be
>
>reconciled? (Deleuze 1988: 91)

Bergson wagers that so long as we do not reduce motion to the space traversed, focusing instead on

the tension it dissipates and on its complex mediation of the virtual and the actual, it will neither

efface the real difference between virtual and actual dynamics nor enforce a brute opposition

between qualitative and quantitative physics.[357] The ability to pass between the two furthers

Deleuze's ultimate aim: *to make topology safe for the philosophy of time.* Deleuze's "monstrous" reading

of Bergson aspires to nothing less.[358]

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[356] We must distinguish between the "zero-tensity duration" of matter and the homogeneous "time" of physics.

[357] Tensity is more fundamental than motion: motion "is the intermediary thanks to which duration becomes measurable, that is to say, extensive. Far from engendering the idea of time, movement is, rather, the expedient that allows us to confuse duration and trajectory. Everything positive about movement—the mobility of the act of changing—is of a spiritual and temporal nature" (Jankélévitch 2015: 46). It is perhaps surprising that the intellect cannot make this passage from matter to memory. Why? It cannot apprehend movement, and movement is the condition for passing from one to the other: the intellect "always starts from immobility, as if this were the ultimate reality: when it tries to form an idea of movement, it does so by constructing movement out of immobilities put together" (Bergson 1983: 155). That *movement* is as fundamental for memory as it is for matter gives it two irreducible but interacting aspects: "There is time and creation in the world as in the human being, and if the opposition is no longer between the memory of subjects and the space of things, it subsists, across the whole of reality, between two inverse movements, the one a movement of materialization, the other of living evolution" (Jankélévitch 2015: 41). The difference between material dynamics and experiential dynamics is primarily a difference in tension. Bergson may not propose a "monism of tensity", but tensity does ground the dynamic interaction between the virtual and the actual (Bassler).

[358] Bergson's insistence that the logic of the intellect just is the geometry of solids may have blinded him to the aptness of topology for time. Why topology? In seeking what is invariant under continuous transformation, it immerses itself in an element of total mutability. It is indifferent to the form of identity. Its objects of study—*viz.*, topological invariants—

Problem 1, Orbit 6

Movement "overcomes the opposition" (without annulling the difference!) between interior and exterior flows. It allows us to declare: the aspects of lived experience *expressed in the language of tensity* translate beyond lived experience. The "structure of tensity" emerging from the interaction of intensities, intensive force, qualities, degrees of tension is an invariant of interior and exterior flows. This ability to translate interior to exterior and exterior to interior is absolutely central for Bergson's philosophy of nature. Bergson fixes upon experience only to mine it for durative invariants.[359] Once he extracts the latter, he returns to experience only to rid it of false problems. Bergson insists that "we push each line beyond the turn, to the point where it goes beyond our own experience: an extraordinary broadening out that forces us to think a pure perception identical to the whole of matter, a pure memory identical to the totality of the past" (Deleuze 1991: 27). What is this "turn"? It is a "turning away" from praxis. When experience breaks its ties to "useful" action, dissolving the "selves" that are the correlates of praxis, it immerses itself in immediate experience (Bergson 1988: 185).[360] This "turn" *is* immediate intuition, the threshold separating personal from impersonal duration.[361] That immediate intuition is on the cusp—one face turned towards the praxes to which it is now indifferent, the other towards radically impractical durative domains whose demands it can

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need not be predicated to self-identical spaces. it is not necessary to assume that topological spaces are self-identical. But why are "invariants" not "essences", and so a form of identity?

[359] "Duration seemed to him to be less and less reducible to a psychological experience and became instead the variable essence of things, providing the theme of a complex ontology" (Deleuze 1988: 34).

[360] This "turn"—the point of first contact with impersonal duration—marks a turning away from praxis. Since "the self" is a correlate of praxis, it marks also a dissolution of the self. Deleuze decouples the transcendental field from the subject. Bergson and Deleuze both "seek experience at its source, or rather above that decisive turn where, taking a bias in the direction of our utility, it becomes properly human experience" (Bergson 1988: 184).

[361] "By intuition I mean instinct that has become disinterested, self-conscious, capable of reflecting upon its object and of enlarging it indefinitely" (Bergson 1983: 176).

only entertain without fulfilling—allows it to draw a durative impulse and, compelled to dissipate this impulse, create novel praxes. By immediate intuition, "z-sited paths are but us" (Zukofsky).

"Personal experience" is experience related to praxis. Pure perception and immediate intuition are the two limit-poles of personal experience. At each pole experience is on the point of relinquishing its orientation towards action. At each pole we are at the point of forsaking worldly engagement and immersing our "self" in a qualitative heterogeneity that corrodes alike any residual identity and any distinction between interior and exterior (Bassler). If, at each pole, experience is on the point of losing its personal tint (by dimming as much as possible its orientation towards action), it is not on the point of vanishing completely: impersonal experience is not senseless experience. Only by canceling our worldly engagements can we "restore to intuition its original purity and so recover contact with the real" (Bergson 1988: 185). That there are two limit-experiences—viz., immediate intuition and pure perception—is key. Each limit-experience immerses us in a different element: immediate intuition in the virtual, pure perception in matter. If immediate intuition is experience becoming-virtual, pure perception is experience becoming-actual. Between these limits, experience is an alloy of virtual elements (recollections) and actual elements (material excitations). We can think of immediate intuition as an interior limit-*ground*, and pure perception as an exterior limit-*point*; the former is the refractive "turn" from personal to impersonal duration, the latter the return of perception to matter.[362]

Personal experience is a correlate of worldly engagement. Perception is even derivative of praxis. But perception is not simply present engagement. It is quite complex! Perception—oriented

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[362] Descending to the depths of "our" experience we turn a corner, and the "surface" of the self fades from view (Bergson 2001: 166). We confront then an impersonal element (*le temps*, the weather).

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necessarily towards action, determined (as we will see) by virtual praxis—is necessarily also a "refraction" of an interior fund of "pure duration" (Bergson 1988: 185).[363] Perception is an alloy forged of the two radically different elements into which experience merges at its limit-poles: virtual past and material present.[364] When perception draws upon the past to execute its worldly programs, it draws not only upon the reservoir of past images but also the imageless domain of habit. Habits are drawn from the past, and remain of it. Perception is a complex compounded of two pelagic domains, each of which is itself a complex: not only are the "constituent parts" of these two qualitative heterogeneities (*viz.*, the pure past and the material present) themselves heterogeneous but the heterogeneous domains are complicated ceaselessly by the trajectories traversing them. The habits indexed to my perceptual complex are a residue of my lived history, and these habits induce further structure in the already structured past. As for the present, the distribution of intensive points in matter is a consequence of the history of the cosmos, and this distribution preserves the rhythmically dense structure of matter.

Passing—whether in thought or in practice—from lived experience to impersonal duration depends upon the principle of continuity. This principle allows us to project the properties of the "accessible" terms in a series onto the "inaccessible" limit-terms of that series. It grounds the identification, **first**, of an invariant of immediate intuition (which stands at the limit of the personal experience, drawing there the impulses of impersonal duration into personal eddies) with an invariant of impersonal duration; and, **second**, of "pure perception" with "matter" (Bergson 1988: 73, see orbit 8). We will explore these identifications at length. It is a *principle of continuity* that

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[363] Virtual praxis is itself determined by the virtual past. The latter is the true ground.

[364] "Average or utilitarian perception is situated at the intersection of these two infinities that both exceed it. There thus exists, beyond that shared zone, an intuition of pure mind and an intuition of pure matter" (Jankélévitch 2015: 99).

allows us to overcome our perceptual and conceptual limitations. This principle is as crucial for the

philosophy of time as it is for the philosophy of nature. Without it, we would not be able to pass

beyond perception—and a philosophy of nature that has acquiesced to its anthropomorphic limits is

a philosophy that has abandoned its inquiry into nature.[365] Perception is indexed to praxis, and so

conditioned by *a* body: if not an outright hindrance, this corporeal perspective is severely limiting.

We must not recline in it. It is the difference between thinking *of* nature and thinking *with* it: if the

former acquiesces to a situated perspective, the latter submits itself to corrosive flux. But let's be

clear: this dissolution (and the flow-line following upon it) remains singular—singular, not personal.

We do not move from situated perspective to universal perspective, but from personal to singular.

This irrevocable singularity is a function of being ever medial: to be always in the middle is to be

compassed locally, even while seeping chaotically outward—if we hitch ourselves to the right vector

field. That there are two limit-poles—viz., immediate intuition and pure perception—affords us two

opportunities to surpass our situation. When Bergson encounters "experience at its most

fundamental level", he perches at one of the two thresholds between personal interior and

impersonal exterior. There are two impersonal exteriors: the pure past and matter. The "impersonal

exterior" *for immediate intuition* is the pure past, *not* matter. We will argue however that the past

grounds experience *and* matter. This is not to say that matter and experience reduce to the past.

They remain irreducible to it, even though they are grounded by it. This ground stabilizes nothing,

only impels metamorphoses (Deleuze 1994: 154). Matter and experience are mutually

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[365] We would not be a spectator to the wreck but a victim of the element. If Epicurus conceived of his inquiry into nature not as the "disinterested pursuit of knowledge" but as the emphatically interested liberation from the *fear* of nature, Lucretius (with the help of Archimedes) extracts the latent "discourse on turbulence" coursing beneath the (never completely) calm surface of Epicurean natural philosophy (Blumenberg; Serres).

incommensurate ecosystems attempting to dissipate utterly excessive virtual force.[366] They only fail

to do so: it would be as if a clonal colony could exhaust all of the energy of the sun. If impersonal

duration generates (inner) experience and (exterior) matter, the two still differ in kind. The

interaction of incorporeal memory and corporeal perception models the interaction of intensive and

extensive.

First Identification

> But that each instant is a fresh endowment, that the new is ever upspringing, that the form
> just come into existence (although, *when once produced,* it may be regarded as an effect
> determined by its causes) could never have been foreseen—because the causes here, unique in
> their kind, are part of the effect, have come into existence with it, and are determined by it as
> much as they determine it—all this we can feel within ourselves and also divine, by
> sympathy, outside ourselves, but we cannot think it, in the strict sense of the word, nor
> express it in terms of pure understanding.
>
> —Bergson 1983: 164

What else does experience express of duration? **First**, it is continuous. And not just at its magmic

ground: it is continuous at every level.[367] This first property is a corollary of another thesis: time is

continuous under every aspect. **Second:** experiential continuity is a peculiar continuity, one that is

invariably non-spatial and non-quantitative. This negative characterization will have to suffice for

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[366] We will consider later this excess emanating from the past. By now the pattern is clear: physical flux, impressive as it is, is always just a desperate attempt to dissipate a much more chaotic, much more elemental virtual flux. Actual dynamics is parasitic upon virtual dynamics.

[367] The "deepest level" corresponds to the experience of the "deep-seated self" as opposed to that of the "superficial ego": the former "is a self whose states and changes permeate one another and undergo a deep alteration as soon as we separate them from one another in order to set them out in space" (Bergson 2001: 125). The structure of the deep-seated self is the same as the structure of duration. This is why this deep-seated self can be thought of as a limit-term in a series of selves that nonetheless "forms one and the same person" (Bergson 2001: 125). As a limit-term, it has passed already from the personal to the impersonal.

now. It will be some time before we can characterize it by these two properties: *radical disjunction without discontinuity; communication amidst real divergence.*[368]

If the experience of the superficial ego ever seems discontinuous, it is not really so: if we "replace ourselves in pure duration, of which the flow is continuous and in which we pass insensibly from one state to another," we find "a continuity which is really lived, but artificially decomposed for the greater convenience of customary knowledge" (Bergson 1988: 186). Experience is never composed of discrete elements, whether these be instantaneous moments or discrete packets of sensible qualities.[369] The present is never a mathematical point, qualities are never punctual, and the fundamental elements of real movement take time, even if they are indivisible (orbit 5). There are only complex pulses implicating complex wholes. We arrive at a pivotal thesis: our present "necessarily occupies a duration" (Bergson 1988: 137). It would be premature to assimilate this non-punctual "duration" to an interval. It would be better to conceive of it dynamically: the present has a duration because it has been compromised and complicated by something that is not present (*viz.*, the past). The present is, if not parasitic upon a continuum that resists every attempt at discretion, then a pulsating host to all manner of thickening agents. The present is viscous, a "bolus of slowed flux"—implicated in past conspiracies it cannot resolve even as it solicits more "knots of force" than

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[368] "Now, the more we fix our attention on this continuity of life, the more we see that organic evolution resembles the evolution of a consciousness, in which the past presses against the present and causes the upspringing of a new form of consciousness, incommensurable with its antecedents" (Bergson 1983: 27). The incommensurability of the present with its antecedents expresses its *irreducibility* to these antecedents.

[369] "The duration wherein *we see* ourselves acting … is a duration whose elements are dissociated and juxtaposed. The duration wherein *we act* is a duration wherein our states melt into each other. It is within this that we should try to replace ourselves by thought" (Bergson 1988: 186, emphasis mine). This thought can be only a non-intellectual thought, one that suspends the axioms of the intellect like non-Euclidean geometry the 5th postulate.

it could ever hope to unravel (Ammons).[370] The present is variable: it contracts the past in wildly

different ways. Its structure is primarily a function of the length of its exposure to and its aspect

upon the past. What percolates past its filter, why it percolates past, what one extracts from it, how

one modulates to accommodate it, what it lines within the dimensions coiled "internally" within it

(gauge theory)—this is immensely variable, and not just body to body; it is variable moment to

moment in the life of a body. Know this: punctuality is as alien to the present as homogeneity.

That the present has a duration will imply, **first**, that it *and* its ground are purely

heterogeneous and, **second**, that its ground (the past) is absolutely autonomous not just from any

present but from any being-present! These two implications sheer from impersonal duration every

form of identity. But they explain also why it impels processes of individuation. Besides taking time,

these processes complicate the complex structure of impersonal duration: first, they create a new

degree of tension, *augmenting* the "tensity continuum" with yet another degree; second, they dare

the past to accommodate this new degree, forcing the past to change in its entirety. These

imperatives—*create! accommodate!*—exhibit the third moment of the logic of expression. Why do

problems provoke resolutions? Why does the virtual actualize itself? Why does an autonomous past

impel processes of individuation? The answer is the same: there must be some mechanism for

siphoning off excessive virtual force. Metamorphosis is inevitable, because metamorphosis is

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[370] Bergson "is very much concerned to specify that creative evolution is pluri-dimensional. It has, as one would say in the language of counterpoint, several 'voices.' Like all true polyphony, it offers a certain thickness that evolutionism would very much like to neglect. It is a rich, varied, and unforeseen becoming in which we recognize the same superposed levels" (Jankélévitch 2015: 120). A thickened present militates against all pointillism. But irreducible complexity does not preclude unequivocal concretion.

corrosion: the past infects our experience, sewing into it the singular points that, when tripped,

cleave us from any febrile illusion of self-identity.[371] We are films floating on a welter of processes.

Let's return to the **first implication**: the present and its ground are heterogeneous. This

heterogeneity will reveal something crucial about durative continuity: it does not resolve itself into

simple elements, it is never composed of homogeneous intervals.[372] Heterogeneity is an invariant of

duration because it *resists* any attempt to impose homogeneity upon it—much like the Euler

characteristic of an even-dimensional sphere expresses its resistance to any attempt to construct a

nowhere-vanishing vector field upon it. An invariant is an obstruction. The reciprocal

interpenetration of the elements of a durative whole convey its heterogeneity: "duration within us" is

"a qualitative multiplicity, with no likeness to number; an organic evolution which is yet not an

increasing quantity; a pure heterogeneity within which there are no distinct qualities. In a word, the

moments of inner duration are not external to one another" (Bergson 2001: 226).[373] That the

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[371] The transcendental field embalms (but not fatally) these metamorphic charges. It distributes the singularities absorbing past lines of individuation so that they may issue new lines of individuation. Like a crystalline solution, the transcendental field of experience marks the thresholds, the singularities, the points where the phase changes, the points that wrench a process from one dimension to another, the points that inflect ongoing crystallization.

[372] Physically processes that have a duration are themselves irreducibly complex: if we ask a physical system the right questions, its chaotic behavior manifests itself—and physical systems are derivative of the more primary dynamics of virtual duration: if the former are chaotic, so much more the latter.

