

ferent regimes of individuation as providing the foundation for different domains such as matter, life, mind and society. The separation, the gradation and the relations of these domains appear as aspects of individuation according to its different modalities. The notions of substance, form and matter are replaced by the more fundamental notions of primary information, internal resonance, potential energy and orders of magnitude.

However, in order to modify our notions in this way, we will have to employ both a new method and a new notion. The method would encourage, on the one hand, a refusal to construct the essence of a given reality by means of a *conceptual* relation between two opposed terms, and on the other, a consideration of any veritable relation as something existing in its own right. The relation, then, represents one of the modalities of the being, since it is contemporaneous with both of the terms whose existence it underwrites. A relation must be understood in its role as a relation in the context of the being itself, a relation belonging to the being, that is, a way of being and not a simple connection between two terms that could be adequately comprehended using concepts because they both enjoy what amounts to an independent existence. It is because the terms are conceived as substances that the relation is seen as a connection between two terms, and the being is divided into these terms because it is first conceived of as a substance, before any questions about individuation have been asked. On the other hand, though, if the being is no longer conceived using the model of a substance, it becomes possible to think of the relation as one of the non-identity of the being with itself, meaning that the being contains not only that which is identical to itself, with the result that the being qua being — previous to any individuation — can be grasped as something more than a unity and more than identity.<sup>10</sup> This method presupposes a postulate of an ontological nature. The principles of the excluded middle and of identity are inapplicable at the level of the being since at this point individuation has not yet occurred; they only apply to the being after individuation has taken place, and they refer to a rather diminished being due to its having been separated out into milieu and individual. They do not refer to the whole of the being, which is to say, to the totality that will be formed later by the individual together with the milieu, but rather only to that which became the individual, derived from the preceding preindividual being. So one sees that classical logic cannot be used to understand individuation because it forces us to deal with the process of individuation using concepts and their interrelations, which are only valid for the results of the process of individuation, a limited view at best.

A fresh notion, enjoying a great variety of aspects and many areas of application,

can be drawn from this method which treats the principle of identity and the excluded middle as being too narrow: *transduction*. This term denotes a process — be it physical, biological, mental or social — in which an activity gradually sets itself in motion, propagating within a given area, through a structuration of the different zones of the area over which it operates. Each region of the structure that is constituted in this way then serves to constitute the next one to such an extent that at the very time this structuration is effected there is a progressive modification taking place in tandem with it. The simplest image of the transductive process is furnished if one thinks of a crystal, beginning as a tiny seed, which grows and extends itself in all directions in its mother-water. Each layer of molecules that has already been constituted serves as the structuring basis for the layer that is being formed next, and the result is an amplifying reticular structure. The transductive process is thus an individuation in progress. Physically, it might be said to occur at its simplest in the form of a progressive iteration; however, in the case of more complex domains, such as those of living metastability or psychic problematics, it might progress at a constantly variable rate and expand in a heterogeneous area. Transduction occurs when there is activity, both structural and functional, which begins at a center of the being and extends itself in various directions from this center, as if multiple dimensions of the being were expanding around this central point. It is the correlative appearance of dimensions and structures in a being in a state of preindividual tension, which is to say, in a being that is more than a unity and more than an identity, and which has not yet passed out of step with itself into other multiple dimensions. The ultimate terms at which the transductive process finally arrives do not preexist this process. Its dynamism derives from the primitive tension of the heterogeneous being's system, which moves out of step with itself and develops further dimensions upon which it bases its structure. It does not derive from a tension between the terms that will be found and registered at the furthest edges of transduction.<sup>11</sup> Transduction can be a vital process; in particular, it expresses the sense of organic individuation. It can also be a psychic process and in effect a logical procedure, although one that is in no way restricted to the logical mind-set. In the area of knowledge, it maps out the actual course that invention follows, which is neither inductive nor deductive but rather transductive, meaning that it corresponds to a discovery of the dimensions according to which a problematic can be defined. It is the analogical process insofar as it is valid. This notion can be used to understand all of the different areas of individuation; it applies to all the cases where an individuation occurs and reveals the genesis of a network of relations based on the being. The possi-



bility of using an analogical transduction in order to understand a given area of reality shows that this area is really the place where an analogical structuration has occurred. Transduction corresponds to the presence of those relations created when the preindividual being becomes individuated. It expresses individuation and allows us to understand its workings, showing that it is at once a metaphysical and also a logical notion. *While it may be applied to ontogenesis, it is also ontogenesis itself.* Objectively, it allows us to comprehend the systematic preconditions of individuation, internal resonance<sup>12</sup> and the psychic problematic. Logically, it can be used as the foundation for a new species of analogical paradigms so as to enable us to pass from physical individuation to organic individuation, from organic individuation to psychic individuation, and from psychic individuation to the subjective and objective level of the transindividual that forms the basis of our investigation.