[373] The notion of a quality that lacks any quantitative dimension is a notoriously difficult one. What is a purely qualitative intensity? How is one intensity individuated from another? Maimon provides an early theory of qualitative degrees—one that Deleuze enlists for his elaboration of Bergson's notion of intensity. In part II, we mentioned Maimon's critique of Kant: beneath the homogeneous forms of space and time, there is a fulgurating sheet of non-spatial, non-temporal intensities (each in itself " = 0 " but designating "something $\neq 0$" when in reciprocal relation with another intensity—exactly as in the manner of dx and dy/dx) that generate the spatio-temporal forms of intuition. Maimon was inspired here by a conflation of the differential calculus and of Leibniz's *petites perceptions*. In itself, an intensity "cannot be an object of consciousness: pure redness, with an extent and duration of zero, cannot be understood distinctly, since in itself it lacks the difference that is a condition of possibility of thinking it. Pure redness can, however, be understood in its difference from pure greenness, even if the extent and duration of both qualities is zero. The relation of difference between red and green means each quality *can be thought* in conceptual space and time, and, moreover, scaled up to any degree of magnitude" (Lord 2011: 117). Of course, to endow it with spatio-temporal determinations and quantitative degrees is to misrepresent it. But we can push past this misrepresentation to discern something about a quality "in itself". Two intensities differ, even if their difference makes no reference to space or time. At the limit,

elements of a continuous multiplicity mutually permeate one another contrasts sharply with the

elements of a discrete multiplicity; the latter are mutually external to one another. The difference

between "temporal" and "spatial" elements differentiates time from space. That their elements are

incommensurate precludes even the possibility of analyzing duration by a method adapted to the

analysis of a spatial domain. If a domain is homogeneous under some aspect, if its elements are

mutually external to one another, it is *spatial* (Bergson 2001: 98). Bergson insists that all logical and

mathematical discourses are adapted to spatial domains. They necessarily falsify the structure of

duration. Why? The intellect requires that its objects be self-identical and clearly distinct from each

other and from the intellect. The intellect countenances only discrete multiplicities where each

element is external to every other element. None of this "reciprocal interpenetration"! Even if "set in

motion", a discrete multiplicity remains discrete: every "moment" of its evolution—moments which

are themselves mutually external!—presents only a discrete array of elements. The intellect

disentangles the interpenetrating elements of time, excising them illegitimately from one another and

from the whole permeating each element. The intellect attempts to compose continuous wholes of

discrete elements (Weyl 1994: 90–91).[374] But these elements no more admit of externalization than

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stripped of all spatio-temporal determinations, a quality becomes nothing more than a "*rule* for generating" a sensation
of itself (Lord 2011: 118). These intensive limits, these qualities, are *differentials*: "Maimon's differential is the most basic
element of the matter of sensation: a sense quality infinitely reduced in magnitude, until it becomes nothing but the rule
for the generation of that sense quality" (Lord 2011: 118). See the discussion of Maimon in Part II.
[374] Intellectual "explication thus gets ahead of the action to be explained and, in a way, tells it what to do. It's not about
being true but simply about *being in order*, conforming to the grammar of life and concealing the black logic, the
shameful logic of our acts with the noble reasons of an official logic controlled by the pilot-intellect…. The red-hot order
of spontaneity yields to the reheated order of artifice. Our entire life, encumbered by parasitic reconstitutions, disappears
underneath such a piling up of logic. The profound and central significance of freedom becomes impenetrable for us"
(Jankélévitch 2015: 51). What is true of motion is true of action: "the future act is already entirely preformed, not
morphologically but dynamically and, so to speak, functionally. That is why the reconstitution of the act from its
elements generates so many irresolvable aporias. These elements are never *constitutive* of the action; they are *expressive* of
it. Experience reveals to us moments of a history, not fragments of a system" (Jankélévitch 2015: 57). Against the

the explication of an organic whole a "step-by-step " re-composition. Against intellect, we hold

duration to be a "succession without distinction, and think of it as a mutual penetration, an

interconnexion and organization of elements, each one of which represents the whole, and cannot be

distinguished or isolated from it except by abstract thought. Such is the account of duration which

would be given by a being who was ever the same and ever changing, and who had no idea of space"

(Bergson 2001: 101). But, as we will argue for the **second problem**, Bergson may have been too

hasty to condemn *all* intellectual movements as falsifications of time. Mathematics may express yet

something of the structure of time. This is Deleuze's monstrous provocation: that continuous

multiplicities are *manifolds*, even though manifolds are mathematical concepts! Certain results from

Part II of this dissertation support Deleuze's provocation. Bergson's prohibitions upon using

mathematics to inquire into duration are motivated not just by the spatializing tendencies of the

intellect; they belie also a residual fealty to certain postulates of the dogmatic image of thought,

namely, the necessary centrality of the forms of identity for intellectual thought. Intellection apart

from the forms of identity could be used to investigate time. In refusing the dogmatic image,

Deleuze opens duration to the intellect. Indeed, the construction of a mathematics adequate to

qualitative heterogeneity is already underway. What might a "science of the pure multiple"

unadulterated by any form of identity disclose about the structure of duration?

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retrospective reconstructions of the intellect, the intuition advances the method of immanent genesis: "While the intellect is always dissimilar to its object, there is no essential difference between the movement of intuition and the movement of freedom or of life…. Intuition, for its part, is not the speculative assimilation of something that senses and something that is sensed; it is, rather, a drastic coincidence and, to have out with it, a re-creation" (Jankélévitch 2015: 61).

In time! We are not done with the immediate intuition of heterogeneous time.[375] If it is the interpenetration of durative elements that first alerts us to the inadequacies of the intellect to time, this is not the only sign.[376] The interpenetration of elements is an invariant of a more fundamental fact: durative continuity. The fact of durative continuity repels the intellect: "pure duration might well be nothing but a succession of qualitative changes, which melt into and permeate one another, without precise outlines, without any tendency to externalize themselves in relation to one another, without any affiliation with number: it would be pure heterogeneity" (Bergson 2001: 104).[377] Immediate intuition encounters an experiential flux that admits of no measure. Measures (or metrics) are quantitative, and if we can say anything about the qualitative heterogeneity of durative flux it is that it is not quantitative under any aspect. This resistance of durative continuity to measure corroborates Bergson's prohibition upon any *geometrical* image of time. Geometrical spaces are metrical spaces; they possess a metric. This seemingly unremarkable object encodes nearly all of the information about a manifold: "the length of curves, angles, and the size of given regions on the surface depends on [the metric] alone" (Weyl 1952: 87).[378] But not all spaces are "geometrical" spaces. There is a discourse consecrated to the investigation of non-metrical spaces: topology, that

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[375] Time resists externalization of any sort: its elements are not mutually external, it resists being projected onto space. This resistance grounds the "first-person" orientation of Bergson's philosophy. We have only to immerse ourselves in this element of time. But this immersion dissolves the first-person: immediate intuition merges with a heterogeneous domain hostile to all forms of identity. Rather than mystical transcendence, immersive corrosion.

[376] The interpenetration of elements is "nearly equivalent" to two other properties of organic wholes. These interlinked properties disclose the structural invariants of durative continuity.

[377] Bergson has his preferred prepositions: with duration, we are "in" but never "alongside". No less than other philosophers, he is trapped by a prepositional matrix of his own making.

[378] It is possible to extract "quantitative information" from a manifold without a metric. In algebraic topology, the groups of a space allow us to extract numbers from that space. Groups are algebraic objects, but that they possess a certain dynamism suggests that they might not be inherently quantitative. They might present a means of probing a topological space without inducing a quantitative aspect. Bypassing metrics might allow us to circumvent Bergson's prohibitions upon the intellectual analysis of durative flux.

nascent "science of the pure multiple", that mathematics of fluidity. Besides number and measure, durative continuity resists the "consequential logic" of efficient causation. A durative flow does not *imply* its next phase, even if it is *pregnant* with it.[379] Durative continuity never allows one "to deduce" exactly a present state "*a priori* from its predecessors" (Bergson 2001: 156). One state implying the next homogenizes durative flux. If durative flux resists geometry and strict consequential logic, it does not resist every logic: it is condemned to unfold by a dissipative logic—one desperately acclimating itself to the overwhelming excess of the past. If this flux is free, it is a necessitated freedom: "freedom *emerges from* the total past; it *expresses* a kind of superior necessity" (Jankélévitch 2015: 64).[380] Though necessitated, it is no less creative—even if this creativity is a paradoxical one:

> a creative continuation is no more contradictory than a creative evolution! Also: freedom is not a vertiginous option in a void without preferences and preexistence, nor even a power to inflect or arbitrarily suspend the course of representations. Freedom is not a surprising *clinamen*, a fortuitous declination of the future but rather an extreme concentrate of duration. (Jankélévitch 2015: 63)

Creativity is the unique dissipation of an excessive virtual force (orbit 4). To attempt to dissipate this excess, durative flows will have to be infinitely supple and irreducibly complex. Its fluidity repels metrics, its complexity repels quantity. Quantitative structures are too simple and rigid.

We are ready for the **second implication** of the fact that the present has a duration: the past is absolutely autonomous not just of any present but from any being-present. So much from so little!

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[379] "Bergson compares free choice to a biological hatching or to a fruit's organic maturation so often that the *fiat* loses some of its crucial and revolutionary character" (Jankélévitch 2015: 64).

[380] "Freedom thus conceived would furthermore—as Plato, the Stoics, and Spinoza understood—be an organic necessity that opposes both indifference and determinism" (Jankélévitch 2015: 65).

How could Bergson possibly prove this? Let's start again from presently lived experience. The present is synonymous with present perception, and every perception is alloyed of sensation-images and memory-images, two classes of image that differ in kind. Perception is complex: the past crowds it with memory-images (turbulent little packets of duration) that bear upon the problems posed to it presently by praxis. But the past does not simply aid praxis. It can confound it, countermanding it with its own designs. How complex is perception! Host to the images of an unruly past, it stages the interaction of mutually irreducible elements: the images of memory and the sensations of matter. In every perception, sensation and memory "interpenetrate each other" (Bergson 1988: 67). Even its "limit-point" (pure perception) is complex. Perception is never the passive reception of sensations. Even its range of receptivity is actively constituted. Sensations press upon our senses, but perception is never just the sum of these impressions: "there is no perception which is not full of memories" and no perception without praxis (Bergson 1988: 33). Praxis anchors us at present by selecting those sensations that pertain to future actions

Perception does not have one passive and one active aspect. Rather, each relation with each of its two "exteriorities" (namely, matter and memory) has a passive and an active aspect. Perception is variably co-constituted by elements from mutually irreducible domains whose every element is itself irreducibly complex; it is host to a turbulent interaction. But this turbulence does not undermine it. The difference-in-kind between matter and memory, the heterogeneity of memory-images, the qualitative character of sensations whose singular degrees of tension derive from the heterogeneous character of the "inner continuity" (orbit 5) constituting each one as singular—all of this preserves the continuity of present perception, ensuring that it pulses continuously forward. If

perception was reducible to passive sensation, it might be discontinuous: our sense-receptors are weak, partial, and coarse. They could flicker out momentarily, or miss the infinitely-fine gradations constitutive of continuous phenomena.[381] Perception has a duration; as such, it is continuous. If not sensation, what grounds the continuity of perception? There is only one candidate: memory. Memory invades experience with the memory-images that "complete and illuminate the present situation with a view to ultimate action" (Bergson 1988: 179). It is almost an axiom of Bergson's philosophy: what is durative is subject to continual saturation—ever rupturing, ever re-sewn. This axiom liberates memory from matter. Matter cannot ground the continuity of perception. Its continuity forces us to affirm the reality of a vast virtual memory. Far from supporting a reduction of matter to memory, this affirmation complicates and dynamizes each domain, insisting upon their mutual irreducibility. Memory grounds the continuity of each present and the continuity of present pulsation. Though it does not ground it, matter helps to constitute this continuity. Without matter to solicit memory, without a set of sensations (which are nothing but virtual actions) provoking memory to invade present perception, we would disengage and float inexorably towards an infinitely dilated past—the terrifying upper reaches of the cone-diagram. Matter solicits the past, inducing it to contract itself to varying degrees. The past is itself a continuum of continuous sections, each section a unique contraction of the entire past. More than memory itself, the *interaction* of matter and memory grounds the continuity of present perception.

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[381] Bodies are "conductors" interposed between matter and memory (Bergson 1988: 78). The body must oblige the past if it is to fulfill its practical obligations. Praxis requires continual modulation, and continual modulation requires continuous perception. If matter and memory are the ground, praxis is the determining agent—or, better, if matter and memory are the metastable fluid, praxis is the crystalline seed provoking successive articulation.

If the interaction of matter and memory determines the form of perception, praxis determines its content. Praxis determines what one senses of matter and what one draws from the past. In each present a virtual continuum of actions demarcates a field of action. This field presents the paths along which a body might act. This virtual continuum is a space of virtual actions, not a static array of all *possible* actions. Its paths are not mutually external to one another; they articulate a whole informing the unique action one will undertake. The virtual continuum is no homogeneous space crossed by inert paths. It has a qualitative character: its cardinal points are not static; it is marked by rifts, folds, troughs, bottlenecks. It has an efficacious topology: it acts upon present perception as present perception acts upon it. This "virtual praxis" determines the content of present perception (Bergson 1988: 21).[382] Perception parcels out reality "in view of the exigencies" of praxis, it "exactly measures our virtual action on things"—this attests to the contributions of virtual praxis to present perception (Bergson 1988: 183, 179). A field of virtual action precedes perception.[383]

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[382] Bergson indexes philosophy's autonomy not to theory but to praxis (Bergson 1988: 12). Indexing perception to praxis and denying the (anyway embodied) mind the power to generate representations resists a central philosophical dogma: theory predominates over praxis (Bergson 1988: 181). This displacement of theory by praxis transforms the conception of philosophical autonomy. Bergson's invocation of this autonomy is all the more curious, since few would claim that praxis is autonomous and pure. Unlike reason, praxis presents itself as the very figure of contamination. No one could pretend that praxis could be divorced from a body; few would argue that it could be detached from its historical conditions. It is deployed in a milieu that shapes it. If we adopt the maxim that we must metamorphose, this contamination becomes an advantage. Contaminations are singular "seeds" provoking new growth—as impurities provoke crystalline growth. A problematic milieu is no less metastable. Casting praxis as fundamental lends it a metamorphic hue. Thhis colors Deleuze's interest in Bergson and Spinoza. It is not *present* praxis that is fundamental, only the solicitation to adopt radically novel praxes. Grounding this virtual praxis comes at a cost: Spinoza invokes immanent substance, Bergson a complete and autonomous past. Planting everywhere the seeds of becoming-other requires irreducible orders and effective virtualities.

[383] The predominance of a field over its center motivates Bergson's hostility towards the intellect's elevation of the forms of identity. As much as the individuals it perceive an individual is an effect of a field of praxis: "The distinct outlines which we see in an object, and which give it its individuality, are only the design of a certain kind of *influence* that we might exert on a certain point of space: it is the plan of our eventual actions that is sent back to our eyes, as though by a mirror, when we see the surfaces and edges of things. Suppress this action, and with it consequently those main directions which by perception are traced out for it in the entanglement of the real, and the individuality of the body is re-absorbed in the universal interaction which, without doubt, is reality itself" (Bergson 1983: 11). A philosophy of nature demands a logic that does not ground itself upon derivative categories.

Perception is a function of this field, even if this field is not the ground. The sense of a thing is the virtual field of its practical effects (Peirce). We can define perception in terms of sense: a body perceives a section of its sense—specifically, the section of its sense impinging upon the present perceptual field.[384] Bodily capacities disclose perceptual fields: "my present is my attitude with regard to the immediate future; it is my impending action" (Bergson 1988: 140). This "attitude" is not just a conscious attitude: it is more a function of an unconscious corporeal orientation. More primordially, it is a function of the "virtual topology" generated by the way in which a body's lived history sinks into the pure past; the embedding of lived history in the pure past is non-trivial. The lines along which perception might parcel the present, the accent given to certain actions over others, the predilections enforced by habits, whether contracted by the individual or by the species (orbit 7), inclines the body towards an attitude. That these three factors are functions of virtual praxis implies that praxis has priority over any selection of sensations by the sense-centers themselves (eyes, ears). Virtual praxis does not just determine sensation. *For the most part*, it determines interactions with memory. Of course, memory has its own means of infecting experience. But only after having been confronted with a reality carved up with a view to action, only after having been immersed in virtual praxis, only after adopting an attitude, will memory-images appear. The embodied attitude solicits the memory-images that will bear upon the impending action. Memory-images prolong themselves in present perception. Far from trivial, it is this prolongation that extends the present into the future. Recall that there is no perception without some memory, and that of itself sensation is not able to

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[384] This gives renewed depth to Spinoza's emphasis upon bodily dispositions over self-identical essences: "whatever diminishes the power of the body diminishes the power of the mind"; the mind is "the idea of the body" (EII). Bergson echoes this when he says: "my present consists in the consciousness I have of my body" (Bergson 1988: 138). My present is, in a sense, my mind—better, my mind is a mode of my present.

constitute the continuity of perception. Only memory can ensure that perception will be always continuous, and so take time.

Virtual praxis is no ground. It lacks the metamorphic charge we have come to expect of any ground. But it has a creative aspect: virtual praxis compounds itself of the lived history of an organism. Like perception, it is partial. Virtual praxis and present perception both prefer a restricted to a general economy: they select of the pure past and perceive of matter only what is useful (Bataille 1988).[385] Once pressed into action, memories become "nascent perceptions" (Bergson 1988: 136). Of course, memories are never *just* nascent perceptions: no less than memory itself, memory-images do not reduce to their contributions to action. Since perception is oriented towards action, memory-images *appear to perception* as images bearing solely upon action. But appearance is not reality. What are memory-images, if not just nascent perceptions? Memory-images are the becoming-actual of memory. They are condensations—solicited by a presently-embodied attitude towards the future— in the process of passing from "virtual" memory to "actual" perception (Bergson 1988: 134). A memory-image is pure memory on-its-way-towards present perception.[386] It is a mode of memorial dynamics. Memory-images are the means by which the past informs the present. Pure memory is developed in memory-images without being exhausted by it. If memory-images bear upon praxis, pure memory has little to do with it: pure memory preserves *everything*, without any concern for future utility. It is indifferent towards praxis, contemptuous of the restrictive protocols of perception.

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[385] This is fine for perception, perhaps even necessary for our being-in-the-world, but politically and aesthetically we would do well to adopt a general economic approach: to confront excess without any view towards utilization; to draw before this non-utilizable flow a permeable, utterly wasteful and infinitely ramified labyrinth that will can only fail to channel the excess. It would be a properly mathematical response!

[386] "Memory actualized in an image differs profoundly from pure memory" (Bergson 1988: 140).

Even if contemptuous of utility, the past does not invade the present without reason.

Perception is oriented primarily towards action; a memory-image is the past's effort to aid it in its

execution of this action. It is in this sense that memory-images "complete" present perception,

making it continuous (Bergson 1988: 66).[387] But pure memory's autonomy from praxis means that

it can indeed invade present perception without reason—often to the dismay of perception, which

has things to do! Memories often arrive unsolicited, disrupting the present functions of the "sensori-

motor diagram"—the succession (without distinction!) of virtual actions coupled to their corporeal

index. Often, pure memory strives "to insert itself into motor habit" without any desire to assist it, as

if the past had its own designs upon the present (Bergson 1988: 156). Though the presently living

body solicits the memory-images that help it to "complete" its perception, it does not determine the

manner in which the past will respond to this solicitation—at least any more than an incomplete

axiomatic system determines how it will be completed.[388] It is true that a body selects actively certain

memory-images by "leaping" to the level of the past that possess a certain degree of contraction.[389]

But the pure past itself selects memory-images for the present. And just as virtual praxis favors

certain actions over others, illuminating the trajectory it would like the body to pursue, so the virtual

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[387] If in *Time and Free Will* "image" has only a negative valence, *Matter and Memory* complements it with a more positive valence. No more the mere falsification of time, an *image* is the positive contribution of the past to praxis. A memory-image is a mode of the past. As such, it expresses an aspect of it. And if memory-images express adequately the past, why not mathematical images? Like image, *symbol* "shows us an entirely different face [in *Time and Free Will*] than in *Matter and Memory*. It has no function of its own [in the former]; it serves only to dissimulate the mind. It is a parasitic vegetation it would suffice to trim off to get back to the true self…. [In *Time and Free Will*] spatial abstractions were opposed to concrete duration; now we see concretion become the privilege of mixed perception, i.e. of implied recollection in which matter and memory mesh (*concrescunt*)" (Jankélévitch 2015: 96).
[388] Events, encounters, dispositions all solicit the past: "memories await, so to speak, the dominant image to which they may be fastened. A sharp shock, a violent emotion, forms the decisive event to which they cling" (Bergson 1988: 171). It calls to it, and confronts often a response it can neither understand nor assimilate.
[389] Whether a contraction of the pure past by memory-images, of lived history into habits, of the pure past into a section of the cone, a contraction is always a complex contraction of heterogeneous orders.

past favors certain of its levels, certain degrees of contraction, over others. The present gives the past

occasion to "incarnate" various contractions of itself. It is in this sense that Bergson speaks of a

"tendency" of the past to infect the present, even a "conatus" of memory-images themselves (Bergson

1988: 114). A body's present comportment constrains the selection of memory-images: not every

image can "complete" a perception, not every image can extend an action into the future. But many

images will suffice. Despite the metaphors, we do not attribute any agency to the past. We hold only

that it has a dynamics and a topology. Its "conatus", like its creativity, is a function of the excess

generated by its dynamical regime.

Problem 1, Orbit 7

> But the transcendental field is no more individual than personal, and no more general than
> universal. Is this to say that it is a bottomless entity, with neither shape nor difference, a
> schizophrenic abyss? Everything contradicts such a conclusion, beginning with the surface
> organization of this field. The idea of singularities, and thus of anti-generalities, which are
> however impersonal and pre-individual, must now serve as our hypothesis for the
> determination of this domain and its genetic power.
>
> —Deleuze 1990: 99

The body is no static object. It is a function of a complex present. A body is a process or, better, a

mutating diagram: "my present consists in a joint system of sensations and movements, It is, in its

essence, sensori-motor" (Bergson 1988: 138). The sensori-motor diagram is the living body at

present. It is presently leeching out of the past and budding into the future: life is "not at all in what

is all ready-made but in what is *making itself*; and it is this transitivity, it is this 'present participle,'

that represents the very mystery and ipseity of freedom" (Jankélévitch 2015: 56). Far from linear,

this transitive flow flashes forward across heterogeneous dimensions. A body too takes time: it has a

duration. A body is a mutative diagram mutating to the intrusions of sensations and memories. The

living present is irreducible to the body; it includes the body, but maintains about itself a virtual

nebula that it has contracted in part from its lived past and in part from the pure past. The

numinous "screen" by which it orients itself at present is the second kind of memory: habit.[390] The

living body is indexed to a numinous virtual screen. This screen has two functions: to determine

which sensations are perceived and to solicit the memory-images that will thicken present perception

into a durative whole.

What is habit? We have detailed the first kind of memory, spontaneous memory: it is the

mechanism by which the pure past informs perception, always completing it, often invading it, with

memory-images. We have discussed also this second kind of memory: it is virtual praxis.[391] Virtual

praxis informs perception. It secretes a "zone of indetermination" that acts as a "screen" admitting

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[390] We must detach "habit" from its Anglo-American uses. It is not simply the closed circuits of a pathetic creature. Habit is habituation: it is a body's creative response to its history, its supple negotiation of its milieu, a potent means of individuation. Habits are allied with contemplation and creation: "habits are taken on by contemplating and by contracting that which is contemplated. Habit is creative. The plant contemplates water, earth, nitrogen, carbon, chlorides, and sulphates, and it contracts them in order to acquire its own concept" (Deleuze and Guattari 1994: 105). Far from an accursed inheritance that must be liquidated for the individual to be free, habit is freer and more creative than any individual. It *generates* individuals out of nothing but spare matter, a lived history, and the pure past. Affixed to a genetic perspective, it contributes to the critique of the sedentary distribution of categories and the dogmatic image of thought: "Deleuze suggests that great empiricist concepts like 'habit' and 'association' are already exempted from the classical self-image [—that is, from the dogmatic image of thought]. In their case it is not a question of specific combinations of abstract representational elements but of concrete *autopoietic* acts of thought whose subject matter is inherent" (Rölli 2016: 167). To capture the dynamism inherent to habit, to position it as a process of individuation, it is best to conceive of it not as habit but as habituation. Bergsonian habit is active, evoking d'Alembert's law of virtual displacement: at every moment, a system in equilibrium "contemplates" a continuum of infinitesimal virtual displacements and "selects" the one that preserves its equilibrium. As virtual praxis determines the lines that the sensori-motor diagram will trace upon the future, so the continuum of infinitesimal displacements determines how a physical system will evolve.

[391] "The two levels of memory, for example—the memory of picturesque recollections and the memory of movements or habit—represent two vital "tones" that are to one another as the past is to the present. 'Tone' here means both *tonality* and *tension*: these two hemispheres of the mind are as opposed to one another as are two musical 'tonalities.' Their opposition is produced by the variable 'tensions' of the mind, which oscillates between the complete relaxation of dreams and the vigilant tonus of played or 'attentive' action. The distance between distracted memory and tonic perception seems insurmountable. But do we not know that spiritual syntheses are built on exasperated multiplicities?" (Jankélévitch 2015: 85).

only what could interest us (Bergson 1988: 39).[392] (Note the subjunctive! Peirce's pragmatic maxim!)

Habits are no more "in" us than memories: the logic of container and contained—an eminently

spatial logic—is *never* appropriate for durative elements (Bergson 2001: 4). Though neither within

us nor without us, habits bear upon our praxis. They are of the system of virtual praxis that we

express in each moment: "habit here manifests its full generality: it concerns not only the sensory-

motor habits that we have (psychologically), but also, *before these*, the primary habits that we are; the

thousands of passive syntheses of which we are organically composed" (Deleuze 1994: 74, emphasis

mine). That habits are no more "ours" than the past suggests that habits have an impersonal

aspect.[393] They are series of paths, cycles, and epicycles that have been contracted from lived history

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[392] "The body in general is thus an impediment as much as it is an instrument; the body screens perception and *in so doing* renders it possible! Its very resistance and inertia are paradoxically a stimulant for vitality... The body expresses what life has had to overcome and also what it has had to abandon of itself in order to render itself visible. In this sense one could say, without vain paradoxology, that the animal sees *despite* its eyes rather than by means of them. There is no idea more profound and more fertile in Bergson's philosophy" (Jankélévitch 2015: 138, ellipses in original). Tendencies, movements, processes are more fundamental than the residua left in their wake: "Life does not need the body; on the contrary, it would very much like to be alone and go straight to its goal without having to pierce through mountains. But the body is there. It has had to be bypassed, eluded, sublimated by all kinds of learned ruses. To really understand this operation, we would need to invert from top to bottom the favorite order of our mechanicist intellect. We would then see that the only positive and truly primary reality is the very effort of life to ennoble and spiritualize the matter that resists it. Such is the inversion of the facts that Bergson's philosophy suggests: the epitome of positivity is not what is obvious and spatial, tangible and visible. The body represents a partial interruption of life, the way the idea is a negation of thought and rest a negation of movement. We have trouble getting used to the idea that concepts, instants, and bodies express a loss, not at all a gain. Meanwhile, the concept is a fracture of thought, a thought suspended" (Jankélévitch 2015: 139–140).

[393] "Habit allows pragmatists [such as Peirce] to displace the traditional philosophical conceptions of subjectivity as located either on the transcendental plane or in some deep inner self. They seek subjectivity rather in daily experience, practices, and conduct. Habit is the common in practice: the common that we continually produce and the common that serves as the basis for our actions….Habits create a [diagram] that serves as the basis of life" (Hardt and Negri 2004: 197). Having discerned an impersonal dimension in habit, Deleuze adapts it to nature: "What we call wheat is a contraction of the earth and humidity, and this contraction is both a contemplation and the auto-satisfaction of that contemplation…. What organism is not made of elements and cases of repetition, of contemplated and contracted water, nitrogen, carbon, chlorides and sulphates, thereby intertwining all the habits of which it is composed?" (Deleuze 1994: 75). "Habits are thus never really individual or personal. Individual habits, conduct, and subjectivity only arise on the basis of social conduct, communication, acting in common. Habits constitute our social nature" (Hardt and Negri 2004: 197). That habit has this productive, impersonal dimension lets it illuminate the nature of the praxis of that fabled impersonal agent, the multitude: "We can already recognize a concept of the multitude emerging from this pragmatic notion of habit. Singularities interact and communicate socially on the basis of the common, and their social

and grafted onto a sensori-motor diagram.[394] Habits are one attempt to dissipate accrued duration;

they defuse durative force. It is not habits that weigh upon us so much as the past. Habituation is a

response to an impossible prompt: *Dissipate the influxes of matter and memory!* Habituation is active

creation: habits inhabit a life (even a transcendental field) like lynxes the seam of a mountain.[395]

We do not perceive the world, only a virtual schema for acting in it: no percept not

correlated with an action (Bergson 1988: 48–49). The screen of virtual praxis admits only those

percepts that accord with what our body can do.[396] And what it can do is determined as much by its

corporeal form as by the lived history from which it has contracted its habitual diagrams.[397] That

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communication in turn produces the common. The multitude is the subjectivity that emerges from this dynamic of singularity and commonality" (Hardt and Negri 2004: 198).

[394] "We do not contemplate ourselves, but we exist only in contemplating—that is to say, in contracting that from which we come" (Deleuze 1994: 74). "To contemplate is to capture one or several forces, as a tissue becomes an eye when it succeeds in capturing light. Capture [*capter*] is not the same as excitation, since it is a matter of relating excitations, of making a principle of them, of contracting their successive vibration. Capture is a habit, and habit is the *positive product* of a relation of forces" (Zourabichvili 2012: 115, emphasis mine). Contractions, contemplations, habits—if these "passive syntheses constitutes the system of the self, under conditions yet to be determined, it is *the system of a dissolved self*" (Deleuze 1994: 78, translation modified). What was taken as a unity decomposes into a material multiplicity of contracting, gasping, leaking nodes. Passive syntheses are meant to correct the crude "Kantian dichotomy of activity and passivity, where the latter appears as mere receptivity without synthesis. In contrast, the transcendental aesthetic can be conceived in a new way with the concept of habit as its centre, letting the intensive element of sensation lead to primary processes of binding and individuation" (Rölli 2016: 231). Passive syntheses ground the active syntheses of a subject. The former function without any reference to a unified subject. They are not "receptive centers" but constitutive agents, actively generating higher-order syntheses. They are crucial for Deleuze's attempt to provide a genesis of real experience.

[395] The past's autonomy is even fuller than its enduring insistence in habit: "The past, which is not simply ineffectual history or 'over', *insists* in the present by structuring the very referential contexts that make possible relationships of similarity, etc. When a present passes along, it does not just visibly give up its evidence at the affective zero point, but rather it becomes sedimented in the accustomed corpus of multiple habits which strengthen themselves in repetition and which predetermine actual associational horizons" (Rölli 2016: 118).

[396] The brain "adds nothing to what it receives" (Bergson 1988: 30). It is only a labyrinth that variably prolongs, delays, reroutes, distends, and interrupts impressions both from matter and from memory. It does not store memories. Like every part of matter, it is an energetic circuit: "its office is limited to the transmission and division of movement" (Bergson 1988: 30). As its improvisations variably complicate and disrupt, it might be said to present to the past, if not a general economic stance, then a labyrinthine one: it dissipates excessive influx, converting general to restricted economy.

[397] Unlike virtual praxis, the form of its body is not a contraction of its unique history. Rather than an image of its past, the actual body is a contraction of the history of its species, and by extension all of terrestrial life. A body is habit-memory at the species-level, virtual praxis is habit at the individual-level. Of course, lived history is of the pure past. Habituation and recollection are two irreducible aspects upon a unique past, with one difference: the former is more partial than the latter.

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impersonal agents determine what our body can do should not trouble us: they incline us towards

metamorphosis—if only because the means of dissipating accrued duration are necessarily

inadequate: drastic re-acclimation is always expected. Virtual praxis sifts lived history into a

continuum. This continuous screen sieves the onrushing flux, with an eye towards action. We live

inside of it as in a cocoon, in folds of the *aurora borealis*. Under every aspect—corporeally, praxically,

temporally—it is the same: a virtual continuum is prior. However one is, one is in and by a

manifold: this is the meaning of larval envelopment (orbit 5).[398]

As a function of virtual praxis, perception "expresses and measures the power of action in the

living being" (Bergson 1988: 64).[399] The topology of virtual praxis determines the "amplitude" of

perception (Bergson 1988: 32). Not surprisingly, this topology is a function of duration: the lived

history of that body and the species-history of its ancestral bodies determine it. A body's manner of

contracting its lived history distributes the singularities that determine the topology of the

continuum of virtual praxis. The more topologically complex the continuum, the more variegated

the perceptions. Virtual praxis is quite variable: every momentary act is a solution that acts back

upon the structure of this continuum, altering the screen that it arrays before the exterior world.[400]

Virtual praxis is a problem, but one that constitutes itself as a response to a superior problem: that of

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[398] If, politically, our life has been reduced to number—worse still, "we don't know what a number is, so we don't know what we are"—temporally (strung up in the rafters of time) it remains a manifold (Badiou 2008: 3).

[399] We encounter here a Spinozist conception of power: the more varied the capacity to act, the more varied the capacity to be solicited by the world (Bergson 1988: 56).

[400] Bergson conceives of physical space in problematic terms: "points of space" pose an "elementary question" to a perceptive body, and "every such question is what is termed a perception" (Bergson 1988: 45). Questions are solicitations to act. And to act is to select a unique path from a virtual continuum of paths. Since the structure of the continuum not only screens out certain questions but amplifies some and dims others, it can be said to determine the intensities of the questions posed by matter. By emphasizing certain questions over others, the continuum determines which question will be answered by an act. Far from indifferent to the path that comes to be selected, the virtual continuum determines the process from beginning to end.

time itself. Duration may be no more than a cascade of problems, each provisional pool inflecting

anew the force of the superior problems upstream—without eclipsing them for an instant. With each

new inflection, extent problems grow only more insistent. Like oil gathering on the surface of the

sea, time is a pool of iridescent problems that, growing increasingly complex, become only more and

more unresponsive to the chemical dispersants layered upon it.

<u>Problem 1, Orbit 8</u> *The past is not a deposition but an interrogation.*

<u>Second Identification</u>: pure perception and matter (for first identification, see orbit 6)

This excavation of the layers of experience is a prerequisite for understanding Bergson's

identification of pure perception with matter. How he passes from something as apparently personal

as perception to something as impersonal as matter depends upon the complexity of perception.

Virtual praxis is a correlate of habit-memory. If habit interacts with the past, it is not by means of

images: habit "acts our past experience but does not call up its image" (Bergson 1988: 151). Habit is

a virtual sedimentation of the history of a body.[401] Of course, habit is not purely virtual: actual

elements of the body are contracted of that body's path through time, as its forms are contractions of

its species' descent through time. But habit is *primarily* virtual. Habits line the continuum of virtual

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[401] But it is not just its history: the body of an organism is a sedimentation of the history of its species and, indeed, of all of life. Even the habitual structure of a body requires us to draw upon a past that exceeds that body. The living body (or sensori-motor diagram) has corporeal and non-corporeal aspects. Both aspects are oriented towards action. The diagram is a dissipative mechanism, distending a body at present so that it can extend itself in action. To execute its actions, it is visited by "two forms of memory": spontaneous memory and habit-memory (Bergson 1988: 71). The sensori-motor diagram is more nearly a riverine delta attempting to dissipate presently the action that determined its selection of sensations and that elicited the selection of memories that alloyed the present perception. Its unique array of praxes, its unique past, its present pose, all determine the dissipative modes that it will adopt to discharge this accrued morass. This is where Bergson's notion of freedom converges with Spinoza's: for the crucial components of this "need to dissipate" are involuntary. We do not own our praxes, determine our situated pose, or even possess our past. We are possessed by these things. What memories alloy themselves in present perception depends upon the stance that we have happened upon. We can know neither what of the past will inhabit us—the past is unsurveyable! as is the continuum of praxis—nor if it can be dissipated. We experience primarily an imperative to dissipate it, though we possess neither the means to satisfy it nor the capacity to evade it.

praxis. Each of the two forms of memory—spontaneous memory and habit-memory—rely upon a

virtual continuum, each with its own topology and its own dynamical regime: respectively, the pure

past and praxis. That lived history is a part of the past implies that virtual praxis relies also upon the

past. It could be said that memory grounds habit:

> The first synthesis, that of habit, is truly the foundation of time; but we must distinguish the
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> foundation from the ground.[402] The foundation concerns the soil: it shows how something is
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> established upon this soil, how it occupies and possesses it…. Habit is the foundation of
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> time, the moving soil occupied by the passing present. The claim of the present is precisely
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> that it passes. However, it is what causes the present to pass, that to which the present and
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> habit belong, which must be considered the ground of time. It is memory that grounds time.
>
> (Deleuze 1994: 79).[403]

Spontaneous memory (or recollection) and habit-memory are two modes by which "pure memory"

informs present perception. Though they are both modes of pure memory, recollection has priority

over habit. The "indetermination" of virtual praxis calls the other form of memory to act within it:

the "indetermination of acts to be accomplished requires" recollection (Bergson 1988: 65). That it

requires the intervention of recollection in order to "complete" the present action suggests that,

though habit is irreducible to recollection (since habit is image-less), it is derivative of it. Why is the

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[402] Like Bergson, Deleuze is not an anti-foundationalist but a foundational relativist: the foundation is relative to a
magmic ground. Categorical logic relativizes logic: it exists relative to a topological space.

[403] The importance of the three syntheses of time cannot be overstated. They are stations in the "genesis" of real
experience. They trace the emergence of experience from intensive flux: Deleuze's "model of the three syntheses of time
in *Difference and Repetition* challenges the Kantian account of subjectivity with its strict distribution of the empirical and
the transcendental, of passivity and activity. We have seen that Deleuze's first synthesis of time, that of the living present,
constitutes subjects as formations of habit. The second synthesis of time, that of the pure past, establishes the coexistence
of several levels of the past. It shows that the individual life in fact presupposes the whole of the past, that is not only its
own past experiences and memories, but also those of others. Thus by means of the first two syntheses, Deleuze attempts
to account for processes of habituation, subjectification and artistic creation" (Voss 2013: 230–231).

habitual solicitation of recollection significant? That present perception must call upon recollection to complete it implies that lived history, present sensation, and habituated diagram are not able of themselves to ground lived experience. They cannot of themselves sustain lived experience (orbit 4).[404] This revelation—that the interior dynamic of lived history, sense-reception, and habit are "completed" only by some exterior dynamic—guides Bergson's **first attempt** *to prove the autonomy of the past*.[405] Virtual praxis requires spontaneous memory, and spontaneous memory requires that the pure past subsist in its entirety. Habit-memory lacks images. True, the body is a diagram of habit-memory, but a diagram is not an image. The sensori-motor diagram mutates ceaselessly—in response to its previous mutations and to the influxes from actual exteriority (matter) and virtual exteriority (pure past). It is no more reducible to an image than a motion to the space traversed. Now, habit-memory cannot of itself coordinate praxis, nor can any combination of habits and sensations; even together they are insufficient for coordinating praxis. To prove this, Bergson asks us to entertain the notion of a "pure perception." A pure perception is a perception shorn of every memory-*image*. A purely perceptive body would function without any admixture of memory-images. I say "*would* function" because pure perception "exists only in theory rather than in fact" (Bergson 1988: 34). We cannot embody this limiting case. A pure perception would be the indifferent reception of all presently perceptible aspects of the material world. Why is pure perception

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[404] Though unable of itself to affect a "full and complete" connection between sensation and praxis, memory plays a key role in grounding the continuity both of present perception and of lived history: "No one has shown better than Samuel Butler that there is no continuity apart from that of habit, and that we have no other continuities apart from those of our thousands of component habits, which form within us so many superstitious and contemplative selves, so many claimants and satisfactions" (Deleuze 1994: 75). These micro-habits structure the system of passive syntheses that grounds subjectivity.

[405] Brad Bassler has suggested that, within Bergson's system, this proof occupies a similar position to the proof of the Pragmatic Maxim in Peirce's system (Peirce 1992).

impossible? Bergson grounds perception in praxis: as there can be no disinterested praxis, there can

be no disinterested perception.[406] Why? Interest implies engagement, and engagement is inseparable

from the contemplation of present actions. Entertaining actions solicits the past, which responds by

"completing" present perception with memory-images. But pure perception lacks every memory-

image. To bar memory-images, one cannot even entertain any actions.

If pure perception is impossible, why consider it? It is a limit-point of perception, the point

where it passes over into its other: matter. Bergson uses here a principle of continuity. We arrive at a

pure perception in the way that we arrive at a limit: only in theory. Even if unattainable, the limit-

point inherits certain properties of the terms of that series. Yet Bergson's principle of continuity is a

curious one: in the limit the series undergoes a qualitative transformation. Matter differs in kind

from memory. The passage from lived perception to pure perception is a leap. (*How does a

continuous passage involve a leap?*) Purging perception of all memory-images divulges an image of the

material world "in itself"; of course, this image is still partial: we are bound by the limits of our

perception (Bergson 1988: 70). But there is nothing in a pure perception to differentiate it from

matter in itself. A pure perception is an indifferent perception! It is simply a "part" of the "whole"

material world (Bergson 1988: 71). There is no tint of lived history, no trace of a body (other than

its situated perspective) to distinguish the images of a pure perception from the collection of images

that is the material world. Thus (by the identity of indiscernibles?) a pure perception just is a part of

the material world.

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[406] Though indifferent, pure perception is determined still by virtual praxis: we can perceive only what we are capable of perceiving, and this capacity is determined by virtual praxis. Even in the limit, the latter does not relinquish all control of the apparatus of perception. The partiality of pure perception attests to its persistence.

The material world does *not* have the kind of being of an organism; matter is no cosmic animal. The past is not present for matter in the same way that it is present for an organism. Thus, Bergson concludes abruptly, memory differs in kind from perception. Further, the past exists "independent of matter" (Bergson 1988: 73)! How has he reached this conclusion? At the limit, perception merges with the material world. Memory does cross the threshold: it has "invariants" (specifically, the way that the past is for it) that are radically incompatible with the structure of the material world. Though memory and perception alloy in a "single intuition" at present, they cannot be reduced one to the other: memory is not diminished perception, perception is not sharpened memory (Bergson 1988: 219). At the limit, memory passes out of perception entirely. That this perception is indistinguishable from matter implies that matter exists without memory. There is a "radical difference in kind" between matter (pure perception) and memory (Bergson 1988: 76). Memory is independent of perception. It is independent of any present, of the need to be present, and of any present perception of it. This is a *first argument for the autonomy of the past*. The *second argument* requires an inquiry into the structure of matter.

Bergson charges pure perception with another task: to disclose a first image of matter in itself—equivalently, concrete extensity. This image will suggest a means of transforming the difference in kind between intensities and extensities from a *simple opposition* to a *divergent expression* that, though still divergent, emerges from a single ground: "the analysis of pure perception allows us to foreshadow in the idea of extension the possible approach to each other of the extended and the

unextended" (Bergson 1988: 182).[407] Concrete extensity is unadulterated matter—that is, matter untouched by the filtering and accenting to which perception, always biased towards action, subjects it. A pure perception is a perception without any orientation towards action; it does not solicit the memory-images that would guide future action. Memory-images determine the degree of contraction of a given perception. Since pure perception lacks memory-images, pure perception lacks any degree of tension. Since pure perception just is matter, matter too lacks any degree of tension. Matter has zero tensity. That concrete extensity, like any durative state, is individuated by its degree of tension—even if its degree is nil—implies that it is not *absolutely* incommensurate with duration, even though it differs in kind from it.

Perception is inherently tensed: a perception contracts the past, and the past is always tensed. A perception's degree of tension is unique because it presents an unrepeatable aspect upon the past. Contracting the past changes it in its entirety; it never appears the same way twice. Perceptions are individuated by their tensed aspect upon the past: tension is a mark of individuation. By the contra-positive, what is not individuated is not tensed. It is this lack of tension that allows pure perception to merge with tense-less matter:

> *at the limit* of distension [*détente*][408] we have matter. While undoubtedly, matter is not yet
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> space, it is already extensity. A duration that is infinitely slackened and relaxed places its
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> moments outside one another; one must have disappeared when the other appears. What
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> these moments lose in reciprocal penetration they gain in respective spreading. What they

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[407] This was inconceivable in *Time and Free Will*: there intensity and extensity had "no point of contact" (Bergson 2001: 70)

[408] A passage in *Creative Evolution* lists the different conjugations of tension (Bergson 1983: 237 and seminar 4/6).

lose in tension they gain in extension. (Deleuze 1988: 86, translation modified, emphasis mine)

Matter tends to disaggregate, discouraging any interdependence amongst its elements. By contrasting memorial elements with material elements, we can understand the difference in kind between matter and memory: memorial elements affirm their mutual interpenetration. The latter is an invariant not just of memorial elements but of the elements of any durative whole. What encourages interdependence amongst its elements tends against matter. It is in this sense that life diverges from matter even as it affirms its dependence upon it (Bergson 1983: 98–99).

Continually distending tension, matter maintains itself in a state of zero tensity. But this does not imply that matter is homogeneous. Matter is not space: "space is the *symbol* of fixity and of infinite divisibility. Concrete extensity, that is to say, the diversity of sensible qualities, is not within space; rather is it space that we thrust into extensity" (Bergson 1988: 217, emphasis mine). *Time and Free Will's* assumption that there are two homogeneous "forms", Space and Time, is wrong not just because it spatializes time but because it homogenizes physical space (Bergson 2001:98–99). Matter is a qualitative heterogeneity, though its heterogeneity differs from that of duration.[409] Then there's this: though tending towards disaggregation, matter remains continuous! If it was discontinuous, it

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[409] The pure heterogeneity of concrete extensity presents a problem: "The space of the general theory of relativity however does not present this complete absence of organization that characterizes the most general Riemann spaces. A physics in which the laws of the universe would vary from point to point is in effect inconceivable. Einstein's Riemannian space has what Cartan calls a Euclidean connection" (Lautman 2011: 98). But this Euclidean connection induces some homogeneity: "We also indicated the necessity, where the theory of relativity is found, to endow the Riemann spaces that it considers with a certain homogeneity so that the laws of physics can be independent of any attachment to particular points in space" (Lautman 2011: 114). This homogeneity is incompatible with the pure heterogeneity of concrete extensity. Thus, since physics must introduce some homogeneity in order to proceed, it can never inquire into concrete extensity. It has to do always with a "merely symbolic" extensity, one that is more or less approximate to concrete extensity. Bergson insists as much: intellectual acts are never adequate to qualitative heterogeneity.

would be impossible to sustain its already opaque endurance. But why does matter fail to disaggregate entirely? Why is there an endless reservoir of tension for it to distend? Without this reservoir, it would vanish, since what has nothing to do *is* nothing.[410] But even with this reservoir, it is hard to see why matter would endure as *a* plane. Why are there not disjoint material cores distending tension independently of one another? Leibniz would appeal to the continuous creation of a transcendent being. We appeal to the immanent and differently creative regime of virtual problems. Consider the relation between *a* problem and *its* solutions: that the reciprocally interpenetrating solutions must dissipate the excess of a unique whole binds them in the present as it binds them through time. That they can never dissipate this excess subjects them to the turbulence of a uniquely excessive whole: they keep to their problem like an organism to its hydrothermal vent, hoping the next mutation will free them from this impossible beast. A problem generates an excess of virtual force that *must* be dissipated; that this force cannot be dissipated *binds* together its solutions.[411] The dynamics binding matter is the same as the dynamics binding life: life is *a* plane because life resolves *a* problem: "when life is divided into plant and animal, when the animal is divided into instinct and intelligence, each side of the division, each ramification, carries the whole with it" (Deleuze 1988: 95). Why? Evolution involves genetic mutations and evolutionary pressures; this is its empirical core. But it is not reducible to this empirical core: "differentiation does not merely have an external cause" like genes or environmental pressures; it involves also an "internal

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[410] Bergson, insisting on the efficacy of time: "if it *does* nothing, it *is* nothing" (Bergson 1983: 39).

[411] Dissipation is not dilation but intensification. Matter "filters the vital current [*élan vital*] across divergent individualities the way discourse filters thought into discrete concepts. The sole goal of the nervous system, as we saw, is to specify and channel a diffuse energy. It thus intensifies our action on things. And more generally, the function of matter, in all living beings, plant and animal, is to accumulate a potential energy that life then spends freely. Matter thus serves to concentrate life, to make it attentive and vigilant" (Jankélévitch 2015: 142).

explosive force" (Deleuze 1988: 94; 98–99). Creative evolution couples evolution to virtual problems. The latter involve always the imperative: *dissipate virtual force*. This excessive force grounds the "efficacy" of duration. It is because of this force that "reciprocal interpenetration" implies "endlessly continued creation" (Bergson 1983: 178). Interrogation, improvisation, dissipation: these three "moments" of the dynamics of virtual problems and actual solutions continually amplify one another, grounding the mysterious efficacy of time. Matter can no more free itself from the past than an organism from the problem of Life. This is why each one describes *a* plane. What is in time remains of it: no escaping time. No less than lived experience, matter is a product of the past. The past keeps every degree of tension; as Captain Beefheart says, the past sure is tense. Matter cannot distend continuum-many degrees of tension. It is fixed to a past it cannot exhaust exactly as an animal to a problem it cannot resolve.

The passage from memory to matter is marked by a loss of tension and by a change in the relations amongst their respective elements. Memorial elements are marked by reciprocal interpenetration: each element expresses every other element and the past as a whole.[412] Is it so different with matter? What part of matter is not bound to every other part? What part does not express the whole? Don't scientific experiments presuppose this? True, the bond between most parts is vanishingly weak. Yet there is a radical solidarity amongst bodies—just as there is amongst memories. This does not annul the difference in kind between the two: if memories express emphatically their mutual implication (respecting memory's contractile *tendency*), bodies (riding matter's dilatory *tendency*) obscure it, tempting the intellect to place them in space as mutually

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[412] *Is there a difference?* Yes! Since durative wholes are not the "sum" of their parts, expressing each part is not the same as expressing the whole, though the latter implies the former.

external. The "interpenetrating relation" amongst memories might differ qualitatively from the "extrinsic relation" of bodies. But this no more annuls the possibility of their interaction than it annuls the possibility of "passing conceptually" between them: we deduce something about the one from the other. We saw something similar with tension: that a domain with tension differs qualitatively from one without it does not ruin the possibility of passing conceptually between them—even if Bergson justifies this passage by an obscure principle of continuity.

Matter distends tension. This commitment to distension indexes it to the past: that the past keeps all degrees of tension implies that the distending activity of matter must refer to the past if it is to execute its principle task. It is this indexation to the past that keeps matter from indulging absolutely its disaggregating tendencies. Considering exactly how this interaction of matter and memory sustains this unique material place illuminates the mysterious efficacy of durative wholes. But why this excess? What keeps it excessive? Since the past is a durative whole, any interaction with it changes it in its entirety. In particular, each material distension alters the past in its entirety. Since each act of distension alters the whole, there is always a newly-tensed whole to distend. Like anything subject to a problem, matter is bound to an imperative. It must execute its office—*distend tension!*—but it cannot keep up with the rapidity of the changes to this mutating repository of tension. Matter is severely out-paced by the past. It is this out-pacing that binds matter to memory and sustains material continuity.[413]

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[413] By the axiom of completeness (below), the past keeps continuum-many degrees of tension. By Easton's theorem, their "number" is indeterminate! How can matter exhaust it, if it is inexhaustibly multitudinous? Matter, bound to its office, is bound to the past. Matter owes its integrality (the solidarity amongst its parts) to the past. That its integrality is *derivative* of a superior totality encapsulates the paradoxical relation between matter and memory: they interact despite their qualitative difference. By analogy, in taking the derivative of a manifold, we pass to another space entirely—the

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Bergson affirms a central thesis of Leibniz's dynamics: matter, indexed to a whole it cannot exhaust, is not reducible to the local, efficient interactions amongst its parts. That matter is indexed to a durative whole that exercises it as it exercises this whole implies that matter *in itself* is purely heterogeneous.[414] Matter, nowhere uniform, is very unlike space: symbolic space is homogeneous, but concrete extensity heterogeneous. Matter lacks tension, but the material distension of past tension is not homogeneous.[415] Indexed to a turbulent influx it cannot exhaust, matter is a qualitative heterogeneity. But its heterogeneity differs in kind from that of memory: the latter is intensive, the former extensive. One is a limiting case of the other—like pure perception to perception, so concrete extensity to the past. That pure perception passes into a present that just *is* matter suggests that matter is relatively durative:

> *Matter is my present*—that means two things: (a) that my present, when it is pure, is
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> extension itself, and that I already find exteriority in myself; but also (b) that matter in turn
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> occupies a place in time. Matter is nothing other than *quality* in a state of extreme dilution,
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> nothing other than duration in the ultimate degree of relaxation. As for *Time and Free Will*'s

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tangent bundle. The real differences between these spaces does not preclude their informative interaction. Matter is an actual film on a virtual sea.

[414] That matter must distend memory but *cannot do so* suggests that its successive distension will be dense: between any two distensions there are infinitely many distensions. Executing its office is a dense affair. Is material distension a succession without distinction? Bergson anticipates certain developments in physics: he dynamizes space, endowing it with an efficacy different from that of efficient cause. No more inert containers!

[415] If not durative in itself, matter is *relatively durative*. If we have a dualism of domain, we have a monism of time: "By separating the present and the past, Bergson has not purely and simply split up duration. Matter is now on the level of the present: that means that it, too, has become relatively spiritual. While in perception the mind settles in exteriority itself, exteriority in turn participates in the mind. For the first time, consciousness goes out from itself and discovers the distant kinship that unites it with movement, physical changes, and concrete extension. It learns to no longer confuse true extension with the delusions of a homogeneous space, the tension of real movement with the quantitative schemata that measure it" (Jankélévitch 2015: 98). Still, it is difficult to understand how domains that differ in kind interact in time. How is the principle of continuity grounding their relation?

homogeneous space, it is something else: it does not exist at all. It is a phantom of the

imagination, born from utilitarian needs (Jankélévitch 2015: 99, second emphasis mine).[416]

Only at the limit-poles of perception do we encounter purely qualitative heterogeneity: at the limit-

point of pure perception, extensive heterogeneity; at the limit-ground of immediate intuition,

intensive heterogeneity. Though these heterogeneities differ in kind, they interact: the jagged arc of

perception traces precisely their convulsed interaction.[417]

Bergson's excavation of lived experience illuminates also intensities. In perception, qualities

develop intensities. Now, concrete extensity is a "diversity of sensible qualities" (Bergson 1988: 217).

We have to be delicate here, mindful of Bergson's critiques of idealism: to identify bodies with

qualities is neither to dissolve their substantiality nor to index their being to being-sensed. Matter is

sensible qualities, not *sensed* qualities. Material qualities are no more "free-floating" than perceptual

qualities: they are grounded in intensities. "If it is true that intensity is never given in a pure

experience, is it not then intensity that *gives* all the qualities with which we make experience"

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[416] Why does the qualitative heterogeneity of concrete extensity not appear to us? Perception suppresses it: "Perception, which is made for action and for the satisfaction of our needs, is practically interested in only a small portion of the external world. It deceives us, first of all, not because it adds something of its own to materiality but on the contrary because it takes something away" (Jankélévitch 2015: 86). It is "possible, in a certain measure, to transcend space without stepping out from extensity; and here we should really have a return to the immediate, since we do indeed perceive extensity, whereas space is merely conceived—being a kind of mental diagram" (Bergson 1988: 187). Projecting space upon concrete extensity does not annul the latter's priority: "Concrete extensity, that is to say, the diversity of sensible qualities, is not within space; rather is it space that we thrust into extensity" (Bergson 1988: 217). But concrete extensity crouches still at the limit-pole of perception, threatening to scramble every orientating grid: "homogeneous space and time [are] principles of division and of solidification introduced into the real, with a view to action and not with a view to [true] knowledge, which attributes to things a real duration and a real extensity, and which, in the end, sees the source of all difficulty no longer in that duration and in that extensity (which really belong to things and are directly manifest to the mind), but in the homogeneous space and time which we stretch out beneath them in order to divide the continuous, to fix the becoming, and provide our activity with [cardinal] points to which it can be applied" (Bergson 1988: 212).

[417] Their interaction discloses the "paths" that we have used for proofs of the properties of matter and memory. It is as in algebraic topology: as we oscillate between topological spaces and groups, we enrich our knowledge of both domains—so with matter and memory. Zalamea catalogues many instances of this enriching "pendular" movement in mathematics.

(Deleuze 1988: 92)? Yes; qualities swarm perceptual and material fields—they share this genetic element: intensities. Whether material or perceptual, qualities develop intensities and intensities inform qualities. That the dynamics of matter, memory, and perception all involve intensities suggests how perception, host to two mutually irreducible domains, alloys the envoys of matter and memory in the present (orbit 6). But intensity is not a comprehensive ground. Matter and memory involve intensities and intensities involve tension. *Tensity* is a comprehensive ground.[418] *But if a single language (that of tension, intensities, durative flux, explication, implication, complication) is adequate to material and memorial processes, why do matter and memory differ in kind? Does not temporalizing matter and (partially) materializing memory efface the difference between them?*

> The essential point is to see how expansion and contraction are relative, and relative to one another. What is expanded if not the contracted—and what is contracted if not the extended, the expanded? *This is why there is always extensity in our duration, and always duration in matter.* When we perceive, we contract millions of vibrations or elementary shocks into a felt quality; but what we contract, what we 'tense' in this way, is matter, extension. (Deleuze 1988: 87)

This celebrates the monist cast of Bergson's thought, but courts contradiction: "There are numbers enclosed in qualities, intensities included in duration. Here again, must we speak of a contradiction in Bergson" (Deleuze 1988: 92)? Intensities "enclose" numbers, tension admits of *degrees*—how do

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[418] *Tension* is more fundamental for Bergson than *multiplicity* (but less fundamental than *durative continuity*!) because it grounds a genetic perspective. It lies at the origin of perception (which develops intensities as qualities) and matter (which develops intensities as bodies): "Bergson refuses all simple genesis, which would account for intelligence on the basis of an already presupposed order of matter, or which would account for the phenomena of matter on the basis of the supposed categories of intelligence. There can only be a simultaneous genesis of matter and intelligence" (Deleuze 1988: 88). Deleuze wants a "genesis of intuition in intelligence" (1988: 111).

they differ in kind?[419] Continuity—it blocks the creeping symmetry. Tensity expresses the invariant structures of matter and memory. But the continuity of matter differs in kind from that of memory. Intensities *found* perceptual and material qualities, but a foundation is not a ground. Intensities individuate themselves by their degree of tension, but they draw this degree from a more profound continuity. An intensity siphons its "inner continuity" from the superior continuity of a durative whole (orbit 5). If tension threatens the difference in kind between matter and memory, continuity preserves it.

Problem 1, Orbit 9 (osculating)

> The past and the present do not denote two successive moments, but two elements which coexist: One is the present, which does not cease to pass, and the other is the past, which does not cease to be but through which all presents pass. It is in this sense that there is a pure past, a kind of "past in general": The past does not follow the present, but on the contrary, is presupposed by it as the pure condition without which it would not pass.
>
> —Deleuze 1988: 59

Matter *is* the present. This identification is crucial for our ***second argument*** *for the autonomy of the past.*[420] Explicating matter was a requisite for explicating the present. If perception expresses something of matter, the mathematical intellect does not: "material extensity is not, cannot any longer be, that composite extensity which is considered in geometry" (Bergson 1988: 182). But the *intensive* heterogeneity of durative wholes differs in kind from the *extensive* heterogeneity of matter. Can we transfer the prohibition upon mathematically expressing heterogeneity from the former to the latter? Could the symbolic spaces that we use to reason about concrete extensity hew more

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[419] An intensive difference is an incomparable difference: "between two intensive quantities there is only heterogeneity or difference in kind" (Zourabichvili 2012: 106).
[420] This argument is important for what it reveals of durative continuity—much as Wiles' proof of Fermat's Last Theorem is more important for what it reveals along the way than for its result.

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closely to it than the symbolic representations of duration hew to duration? Could a sufficiently turbulent mathematical image express something of the structure of concrete extension? And if it illuminates concrete extension, could it express indirectly the pure past that grounds extension? These questions tend towards the gravitational field of our second problem. It would be premature to enter it, so we will maintain ourselves in the outermost osculating orbit of our first problem.

Like experiential flux, material flux involves intensities—but with this difference: where material flux distends every intensity, experiential flux distends some, preserves others, and contracts new ones of itself. Experiential flux is more turbulent, owing to the tensed singularities obstructing its dissipative efforts. Experience is tensed of itself, matter has zero tensity; it only distends tension. Matter is the labyrinthine face of a vain, chaotic bid to dissipate completely the tension coiled within intensities. But how to defuse a past that mutates always ahead? The past only evades matter, tensing in a new configuration that matter will fail also to dissipate. Is it too much to see in concrete extensity a variably fluctuating manifold on the point of losing itself, always expiring, edged almost to formlessness, sustained only by its inability to keep pace with a rapidly mutating past? But this inadequacy is no deficiency. A genetic perspective transmutes a "negative" inadequacy into this positive principle: concrete extensity distends perpetually the past's tension.[421] This principle expresses both the genesis of extension and the ground of this genesis. As Gilles Châtelet argues, this genetic perspective transcends a *static* geometrical perspective but not every mathematical perspective. Lautman, by tracing the dynamical cores animating mathematical theories, points a way to overcome Bergson's exile of mathematics from the philosophy of time. Intuition, this "anexact yet

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[421] Intensities contract the past, and this contraction must be dissipated. For Leibniz, extension "is merely the repetition or diffusion of something prior, that is, the repetition or diffusion of this force" (Leibniz 1989: 148).

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rigorous" *thought* of time, might proceed topologically—a mode that, while perfectly rigorous and precise, is not quantitative (Deleuze and Guattari 1987: 367). A mathematical thought adequate to *extensive* heterogeneity will have something to say about *intensive* heterogeneity—despite Bergson's protestations against it. Grassmann stages a genesis of extensive heterogeneity:[422]

> the capture of the extension would not be satisfied with "a knowledge which, like that of ordinary geometry, is completely abstract and deprived of life" [(Schelling)]. This ordinary [metrical] geometry contents itself with merely measuring the distances between extended figures, whereas what is necessary is to apprehend the *positivity of the going out of itself*, of this permanent act of auto-production, without idolizing it and without forgetting that the true positive is that, according to Hegel, which *remembers being posited*. This positive is no longer the headstrong insistence of a petition of existence, and true geometry must grasp the instant where space finally quivers with the virtualities that inhabit it and invites us to experience dimension as the invention of an articulation. It leads us by the hand so to speak to relearn the motion that at once separates and links and to be able to capture in a simple fragment the direction and continuity of a gesture.[423] This geometry thus demonstrates its ability to reactivate a productivity that is never extinguished in its product and reveals that the same mind is at work in the *productions* of nature and the *creations* of liberty. This is what makes

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[422] This is the challenge of the second problem: to do for durative wholes what Grassman does for concrete extensity. There is another candidate: Weyl's "pure infinitesimal geometry" might be supple enough to capture concrete extensity's coupling of rapid fluctuation with exact determinability (Weyl 1952: 102).

[423] It is no accident that Châtelet evokes Spinoza in this passage. The allusion (being "led by the hand") emphasizes that the "gesture" that is solicited is no more a *human* gesture than the intellect perceiving (and not *conceiving*) what "constitutes the essence of substance" is a human intellect.

Grassmann's theory of the extension remarkable. It represents a genuine pedagogy of the forms of the grasping of space. (Châtelet 2000: 103)

Not enough can be said about this passage! Who knew that Bergson's thought was not just anticipated by mathematics but condensed already within it, just waiting to be explicated? Real geneses of forms, solicitations to act, non-metrical but perfectly precise spaces, persisting virtual wholes, intensities demanding to be explicated—it's all here. Rather than being neutralized by the extending act, intensities act upon it as it acts upon them.[424] This reciprocal determination should be familiar: it is the mark of the genetic logic of expression. That it structures the genesis of extension should not surprise us: nature unfolds by implication, explication, and complication.

In this outermost orbit we encounter finally the **second argument** *for the autonomy of the past.* It draws upon the identification of matter with the present. We have adduced an argument for why the *material* present passes: to distend the past changes it. The past distended at present is already a past configuration of the past. The past, mutating at "infinite speed", outpaces the present. Thus, the present must pass if it is to attempt to dissipate every tension anew—no present not past its time! No less than the old past, the new past (brought into being by the attempted distension of the old past) must be distended anew. Only a novel configuration of matter can answer to a newly configured past—even as the former will be doubly inadequate: both to the old past it attempts to dissipate and

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[424] "To grasp a dimension is to invent a diagram where the pure dispersion of what Hegel called *aussereinandersein* (the 'being outside one another') and the exuberance of the intensive balance one another out: the unfolding of the latter nourishes the mobilization and straightening of the former, and vice versa" (Châtelet 2000: 113). Deleuze complicates this schema: "we know intensity only as already developed within an extensity, and as covered over by qualities. Whence our tendency to consider intensive quantity as a badly grounded empirical concept, an impure mixture of a sensible quality and extensity, or even of a physical quality and an extensive quantity. It is true that this tendency would lead nowhere if intensity, for its own part, did not present a corresponding tendency within the extensity in which it develops and under the quality which covers it. Intensity is difference, but this difference tends to deny or to cancel itself out in extensity and underneath quality" (Deleuze 1994: 223).

to the new past that has leapt in its place. The problematic imperative that the past addresses to the present is never fulfilled. That each present expresses only an out-dated past implies that a new present must arrive to contract it anew.[425] But this argument pertains only to the present *qua* matter. What of the *lived* present, this more complexly structured thing—why does it pass? This lived present evinces a much more complex relation to the past than the material present. At times inhabiting it, at times drawing force from it, at times relaying its designs to the future, the lived present involves itself emphatically in the past. It does not attempt simply to dissipate the past; it is exercised by other imperatives. So we ask: why does the *lived* present pass? Can we relate its passage to the passage of the material present? If so, how? Does each present compel itself to pass? If not, what causes it to pass? Is it true that "the present" is *the passing present*, something at once present and not present? Each present passes and, in passing, appears as past: who could say otherwise? Yet our familiarity with the fact that the present passes obscures its peculiarity. Why should the present pass, if it is fully present?[426] And if fully present, why should it appear as past? What summons the next present to replace it? Not this present, since it insists fully upon its presence. Should not

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[425] Bergson's argument for why the present passes is somewhat different. He does not speak of an *imperative* of the past (*dissipate force.*); he uses, if only implicitly, of **the axiom of complete contraction**. It says: the past contracts itself to every degree. The passing present contracts the past to the highest degree. In contracting it, it changes it: any change changes the whole. With each passing present the past changes in nature. If it has changed in nature, it will no longer be contracted to *every* degree. But by the axiom of complete contraction, it *must* be contracted to every degree. The passing present contracted the past as it was *prior* to the present contraction. With this contraction, the past has changed. This new past must be contracted anew. Only a novel present will do: since it has adopted a unique pose, the past can express itself anew only under a unique aspect. We must keep up appearances: only a novel present could possibly be adequate to a novel whole. The past is *just impossible*: though no present can satisfy it, it demands a novel one oblige it. The pure past maintains itself in every degree of tension: every contraction, every dilation. The novelty of the present is a mark of the perpetually renewed attempt of the past to discharge its obligation to contain every degree of contraction. The past changes always already ahead of it. The present lags behind a past that, always ahead of it, only reconfigures itself completely anew.

[426] "We are unable to believe that the past is constituted after it has been present, or because a new present appears. If a new present were required for the past to be constituted as past, then the former present would never pass and the new one would never arrive" (Deleuze 1994: 81).

appearing as past be as incommensurate with being-present as needing a future present? Why would every present announce its inadequacy by demanding a future present? If it is not fully present, is it present at all? Can it be both present and not-present? What about the different ways of being present? If not fully present, perhaps the present is present under one aspect and past under another. Do these two aspects coincide? Do they constitute the complex that is being-present? Or does the second aspect—viz., appearing-as-past—appear only in passing? How can "a single present" admit of two aspects? Are these two aspects complementary? Do they not seem rather contradictory? Is it not: *you're either past or you're present, not presently passing*? For Deleuze, it is a paradox: the present insists in passing that it is present. And perceiving the present as paradoxical is a condition for conceiving it genetically.[427] It points to the past as the ground of this presently passing flux. As ground, it differs in kind from the present, and so exists independently of it.

The present is composed of two irreducible but coincident aspects: it is present, it is past. That these two aspects of the present are alloyed in a single perception does not mean that they are indistinct. It is as with memory-images, present sensations, and habitual motions: if they are not easily disentangled in life, they can be in thought.[428] It should not surprise us that durative flux, far from being self-identical, is everywhere and under every aspect multiplicitous. It resists every form of identity. Even in the immediate present, complex-coexistence replaces self-coincidence. This

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[427] Casting the present as paradoxical rhymes with Bergson's conception of the present as irreducibly complex.

[428] The two aspects of the present (it is present, it is past) can be related profitably to two aspects of present perception: habit-memory and spontaneous memory. Habit-memory is an imageless contraction of the past that has oriented itself towards future action (Bergson 1988: 140). The present of the sensori-motor diagram is a culling of sensations that will be absorbed in a motion only after having been "completed"—that is, linked definitively to present action—by memory-images. We have seen that the present takes time: it has a duration (orbit 6). And it is primarily the memory-images that thicken it into a durative interval, though habit plays a pivotal role in constituting the continuity of this interval (orbit 7). Thus, the above analysis of the lived present (that it alloys matter and memory) is consistent with this paradoxical characterization of it as both present and past.

"paradoxical way of being" is not restricted to the present but contaminates also the past: "No present would ever pass were it not past 'at the same time' as it is present; no past would ever be constituted [as past] unless it were first constituted [as past] 'at the same time' as it was present" (Deleuze 1994: 81). But why does one present never suffice? And why does each one differ from every other? As always already past, each present is always already a part of the continuous multiplicity that is the pure past. As a part of the whole past, each present expresses uniquely the whole. The enormity of this cannot be overstated: every present maintains a relation with every past present, no matter how chronologically or cosmologically distant. Past presents coil in the "internal dimensions" of each present—as forces in the internal dimensions of a particle (gauge theory). This solidarity of the present with the entirety of the past is the source of the secret coherence of time. It is remarkable: despite being comprised of heterogeneous levels in mutating configurations, the pure past remains an integral whole; despite the heterogeneity of each present (each one offering a singular aspect upon the past), the passing present articulates itself as *a* flow; and despite differing in kind, the past and the present participate in a unique time. The more one thinks about it, the more bewildering this coherence. And Bergson only exacerbates it: how is it that the past coheres—that every present becomes a part of it and that it remains unique? How is it that each present is a part of this continuously lived present? that the past and this presently passing flux cohere while differing in kind?

We know *that* presents "succeed" one another. But *how* do they do so? What is the structure of this presently passing flux? That of a "succession without distinction" (orbit 4), a lived non-linearity:[429]

> presents succeed, encroaching upon one another. Nevertheless, however strong the incoherence or possible opposition between successive presents, we have the impression that each of them plays out "the same life" at different levels. This is what we call destiny. Destiny never consists in step-by-step deterministic relations between presents which succeed one another according to the order of a represented time. Rather, it implies between successive presents non-localisable connections, actions at a distance, systems of replay, resonance and echoes, objective chances, signs, signals and roles which transcend spatial locations and temporal successions. (Deleuze 1994: 83)[430]

Non-linear succession and non-local communication marks presently passing flux. These are invariants of the pure past, whose elements maintain also innumerable non-local connections. That the invariants of the past appear in the present is no accident: the former grounds the latter. The present flux is nothing but the successive "*actualization* of a new dimension" *within* the capacious manifold that is the pure past (Zourabichvili 2012: 100).[431] But this is not to reduce the present flux

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[429] "Time is pure change, since its dimensions do not resemble each other whatsoever; and succession is not illusory, it is simply its least profound aspect" (Zourabichvili 2012: 100).

[430] Why pure heterogeneity? "To neglect the intensive temporal difference (pure difference, stripped of all resemblance, and consequently not subjected to an identity that subsumes it) would reduce each of our lives to an alignment of facts within an homogeneous and continuous present, from birth to death. In this way we miss the ruptures that are not only material and spatial, but profoundly temporal, and which are factually signaled when one no longer recognizes oneself in who he or she used to be" (Zourabichvili 2012: 100).

[431] Châtelet's analysis of Grassman's geometry resonates with this. There, the ability to open anywhere a new dimension testifies to the ubiquity of the virtual. Grassman provides a formal model of the productive power of a ubiquitous virtuality. We encounter the virtual precisely at those points that seem to blaze with light, that invite one to inflect the present trajectory, inaugurate a new one, open another dimension.

to the pure past: the former flows, the latter mutates. There is a difference in kind between the dynamical regimes of the past and the present. The latter has a split being: it is at once past mutation and mutant flux. Each present is at once a new dimension of the palatial past and a newly distilled condensation of the past in all of its dimensions—a drop presently dispersing.[432] How many dimensions at present? *Continuum-many*—by Easton's theorem, one can assign to it a "cardinal as immense as you like, provided that it is a successor" to the first transfinite cardinal (Badiou 2005: 280). The present has as many dimensions "as one pleases", all of them mutually irreducible (Bassler 2015). Worse still, these dimensions exhibit a kind of disjunctive complicity—absolutely divergent yet totally in solidarity. If this seems extravagant—or, worse, wildly indeterminate—too bad! It's *your* present. The past is both the condition for any being-present (every present is a contraction *of* the past) and the cause of its uniqueness (that any present expression changes the past implies that that expression will be unique). It is in this sense that the past grounds not just the passing present but every mode of being-present:

> There is thus a substantial temporal element (the Past which was never present) playing the
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> role of *grouna*. This is not itself represented. It is always the former or present present which

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[432] "The successive dimensions are accumulated in a memory whose contents are always expanding; but this accumulation presupposes in principle something else entirely: the relations between the dimensions themselves, the field of the virtual past in which these coexist. A new present is certainly an 'extra dimension,' but it is first of all an *other* dimension. The parts of the virtual past—pure dimensions of time—are not memories or images of a past experience, and the different presents do not refer to contents of experience: each present actualizes a temporal dimension the consistency of which is purely *intensive* (level, degree . . . or else plane, point of view)" (Zourabichvili 2012: 100). Past and present are grossly asymmetrical. The inability of any one present to express the past through all of its modulations is but an expression of this asymmetry. It as with the problem of Life: no one organism can resolve it definitively. The past and the present differ in "size" (degrees of tension, number of dimensions), dynamics, and continuity. The continuity of the past is not the continuity of the passing present. But in this opposition between dynamical regime we can discern a sufficient reason for the dynamic of the passing present: "the passing present which bears itself away [can be] opposed to the pure past which perpetually differs from itself and whose universal mobility and universal ubiquity *cause* the present to pass" (Deleuze 1994: 102, emphasis mine). That the past and the present are asymmetrical and mutually irreducible suggests that the passing present—which contains a present aspect and a past aspect—is unbelievably complex. It is (long past!) time to abandon definitively the illusion that the present is point-like and simple.

is represented…. if the new present is always endowed with a supplementary dimension, this

is because it is reflected *in* the element of the pure past in general, whereas it is only *through*

this element that we focus upon the former present as a particular. (Deleuze 1994: 82)[433]

We argued in part II of this dissertation that ground does not resemble grounded (equivalently,

conditions do not resemble conditioned). That the past is not indexed to the present, that it does not

resemble it, that it derives neither its efficacy nor its being from any present, implies that the past is

autonomous. This completes *the second argument for the autonomy of the past.*

Despite its split being, its irreducible complexity, and the uniqueness of each of its elements,

Bergson proclaims of this presently passing flux: *it is heterogeneous yet continuous!* How is it

heterogeneous? Each present expresses uniquely the past. Successive aspects are neither successive

adumbrations, elaborations, nor juxtapositions: "in place of the traditional image of time as a line on

which presents come to be juxtaposed is substituted the idea of a time that progresses intensively by

an *augmentation* of its dimensions" (Zourabchivili 2012: 99, emphasis mine; orbit 5). How is it

continuous? That each present expresses a *unique* past binds them together as dimensions of a

continuous flux.[434] We confront again a magmic *continuum* of irreducibly heterogeneous but

reciprocally interpenetrating elements, each of which expresses a unique whole. The absolute

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[433] "The past does not cause one present to pass without calling forth another, but itself neither passes nor comes forth…. We cannot say that [the past] was. It no longer exists, it does not exist, but it insists, it consists, it *is*. It insists with the former present, it consists with the new or present present. It is the in-itself of time as the final ground of the passage of time. In this sense it forms a pure, general, *a priori* element of all time" (Deleuze 1994: 82).

[434] That the elements of this presently passing flux implicate one another and, in implicating one another, act upon one another excludes every kind of hierarchy: "No dimension functions as the center of time, but each returns in all the others, and itself causes them to return" (Zourabichvili 2012: 108). Indeed, "an intensive conception of time such as this is vertiginous. There is no reason why the present dimension should have any privilege over the others, or constitute a center or an anchoring; the ego bursts into distinct periods that each take turns occupying the center, without an identity ever being able to become fixed…. The same applies horizontally, if we consider that a life is unfolded on many planes at once: in depth, the dimensions of time, successive or simultaneous, are related to one another in a 'non-chronological' and non-successive manner." (Zourabichvili 2012: 101).

distinction of each element from every other element *coexists* with the total interpenetration of each element with every other element—this paradoxical coexistence is possible only because each element expresses uniquely the whole. The *invariants of durative continuity* mark the present: reciprocal interpenetration, irreducible heterogeneity, unique expressivity. It is by these invariants that we pass from the lived present to the material present, affirming of the former what we have affirmed of the latter. The reciprocal interpenetration of intensive inner states marks "the *continuous* evolution of a free person" and, indeed, the evolution of any being compelled to dissipate excessive virtual force (Bergson 2001: 229, emphasis mine).[435]

The paradox hovering over the epigraph presents an aspect upon the labyrinth of the continuum. *How does the uniqueness of each present accord with the continuity of passing time?* The problem is only compounded by the irreducibility of the present to the past! Bergson's failure to confront this labyrinth amplifies unbearably the formidable difficulties of his *oeuvre*. It falls to Deleuze to analyze the continuity of the passing present. Deleuze's analysis draws us into the orbit of the second problem. Bergson may have had a good reason to evade the labyrinth of the continuum: he argued that any intellectual egress from it would be necessarily illusory. Intellectual thought only obscures concrete continuity. Was he right to prohibit even the possibility of threading a passage through it? The forms of identity only obscure metamorphic durative flux. Do not entertain the

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[435] The invariants of durative continuity ground the coherence of time. The pure past and the presently passing flux exhibit the structure of durative continuity. They relate to one another in a unique temporal continuum while preserving their differences. As with past time, so with present time: it is fundamentally a "relation between heterogeneous dimensions" (Zourabichvili 2012: 102). This "relation" is specific to durative continuity. No less than bodies and qualities, presents are posed by intensities. Thus "the problem of relations is posed at the level of intensities, and the relationship between one intensity and another, between one dimension and another, cannot be one of contiguity or of juxtaposition, but must be one of implication. Two temperatures or two speeds are not added together; one temperature is not composed of other temperatures, but envelops others that envelop it as well, and the same goes for speeds" (Zourabichvili 2012: 105, citing Deleuze 1994: 237 and Deleuze and Guattari 1987: 31).

prejudice: that this flux is radically metamorphic does not imply that it is undifferentiated. It has a

precise structure—more controversially, a logic. Deleuze and Bergson diverge precisely here: *Is there

a logic of duration?*[436] Bergson contends that every logic is spatial: to be a logic is to admit only of

discrete operations upon distinct elements possessed of an unimpeachable self-identity. Intuition,

this rigorous thought of duration, is non-logical. Logic *just is* the geometry of solid, self-identical

figures in homogeneous space. The rigorous thought of duration cannot avail itself of self-identical

elements, of geometrical part-whole relations, of discrete operations. In duration, each change

changes the whole, the whole is present in each part, and nothing coincides with itself. Deleuze asks:

Why not develop a logic that is not the geometry of solids?[437] Why not stage "a genesis of intuition

within intelligence" (Deleuze 1988: 111)? In fact, topology has accomplished both of these things.

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[436] Here as elsewhere, mutual implication is central. It is the most important temporal relation. Indeed, "implication is
the fundamental logical movement of Deleuze's philosophy. In nearly every one of his books, it is only ever a question of
'things' that are rolled up and unrolled, enveloped and are developed, folded and unfolded, implicated and explicated, as
well as complicated. But implication is the fundamental theme because it appears twice in the system of the fold:
complication is an implication in oneself, *explication* an implication in something else. Together they form *a logic of
expression*" (Zourabichvili 2012: 105, last emphasis mine). This is a unique kind of logic, one without any form of
identity. We must conceive of duration without the forms of identity. Duration is ever a "play of positive differences,
where differences are always included within one another. Its consistency is no longer that of the identical but of
distance, reciprocal implication. It now designates the *univocal*, or the possibility of treating the manifold of what exists
as universal self-modification (Nature), where each being implicates all the others by responding in its manner to
difference as pure question" (Zourabichvili 2012: 104).

[437] The forms of identity will no more determine the structure of durative continuity than the forms of empirical
consciousness the transcendental ground. Bergson critiques those who would journey to the heart of time with the
categories of classical logic and the tenets of representational thought. These should no more constrain the intellection of
time than that of the transcendental field. Deleuze insists that the recognition of the corrosive action of time upon every
form of identity is necessary for fulfilling the critical project: "If the greatest initiative of transcendental philosophy was
to introduce the form of time into thought as such, then this pure and empty form in turn signifies indissolubly the
death of God, the fractured I and the passive self. It is true that Kant did not pursue this initiative: both God and the I
underwent a practical resurrection" (Deleuze 1994: 87). Deleuze identifies this pure and empty form of time with the
third synthesis of time, a time "liberated from its overly simple circular figure, freed from the events which made up its
content, its relation to movement overturned; in short, time presenting itself as an empty and pure form. Time itself
unfolds (that is, apparently ceases to be a circle) instead of things unfolding within it (following the overly simple circular
figure). It ceases to be cardinal and becomes ordinal, a pure [intensive] order of time" (Deleuze 1994: 88). Like Spinoza's
attributes to substance, the syntheses (though mutually irreducible) co-constitute a uniquely immanent time.

III. *Making differential topology safe for the philosophy of time,* or Illicit Continuities: The Riemannian Monstrosity at the heart of Deleuze's *Bergsonism*

> We find ourselves on the brink of a decision, a decision to break with the arcana of the one and the multiple in which philosophy is born and buried, phoenix of its own sophistic consumption. This decision can take no other form than the following: the one *is not*.
>
> > –Badiou, *Being and Event* pg. 23

> To apparent changes, Bergson opposes the metempirical idea of a "transubstantiation," of a central becoming that carries all being into another being, and contradicts the principle of identity. To partitive metabolisms, *Creative Evolution* will oppose the prodigy of radical mutation, to evolutionist pseudo-historicism, revolutionary change. To the static prejudice of a pellicular temporality, the second Oxford lecture on "The Perception of Change" will oppose the paradoxical and almost violent idea of an "ontic becoming": a contradictory idea that constrains us to invert all our habits, to distort our logic, and to undertake a profound inner reform.
>
> > –Jankélévitch, *Henri Bergson* pg. 48

Second Problem: *Continuous multiplicities are manifolds, but manifolds are geometrical!*

<u>North star for this problem</u>:: Are Bergson's "continuous multiplicities" really manifolds? Is durative continuity—predicated alike of lived experience and of the pure past—absolutely hostile to mathematics? Must mathematics falsify duration? Is every formal discourse inadequate to time? How could differential topology be safe for the philosophy of time?

<u>Method</u>: outwardly bending spiral

<u>Problem 2, Bend 1</u>: Bergson places severe restrictions upon the inquiry into time: no formal languages, no mathematics, no concepts. What we say of duration we say by metaphor—moments "melt into and permeate one another"—or by negation: time is *not* space, it does *not* admit of any quantitative measure, temporal elements are *not* "mutually external" to one another. What if we wish to inquire differently? What if we exhaust metaphor and negation? Can we *complement* Bergson's

metaphorical scaffolds and negative critiques with philosophical constructions? What if, eager to evade the charge of irrationalism, we engage time in a more formal register? Deleuze's extends Bergson's philosophy by means of an unlikely ally: differential topology. This would be monstrous to Bergson. *All the better*, Deleuze would respond, *so long as we can present this monster as a legitimate, if still unwelcome, heir*.[438] Bergson would resist conscripting topology for any inquiry into duration, insisting that mathematics always falsifies duration. Why? It cannot but spatialise: mathematics necessarily arrays its objects in a homogeneous space, externalizing them one from the other, and operates upon them with the assurance that no local change changes immediately the whole. But the elements of concrete duration are not external to one another, and a change to any part changes immediately the whole:

> Pure duration might well be nothing but a succession of qualitative changes, which melt into and permeate one another, without precise outlines, without any tendency to externalize themselves in relation to one another, without any affiliation with number: it would be pure heterogeneity. (Bergson 2001: 104)

If definite distinctions, sharp delineations, and locally-confined operations are indeed necessary conditions for mathematical activity, then that activity can be only inadequate to durative flux. Bergson insists that "duration, as duration, and motion, as motion, elude the grasp of mathematics: of time everything slips through its fingers but simultaneity, and of movement everything but immobility" (Bergson 2001: 234). Yet Bergson develops a perfectly rigorous *thought* that does not spatialise time, *viz.*, intuition. Might there be a mathematical echo of it? Does all mathematical

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[438] For Deleuze, the only legitimate way to read a philosopher is to beget a monster. But not just any monster will do: it must be one that the philosopher can recognize as her own. It must come to life by a current latent already within the system—begotten not by rude imposition but by vivifying a suppressed tendency.

thought involve number and measure? Is there not mathematics beyond number? or geometry apart

from measure? Again Bergson would resist:

> none of our mathematical symbols can express the fact that it is the moving body which is in
>
> motion rather than the axes or the points to which it is referred. And this is very natural
>
> because these symbols, *always meant for measurement*, can express only distances. (Bergson
>
> 1988: 194, emphasis mine)[439]

 As Bergson was writing this Henri Poincaré was resurrecting Leibniz's *analysis situs*, preparing the

way for a mathematical discourse that refuses to inscribe number and measure in its foundations:

topology.[440] If topology admits of number and measure, it does so only indirectly.[441] Could this

discourse be the mathematical echo of intuition? Two claims underlie Bergson's proclamation that

mathematics is inadequate to duration: first, the intellect necessarily spatialises its objects; second,

mathematics is necessarily intellectual. But the intellect's spatialising tendencies appeared only after a

long evolution. If the first claim forecloses unjustly upon any future intellectual evolution, the

second accedes to a narrow conception of mathematics. Bergson himself acknowledges this: like

other evolutionary products, intellectual activities

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[439] Bergson extends the prohibition to any durative whole: "Organic *creation,* on the contrary, the evolutionary phenomena which properly constitute life, we cannot in any way subject to a mathematical treatment" (Bergson 1983: 20). The mathematical treatment here is the one familiar to physics: it calculates the future from the present. Such a mathematics concerns only initial and final conditions, not the interval. But "evolution implies a real persistence of the past in the present, a duration which is, as it were, a hyphen, a connecting link. In other words, to know a living being or *natural system* is to get at the very interval of duration, while the knowledge of an *artificial* or *mathematical system* applies only to the extremity" (Bergson 1983: 22–23). How would a "Riemannian geometry of sufficient reason" not provoke Bergson's censure? Since applicable to nature, any such sufficient reason would have to involve time. But that it is geometric would seem to preclude such involvement.

[440] Poincaré's *Analysis Situs* papers were published in 1895, a year before *Matter and Memory.*

[441] It is possible to affix an algebraic object like the first fundamental group to a topological space. A group is not essentially quantitative, though it admits of quantitative expression. The first fundamental group considers the equivalence class of all loops from a point to itself. It is true that this group secretes a number, but it does so indirectly. Like Cantor's continuum, it *lends* itself to quantitative expression without being essentially quantitative.

are peculiar to that phase of its history in which life finds itself at the moment of producing

the form: how could we know beforehand a situation that is unique of its kind, that has

never yet occurred and will never occur again? (Bergson 1983: 28)[442]

The poles of the problem that drive apart Deleuze and Bergson can be fixed by two questions: *Are*

durative wholes unities? Does "the intellect" always falsify duration? Bergson answers "yes" to both

questions. Deleuze demurs: Bergson's absolute prohibition upon the mathematical inquiry into time

speaks, if not of haste, then (worse) of a residual dogmatism. The more critical Deleuze answers with

a qualified "no" to both questions: continuous multiplicities (equivalently, durative wholes) are not

unities,[443] and the intellect *almost* always falsifies duration. Deleuze forges a durative thought out "of

the failure of representation, of the loss of identities, and of the discovery of all the forces that act

under the representation of the identical" (Deleuze 1994: xix). Bergson's decision to cast continuous

multiplicities as *unities* rather than as *pure multiplicities* grounds his thesis that mathematics is

necessarily inadequate to duration. But this decision is dogmatic; by refusing it, Deleuze authorizes

his use of topology for the inquiry into time.

Problem 2, Bend 2: Manifolds, metrics, multiplicities

deft channelers patterning air

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[442] Bergson chastises the intellect for *supposing* itself to be in possession of the universal criteria for truth: "Our reason, incorrigibly presumptuous, imagines itself possessed, by right of birth or by right of conquest, innate or acquired, of all the essential elements of the knowledge of truth. Even where it confesses that it does not know the object presented to it, it believes that its ignorance consists only in not knowing which one of its time-honored categories suits the new object. In what drawer, ready to open, shall we put it? In what garment, already cut out, shall we clothe it? Is it this, or that, or the other thing? And 'this,' and 'that,' and 'the other thing' are always something already conceived, already known. *The idea that for a new object we might have to create a new concept, perhaps a new method of thinking, is deeply repugnant to us*" (Bergson 1983: 48, emphasis mine). But by making his absolute prohibition, has not Bergson himself acceded to the intellect's self-presentation? Why decide against the possibility of its becoming-other? Bergson, so averse to irrationalism, makes here an irrational decision.

[443] They are open wholes, precluding self-identification; they are assemblages in motion, irreducibly multiple, foregoing static identity for dynamic multiplicity.

—Ronald Johnson, "Ark 67, Arches I"

Continuous multiplicities have a rich structure, one supposedly inimical to any geometrical property.

Yet they are continuous. Is not continuity inherently mathematical?[444] If mathematics is so adept at

inquiring into continuity, why does the continuity of continuous multiplicities repel mathematical

inquiry? Why is the continuity of lived experience not amenable to any mathematical treatment?

Bergson left implicit one of his key theses: durative continuity is a non-spatial continuity. This non-

spatial continuity is the continuity of continuous multiplicities, organic wholes, lived experience, and

the pure past.[445] Curiously, it resists representation as much as duration itself. Never suppose that

even a wildly turbulent surface could represent durative continuity! Bergson would insist upon a

difference in kind between spatial continuity and durative continuity. Leave it to Deleuze to poison

this rather neat schema. He convicts Bergson of "borrowing" the notion of a continuous multiplicity

from mathematics: "This is why we must attach so much importance to the way in which Bergson,

borrowing [from Riemann] *the notion of multiplicity*, gives it renewed range and distribution"

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[444] Concrete experience is nothing but a continuous "flux of fleeting shades merging ceaselessly into each other" (Bergson 1983: 3). Of course, it is hard to see how experience can be simultaneously so complex—saturated with irreducible intensities, inundated with heterogeneous dimensions of a heterogeneous past, convulsed by present encounters, channeled by habits contracted of its lived history—without admitting of any discontinuity. "A thousand incidents arise, which seem to be cut off from those which precede them, and to be disconnected from those which follow. Discontinuous though they appear, however, in point of fact they stand out against the continuity of a background on which they are designed, and to which indeed they owe the intervals that separate them; they are the beats of the drum which break forth here and there in the symphony" (Bergson 1983: 3). This background is emphatically not that of a self or of any identical stratum but that of an impersonal durative flux.

[445] As the opening pages of *Creative Evolution* make clear, apparently distinct species are merely differences of accent upon a more profound virtual continuum. This virtual continuum is Life—élan vital, conceived of as a virtual problem. The same is true of the apparently discontinuous conscious states of lived experience: they are aspects upon a "fluid" durative mass "swelling" always behind a being (Bergson 1983: 3; 2). Perversely, Bergson insists this durative continuum is the primary constituent of a life: there is "no stuff more resistant nor more substantial" (Bergson 1983: 4). To think, duration as productive substance—more elemental than the bodies it secretes!

(Deleuze 1988: 40, emphasis mine). Deleuze does not suggest that this secret Riemannian inheritance annuls Bergson's inquiry into time, though it does violate the latter's immanent criteria; it can only invigorate it: Bergson's inquiry into time preserves within itself a place for mathematics. After all, if mathematics inspires Bergson's conception of continuous multiplicities, how can he prohibit mathematics from expressing anything of duration?

What exactly does Bergson "borrow" from Riemann? Does the concept of a manifold have a non-mathematical core? If not, can it be stripped of its mathematical content? And what is a Riemannian manifold? We will not present here a formal definition. It is essentially a space with a metric. A metric allows one to measure the distance between two infinitely near points.[446] The metric encodes nearly all of the information about the manifold: "the length of curves, angles, and the size of given regions on the surface *depends on it alone*" (Weyl 1952: 87, emphasis mine). Length, angles, curvature—these properties are at the heart of any geometrical investigation. But this metric can vary from point to point: a continuous manifold is an "amorphous collection of juxtaposed pieces" with only the most minimal of determinations—that "each neighborhood is like a small bit of Euclidean space" (Lautman 2011: 98).[447] It is easy to see what inspired Deleuze to append this secret genealogy to Bergson's multiplicities: manifolds couple maximal variation with impressive conceptual control—perfect for a sufficient reason adequate to universal flux. But even if manifolds allow for an impressive variability, Bergson would still object: unlike Riemannian manifolds, continuous multiplicities do not admit of a measure of any kind. Durative states are "living things,

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[446] Riemann presents "a quadratic differential form which generalizes the Euclidean formula of the distance between points: $ds^2 = du_1{}^2 + du_2{}^2$" (Lautman 2011: 97–8). The latter "Euclidean metric" is merely a special case of a more general formula; it applies only to flat, two-dimensional manifolds.
[447] Indeed, "the connection from one neighbourhood to the next is not defined and can be done in an infinity of ways" (Lautman 2011: 98).

constantly *becoming*, [enduring] as states not amenable to measure, which permeate one another and of which the succession in duration has nothing in common with juxtaposition in homogeneous space" (Bergson 2001: 231). So if a metric is at the heart of Riemann's conception of manifolds, could Bergson really have "borrowed" his conception of multiplicities from manifolds? It would be unwelcome news to Bergson that his conception of multiplicities has a geometrical provenance, for duration must resist any contamination by mathematics: duration is "a qualitative multiplicity, with no likeness to number" (Bergson 2001: 226). All the more so must the inquiry into time avoid even indirect contamination by number.

There are two ways to make sense of Deleuze's claim that continuous multiplicities have a mathematical provenance: **first**, purge manifolds of all mathematical traces. This does not seem very promising! Two things ground the meaning of a mathematical concept: its use in mathematical proofs and its formal expression. Since both involve intellection, Bergson would have to excise both of them from the notion of a "manifold" in order to borrow this notion for the philosophy of duration. But if these are excised is anything left? Have we not burnt away all content, leaving not even the shell of a notion? **Second**: find in duration, if not a hidden mathematical aspect, then an aspect amenable to a specific kind of mathematics, one adequate to pure heterogeneity. Such a "science of the pure multiple" might bring into focus a different aspect of time—one that would not supplant but complement the first-person perspective at the heart of Bergson's philosophy. That multiplicities are not unities, that they evade the dialectic of the one and the many, will be crucial for this second path:

The word "multiplicity" is not there as a vague noun corresponding to the well-known philosophical notion of the Multiple in general. In fact *for Bergson it is not a question of opposing the Multiple to the One but, on the contrary, of distinguishing two types of multiplicity* (Deleuze 1988: 39)[448]

If Deleuze wishes to evade the hoary old dialectic of the One and the Many, it is not simply to replace one categorical scheme with another. Rather, it is to overcome Bergson's prohibition upon using mathematics to inquire into time.

Problem 2, Bend 3: A Science of the Pure Multiple

"The qualitative heterogeneity of time… implies unity at the very moment in which time most violently contradicts unity" (Jankélévitch 2015: 34). We'll consider the **second part** of this quote first: it is true that "the qualitative heterogeneity of time" contradicts unity: "it is hard to see how we can maintain the unity of that which ceaselessly changes in nature—if not verbally—since nothing is conserved of its identity" (Zourabichvili 2012: 102).[449] Durative flux is so heterogeneous that any attempt to confine its fluctuations—by fixing a moment of transition or by separating out two elements of the durative flux—only unleashes ever more convulsive cascades of qualitative change.[450]

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[448] Riemann has a sufficiently genetic perspective. He distinguishing between multiplicities by considering what *generates* their metrics: "in a discrete manifold, the ground of its metric relations is given in the notion of it, while in a continuous manifold, the ground must come from outside of it ... in the binding forces which act upon it" (Riemann 1999: 661; translation modified). Why is the metric of a discrete manifold implicit to it? In a discrete manifold, "a natural class of metric imposes itself immediately because the discrete tolerates only a definite proximity for each of its elements" (Châtelet 2010: 91).

[449] The present "is contradiction vanquished and perpetually resolved; better still, it is this resolution itself, considered in its transitive aspect. Hence the thickness, the concrete plenitude and animation of becoming: unity is never done with putting the recalcitrant originalities in their place, for the protest of the multiple is not easily stifled" (Jankélévitch 2015: 32). Except that there is no *unity* against which the multiple might protest. The relation of problem to solution respects the priority of the pure multiple, which has no need of the forms of unity and hence no regard for the interminable dialectic of the one and the many.

[450] From the outset, Bergson "defined duration as a 'multiplicity' or a divisibility which does not divide without changing its nature" (Deleuze 1994: 331).

These changes neither presuppose a form of identity nor require reference to some enduring identity. In fact, Bergson has undermined the very notion of an "enduring identity": such a notion verges on outright contradiction, as duration pre-empts every form of identity. But this does not mean that durative flux lacks consistency, structure, or organization! It lacks *metrical* structure, *quantitative* order, and *logical* consistency. It is not hard to perceive that the consistency of durative flux is a very peculiar sort of consistency. How to conceive of it? Not as the logical consistency of an axiomatic system. That kind of consistency is unthinkable without the forms of identity: minimally, the elements of such systems must be self-identical. Further, certain logical elements (such as axioms) are exempt from change. This violates a central tenet of Bergson's philosophy: nothing not in flux.[451]

The ubiquity of fluctuation does not preclude the possibility of discerning certain *invariants* amidst this flux. Crucially, invariants are not transcendent but immanent. Further, they persist amidst total flux: we need not fix any substrate beneath them. They will be indispensible for conceiving of the consistency of a continuous multiplicity without reference to any identity.[452]

Bergson is right to insist that a formal system that privileges any form of identity is inadequate to duration.[453] "To identify" *is* "to separate out": the process of identifying is strictly equivalent to the process of separating out. The latter is the mark of a spatialising operation, one that

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[451] "Change is far more radical than we are at first inclined to suppose" (Bergson 1983: 1).

[452] A logic need have neither an axiom of identity nor even a law of excluded middle to be a logic that enlists the forms of identity. It is enough for it to handle "elements" that are self-identical and not radically metamorphic. Whether in propositional logic or in set theory, the elements are only ever themselves, even when they enter into relations with other elements. In the context of a proof, these relations explicate the implicit structure of these elements. We await a logic that dispenses not only with laws that prioritize the forms of identity but with any presentation that fixes atomic individuals. The logic of expression—equivalently, the dynamics of virtual problems—is just such a logic. By identifying problems with continuous multiplicities, Deleuze was able to develop covertly a logic of duration: the dynamics of problems is a dynamics of lived experience or of any durative whole.

[453] He does distinguish between a "mathematical one" and a whole: "This life common to all the living undoubtedly presents many gaps and incoherences, and again it is not so mathematically *one* that it cannot allow each being to become individualized to a certain degree. But it forms a single whole, none the less" (Bergson 1983: 43).

can only falsify concrete duration. If there is a mode of intellection that forsakes the process of identification, that discards "the One", this mode might be adequate to a flux whose elements are inseparable from one another even as they remain heterogeneous to one another. This is precisely the wager animating Deleuze's extension of Bergson's philosophy, a wager that Bergson himself solicited. Let's return to the **first part** of the above quote: is it true that a qualitative multiplicity, where every part permeates every other part, "implies unity"? Is the pure past a unity? Bergson himself speaks of the "undivided unity of our perception" (Bergson 1988: 219). This is surprising: perception—this durative whole of reciprocally interpenetrating but irreducibly heterogeneous levels, fusing elements from the pure past with those of the material present—is a unity. And it is such despite never being punctual: however far reduced, our present "necessarily occupies a duration" (Bergson 1988: 137).[454] It is a complexly-structured pulse. And far from pre-empting the unity of concrete perception, memory—this quintessentially durative element—seems to Bergson to ground its unity: memory's capacity to contract moments into a "single intuition" grounds its contributions to present praxis and to free action. The

> primary function [of memory] is to evoke all those past perceptions which are analogous to the present perception, to recall to us what preceded and followed them, and so to suggest to us that decision which is the most useful. But this is not all . By allowing us to grasp in a *single intuition* multiple moments of duration, it frees us from the movement of the flow of things, that is to say, from the rhythm of necessity. (Bergson 1988: 228, emphasis mine)

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[454] It is hard not to see Bergson's insistence upon unity as a last vestige of the dogmatic image of thought. Identity and unity are the rational core of an image that is mostly husk. We cannot fault Bergson too much for his fealty to the core of this dogma: it seems impossible to do away definitively with the forms of identity. That Bergson is elsewhere so alive to the intrusions of this dogma indicates that the prominence of identity will not be so easy to overcome. Deleuze contends that nonetheless we must do so. Duration itself demands it!

Why cast continuous multiplicities as unities? Why allow durative wholes to bear identities? Insisting that durative wholes are unities *supports* Bergson's absolute prohibition upon inquiring into time by intellectual means. Suppose that purely heterogeneous experience is unitary. Its unity obliges us to treat it by a formal system that possesses a form of unity. If it did not countenance unity, it could not grasp the unitary character of this durative whole. It would miss an important aspect of its structure. A logic that proceeded (somehow) without a form of unity would be inadequate to time! Unable to express the full structure of duration, it would falsify it. So if durative wholes are unitary, we must inquire into them by means of a discourse that enlists a form of unity or identity. But to approach a durative whole by means of a discourse that enlists a form of identity would also be inadequate to it, since durative wholes "contradict unity" even as they affirm it. So the unitary character of durative wholes *shields* them from discursive presentation. No discourse enlisting a form of identity could ever be adequate to a durative whole, even though it obliges every inquiry to countenance its unitary character. Further (and more contentiously), a discourse that enlists a form of identity *is necessarily* a logical discourse: wherever there is a form of identity, there is an implicit logic—or so Bergson would argue. But logic, since inherently spatial, is only inadequate to time. We glimpse here a reason for Bergson's apparently dogmatic insistence that durative wholes are unities: their unitary character *supports* his spatialisation theses—that is, that the intellect (arraying its objects in a homogeneous space, externalizing them one to the other) can be only inadequate to time.

Deleuze diverges from Bergson precisely here. Do we need to conceive of continuous multiplicities as unities? Do we need to identify organic wholes? *No!* Does the qualitative

heterogeneity of time imply unity? *No*—nor is it the sum of "many" elements.[455] Deleuze forsakes

the dialectic of the One and the Many for the creations of pure multiplicity. Excising every form of

identity, refusing every affirmation of unity—this is a way to liberate Bergson's philosophy from

certain dogmatic strictures placed upon it by Bergson himself. Rather than challenge Bergson's

prioritization of first-person experience, his metaphorical descriptions of the structure of duration, or

his insights into the incompatibility of duration with spatial forms of thought, Deleuze complements

them with the mathematical armature that both confirms Bergson's insights and elaborate them

anew. If Deleuze faults Bergson for anything, it is this: his devotion to the forms of identity blinds

him to the possibility that certain formal languages might express something of the structure of time.

We confront now two questions: First, *is there a formal language that, like duration, resists every form*

of identity? Second, *what kind of consistency resists every form of identity?*

It is not for purely scholastic reasons that we resist casting durative wholes as unities. It is to

force open unjustly foreclosed lines of inquiry. How perverse to insist that an irreducibly

heterogeneous multiplicity that "necessarily presupposes the fundamental heterogeneity of the states

it organizes" *must* be thought of itself as a unity (Jankélévitch 2015: 32)! Is there really no other way

to conceive of a whole? Why not cast it as irreducibly multiple, consistent beyond the lenses of that

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[455] Unity presents less of a problem—so long as we conceive of it in the way that Bergson conceives of organic wholes: as open and provisional. Identity is not salvageable: where a unity can be dynamic, identity is always static. It shades too quickly into essence. Though it could be admitted, Deleuze wishes to do away with "unity" because it is too close to the forms of identity. Better to replace it with multiplicity. And rather than unitary, we could say that durative wholes—such as immediate intuition and the pure past—are unique. We can insist that the unique "virtual character" of a life is not a unity: "But have we not learned that personality evolves by divergence and radiance, deploying little by little a plurality of tendencies primitively compressed in the unity of our virtual character?" (Jankélévitch 2015: 31). Following Spinoza, we oppose unity to unicity—in Latin: *unius* to *unica*. Rather than unitary spaces, unique atmospheres.

overly-rigid *one* and the arbitrarily-summed *many*?[456] If Deleuze concedes the second part of

Jankélévitch's thesis—that qualitative heterogeneity contradicts unity—he refuses the first:

multiplicities do not "imply" unity.

Deleuze would transform Bergson's absolute prohibition against formal languages into a

partial prohibition. It is true that most formal languages express nothing of time. Yet we could hope

that, even if not yet in existence, a mathematics that expresses something of time might be

forthcoming. Deleuze's gambit is this: **first**, accept that time contradicts unity and annuls identity—

that no formal system bearing within itself a form of identity could be adequate to its structure.

Second, accept that such formal systems spatialise time. **Third**, insist that a qualitative heterogeneity

is a pure multiplicity. **Fourth**, hold out hope for a science of the pure multiple, that is, a formal

system that neither presupposes a form of identity, demands mutual externality amongst its objects,

nor projects these objects into a homogeneous space. Rather than falsify time, such a formal system

could trace the lineaments of its structure. As it is, our conception of time is quite poor: we have

little more than immediate experience and metaphors. Might there be lenses that focus differently

upon the turbulent heterogeneity of duration?[457] Deleuze wagers that topology presents the

rudiments of just such a "theory of the pure multiple" (Badiou 2005: 38).[458] The motivation for

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[456] We disagree that "evolution in general is nothing but this continuing transition from the one to the many, this progressive blossoming of an identity that matures in plurality" (Jankélévitch 2015: 31-32). That continuous processes resist the law of excluded middle (Brouwer) suggests that life and evolution resist any form of identity, and unfold without invocation of the one or the many. Bergson sometimes concurs: "intuition may bring the intellect to recognize that life does not quite go into the category of the many nor yet into that of the one" (Bergson 1983: 177). No resolution into simple forms, no reduction to identity, no imposition of unity, no oscillation between one and many, no immutable essences, no transcendent identities: pure multiplicity, cascading dynamics, ubiquitous metamorphosis.

[457] Though formal discourse draws us up from the depths of immediate intuition, a science of the pure multiple could present, however indirectly, aspects of duration that might evade both immediate experience and intuitive thought.

[458] Deleuze would reject absolutely Badiou's nomination of set theory (ZFC) as an appropriate science of the pure multiple. Still, Badiou presents an interesting counter-point—though (with Zalamea) I resist his "reduction" of

Deleuze's monstrous nomination of Riemann's manifolds as the inspiration for Bergson's theory of multiplicities is clear: *to overcome Bergson's prohibitions, to make topology safe for the philosophy of time*.[459] If successful, Deleuze's core metaphysical theses will be affirmed all the more emphatically: virtual problems are the ground of all things; an adequate conception of actuality must involve virtuality; the topological structure of a virtual problem acts upon its actual solutions just as those solutions act back upon that topological structure. This dynamism anchors the Riemannian "geometry of sufficient reason" adequate at last to a genetic philosophy of nature (Deleuze 1994: 162).

Problem 2, Bend 4: Consistency

What does it mean for qualitative heterogeneity to resist unity? How can it cohere without being self-identical? What endures without being one? The implicative structure of the intensive singularities that constitute a multiplicity illuminates this curious kind of consistency. That each singularity express the whole, that each expression alters the whole, that this alteration finds expression in each singularity: this interpenetrating dynamic is an enduring form of consistency that neither references nor admits any unity or self-identity. If it endures immanently, without a transcendent identity, it is because its consistency is problematic: "Duration is not a thing apart: it is

mathematics to set theory. Badiou denies that "the One" has any being, while conceding nonetheless that "there is oneness": where this is unity, it is always the result of an operation (Badiou 2005: 24). Strictly speaking, the one is not. But Badiou frames this as a *decision*: "my entire discourse originates in an axiomatic decision; that of the non-being of the one" (Badiou 2005: 31). Deleuze does not abandon the hope of deducing the non-being of the one. Any self-respecting Riemannian geometry of sufficient reason would hold out hope for a deduction over a decision.

[459] That "the image of the sheaf is everywhere in Bergson" suggests that fiber-bundle topology might have sketched already new lines for Bergson's thought (Jankélévitch 2015: 31). Besides the conic diagrams of the past, we have: "life is tendency, and the essence of a tendency is to develop in the form of a sheaf, creating, by its very growth, divergent directions among which its impetus is divided" (Bergson 1983: 99). Bergson objects to geometry on the grounds that it's always extrinsic (Bergson 1983: 7). But can there be a genetic geometry? One that does not treat of inert, already given figures but that generates actively its objects in its study of them? Is there a truly intrinsic geometry? If so, then we have a candidate for a mathematics adequate to durative flux.

but the spontaneous continuation of these dissonances infinitely organizing and *resolving* themselves" (Jankélévitch 2015: 38, emphasis mine). If consistency is an enduring problem, it requires continuous attention. *Submerge these dissonances in an enduring whole*: mutual subjection to this imperative binds the radically heterogeneous elements in *a* multiplicity. So long as we conceive of it as a one or as a many, so long as we sacrifice its consistency to unity, so long as we condemn reciprocally-permeating dynamism to "spatial" forms of organization, the solidarity defining this disparate mesh of singularities will seem either a contradiction or a miracle. But pure multiplicity ensures that we need not acquiesce to either of these impressions. It crosses a threshold, articulating a solidarity that is unintelligible to the dogmatic image of thought:

> Multiplicity must not designate a combination of the many and the one, but rather an organization belonging to the many as such, which has no need whatsoever of unity in order to form a system. The one and the many are concepts of the understanding which make up the overly loose mesh of a distorted dialectic which proceeds by opposition. The biggest fish pass through. Can we believe that the concrete is attained when the inadequacy of an abstraction is compensated for by the inadequacy of its opposite? We can say "the one is multiple, the multiple one" forever…. (Deleuze 1994: 182).

We need not appeal to mystical experience, with its fabled coincidence of opposites, to glimpse a consistency, if not beyond, then other than that consistency knit of the one and the many.

Concretely lived duration answers such an appeal: it unseats "identity" from its privileged place amongst the categories, skirting the aporias of the famed dialectic:[460]

> Life ignores the contradictions that drive the intellect to despair. Does becoming, this mix of being and nonbeing, not elude the principle of the excluded middle? When life falls into order in lived duration, *it is not bound to choose between the one and the many*, between identity without nuances and alterity without coherence. Bergson refuses to get caught between these opposites…. (Jankélévitch 2015: 31, emphasis mine)

But that duration repels classical logic—with its dogmatic devotion to the law of excluded middle—does not imply that time repels every logic. This is the lesson of Brouwer's epigones: continuity resists classical logic, but this resistance does not occasion simpe illogicism. As Lautman would insist, *resistance* is the correlate of genetic solicitation. We overcome this resistance to identity by generating new logics: there are infinitely many logics beyond classical logic, just as there are infinitely many geometries beyond Euclidean geometry. Any inquiry into durative wholes—whether virtual problems or lived experience—that bears within itself a form of identity will only sabotage itself.[461]

Deleuze delineates the character of this "consistency without identity" in *Difference and Repetition*. The logic of virtual problems, the dynamics of continuous multiplicities, the structure of durative wholes—all exemplify the enduring consistency of pure multiplicities. The continuity of

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[460] "Since its Parmenidean organization, ontology has built the portico of its ruined temple out of the following experience: what *presents* itself is essentially multiple; *what* presents itself is essentially one. The reciprocity of the one and being is certainly the inaugural axiom of philosophy—Leibniz's formulation is excellent; 'What is not *a* being is not a *being*'—yet it is also its impasse; an impasse in which the revolving doors of Plato's *Parmenides* introduce us to the singular joy of never seeing the moment of conclusion arrive" (Badiou 2005: 23). Bergson wishes to overcome "the aporias relative to the One and the Many discussed in Plato's *Philebus* and *Parmenides*" (Jankélévitch 2015: 30). We court these aporias no longer.

[461] "Schelling already said it: life is a thousand times more ingenious than dogmatic philosophy, which comes up against the principle of disjunction and lets itself be torn apart between the extremes" (Jankélévitch 2015: 31). It's less *becoming*, more *durative continuity* that resists *classical* logic.

such emphatically heterogeneous wholes is a function of an unbreakable *communication* amongst

mutually irreducible elements. As in a life, the chaotic communication amongst singly mutating and

radically disparate orders does not just *constitute* the structure of a radically metamorphic durative

whole; it *is* it. Avoid the temptation: *no stably-enduring "substratum" upon which these disparate orders*

endure (Bergson 1983: 4)! Stability is inimical to durative flux: there is nothing other than mutual

contamination amongst reciprocally mutating yet immediately communicating orders.[462] This

communication is not an orderly debate but an anarchic denunciation: each element expresses the

whole from its unique aspect, without any need of circulating through or presupposing a

harmonizing centre. It is the expression that follows upon a nomadic distribution, one lacking the

hierarchy and consonance of sedentary distributions.[463] But this is not communication without

constraint; far from it: these aspects are aspects *of* a problem. Neither harmonious nor

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[462] Bergson distinguishes between the differently-accented but unbreakably continuous intensive flow of concrete duration and the hallucinatory, symbolic continuity of divisible extensity: we "throw beneath the [real] *continuity* of sensible qualities, that is to say, beneath concrete extensity, a network, of which the meshes may be altered to any shape whatsoever and become as small as we please: this substratum which is merely conceived, this wholly ideal diagram of arbitrary and infinite divisibility, is homogeneous space" (Bergson 1988: 210, emphasis mine). "The whole of matter is made to appear to our thought as an immense piece of cloth in which we can cut out what we will and sew it together again as we please. Let us note, in passing, that it is this power that we affirm when we say that there is a *space*, that is to say, a homogeneous and empty medium, infinite and infinitely divisible, lending itself indifferently to any mode of decomposition whatsoever. A medium of this kind is never perceived; it is only conceived. What is perceived is extension colored, resistant, divided according to the lines which mark out the boundaries of real bodies or of their real elements. But when we think of our power over this matter, that is to say, of our faculty of decomposing and recomposing it as we please, we project the whole of these possible decompositions and recompositions behind real extension in the form of a homogeneous space, empty and indifferent, which is supposed to underlie it. This space is therefore, pre-eminently, the plan of our possible action on things" (Bergson 1983: 157). Pure intuition is an "undivided continuity" (Bergson 1988: 183).

[463] Aspects "do not diverge without mutually implicating each other, without each 'becoming' the other in an unequal exchange that does not amount to a mere permutation" (Zourabichvili 2012: 121). Since anarchic, the aspects of a problem have the autonomy that comes from expressing a unique aspect without any need of affirming the identity of oneself or the unity of the whole. Even autonomous, they are subject to its topology whose progressive evolution they inflect. "Two differences enter into communication and resonate together, on either side of their difference. Each envelops the other, repeats it or replays it on its own level. The reciprocity between them, even if it is unequal, is nonetheless a full reciprocity, and it is therefore not enough to induce a cleavage between active and passive. What is more, each difference is alternately implicating and implicated, which is to say affected and affecting" (Zourabichvili 2012: 117).

complementary, they are yet bound to a mutating whole whose excesses they are obliged to dissipate. "Deleuze's most profound idea is perhaps this: difference is just as much communication, contagion of heterogeneities; in other words, that a divergence never erupts without a reciprocal contamination of [aspects]" (Zourabichvili 2012: 121). It is a most profound idea because it expresses *in nuce* both the structure of durative (non-spatial) continuity and the curious "part-whole" logic of durative dynamics. That aspects remain complicit even as they diverge, that they resonate no matter the actual "distance", is a condition for the enduring consistency of all durative wholes:

> the consistency of the virtual is the very mobility of [aspects], each enveloping the others only by being enveloped by them in its turn, on either side of a fugitive frontier. This mobility, or this incessant overlapping, will vanish with the realization of becoming, that is to say, with the accomplished actualization of one of the [aspects]. The latter puts a stop to the positive distance [between aspects], and passes from the field of absolute differences to that of representation and action. (Zourabichvili 2012: 122–123)

But even an actualization—since it is a selection, a contraction—neither cancels completely this "incessant overlapping" nor suppresses entirely the contaminating noise of aspects.[464] Actualization dims the noise, but not completely: in a life, every becoming implicates every other—even when,

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[464] That, in a becoming, the aspects communicate all the more insistently—blurring them together, making them indiscernible—inspires Deleuze and Guattari's conception of becoming as a "bloc" opening in all directions and implicating all orders (Deleuze and Guattari 1987). We see this in analytical mechanics: for the actual trajectory of the system to preserve its sufficient reason, it continues to implicate the continuum-many trajectories it excluded. Châtelet is right to read those zones of indiscernibility, those sites of indeterminate suggestion, those places of productive undecidability in geometry, analysis, and logic as intra-mathematical traces of the virtual. Even mathematics is not safe from the unexpected resonance of disparate aspects, from the secret complicity of distant constructions, from the vast conspiracies of the virtual. Where there is genuinely novel creation in mathematics, there is the virtual.

especially when, that becoming is a rupture.[465] A life or any durative whole (perceived

problematically, experienced at its metamorphic ground) has a "secret coherence which establishes

itself only by excluding my own coherence, my own identity, the identity of the self, the world and

God" (Deleuze 1994: 90–91).[466]

It should be clear that the consistency of pure multiplicities draws upon the curious relation

between heterogeneity and continuity in duration.[467] We have delineated elsewhere how this

heterogeneous flow, consisting of mutually irreducible singularities, is nonetheless continuous—and

that this continuity is no surreptitious supposition of identity. The key is that each singularity—

whether the lived-present of a life, an eddy in concrete extensity, or a quality in lived experience—

has "a certain thickness": it is a vortical bolus, opening onto a vertiginous intensive depth, animated

by the greater virtual space enveloping it. If the relation between continuity and heterogeneity

appears paradoxical, it is because of the residual fealty of the intellect to the forms of identity: "if the

mechanical intellect operates in a world of homogeneity it does so because it would be quite

incapable of overcoming so many [singularities] springing up if it had only a static identity at its

disposal" (Jankélévitch 2015: 35). If the intellect spatialises, it is to avert its eyes from the paralyzing

face of durative flux.[468] The lack of "distinction" amongst singularities, the vertiginous abyss

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[465] "If it is true that one point of view only actualizes itself by eclipsing [*faisant passer*] another—since two points of view cannot coexist in actuality—the process nevertheless implicates the virtual coexistence of points of view, their envelopment and mutual reprisal: 'point of view on a point of view' in both directions" (Zourabichvili 2012: 121, quoting Deleuze 1990: 175).

[466] Each of the three syntheses of time concerns an aspect of the consistency of pure multiplicity.

[467] If Leibniz's pairing of continuity and non-uniformity impressed us with its fecundity, Bergson's pairing of continuity and heterogeneity impresses us all the more so. Only the latter could justify the claim that duration is a kind of Spinozist substance.

[468] To an intellect besotted of forms of identity and quantity, this flux can be only contradictory: it "is not what it is, and it is what it is not, because the same always becomes other in continual alteration. Even more precisely: our states of

immanent to each, testifying to an unbreakable solidarity, grounds the continuity of enduring wholes (Bergson 2001: 104).[469] The consistency of a pure multiplicity is a function of the *continuity* of durative flux. Only by resolving the labyrinth of the composition of the continuum has Deleuze proven that a pure multiplicity is a viable form of organization, one open to a mathematics of the pure multiple.

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consciousness concatenate according to an uninterrupted becoming without relation to number" (Jankélévitch 2015: 30). But there are mathematical aspects beyond number and measure.

[469] "Each moment of becoming… has its own value and its own dignity; each is its own means and its own end. There is succession but no discursion" (Jankélévitch 2015: 36).

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