Clearly, transduction cannot be presented as a logical procedure terminating in a conclusive proof. Nor is it not my intention to say that transduction is a logical procedure in the currently accepted meaning of this expression. I see it as a mental procedure, or better, the course taken by the mind on its journey of discovery. This course would be *to follow the being from the moment of its genesis, to see the genesis of the thought through to its completion at the same time as the genesis of the object reaches its own completion.* In this investigation, the above-mentioned course is obliged to play a role that the dialectic is unable to play, because the study of the process of individuation does not seem to correspond to the appearance of the negation that follows as the second step, but rather to an immanence of the negative in the primary state, the precondition for what follows, in the ambivalent form of tension *and* of incompatibility. Indeed, it is the most positive element in the preindividual being — namely, the existence of potentials — that is also the cause of the incompatibility and the nonstability of this state. The negation is primarily an ontogenetic incompatibility, but it is also the other side of the richness of potentials. It is not therefore a negation that is a substance. It is never a step or a stage, and individuation is not synthesis, a return to unity, but rather the being passing out of step with itself, through the potentialization of the incompatibilities of its preindividual center. In this ontogenetic perspective, time itself is considered to be the expression of the *dimensionality of the being as it is becoming individualized.*

Transduction, then, is not only a path taken by the mind, it is also an intuition, since it allows a structure to appear in a domain of problematics yielding a solution to the problems at hand. In the sense contrary to *deduction*, however, transduction does not

seek elsewhere a principle to resolve the problem at hand; rather, it derives the resolving structure from the tensions themselves within the domain just as the supersaturated solution is crystallized due to its own potentials and the nature of the chemicals it contains, and not through the help of some foreign body. Nor is it comparable to *induction*, because induction retains the character of the terms of the reality as it is understood in the area under investigation — deriving the structures of the analysis from these terms themselves — but it only retains that which is positive, which is to say, *that which is common* to all the terms, eliminating whatever is singular. On the contrary, transduction represents a discovery of dimensions that are made to communicate by the system for each of the terms such that the total reality of each of the areas' terms can find a place in the newly discovered structures without loss or reduction. The transduction that resolves things *effects the reversal of the negative into the positive*: meaning, that which makes the terms fail to be identical with each other, and that which makes them *disparate* (in the sense in which this expression is understood in the theory of vision), is integrated with the system that resolves things and becomes a condition of meaning. There is no impoverishment in the information contained in the terms: transduction is characterized by the fact that the result of this process is a concrete network including all the original terms. The resulting system is made up of the concrete, and it comprehends all of the concrete. The transductive order retains all the concrete and is characterized by the *conservation of information*, whereas induction requires a loss of information. Following the same path as the dialectic, transduction conserves and integrates the opposed aspects. Unlike the dialectic, transduction does not presuppose the existence of a previous time period to act as a framework in which the genesis unfolds, time itself being the solution and dimension of the discovered systematic: *time comes from the preindividual just like the other dimensions that determine individuation*.<sup>13</sup>

Now, in order to comprehend the transductive process, which forms the basis for individuation at all of its various levels, the notion of form is insufficient. It is part of the same system of thought that substance is, or that in which a connection is considered to be a relation that postdates the existence of the terms. These latter notions have been elaborated based on the results of individuation. They are capable of grasping only an impoverished reality, one that does not take potentials into account, and are therefore incapable of being individualized.

*The notion of form must be replaced by that of information*, which presupposes the existence of a system in a state of metastable equilibrium capable of being individuated.



Information, unlike form, is never a unique term, but rather the meaning that arises on the heels of a disparation. The old notion of form, as it is given by the hylomorphic schema, is too independent of any notion of system and metastability. That given by the Theory of Form includes, on the contrary, the notion of system, and is defined as the state toward which the system tends when it seeks equilibrium, meaning that it is a resolution of tension. Unfortunately, our reliance on a superficial physical paradigm has meant that the Theory of Form views only the stable state of equilibrium as that state of a system capable of resolving tensions. It has totally ignored metastability. I wish to consider the Theory of Form anew and, by introducing a quantum precondition, show that the problems presented by the Theory of Form can be directly resolved — not by using the notion of stable equilibrium, but only by using that of metastable equilibrium. The True Form, then, is not the simple form, the pregnant geometric form, but the *significant form*, that is, the one that establishes a transductive order within a system of reality replete with potentials. This True Form is the one that maintains the energy level of the system, sustaining its potentials by making them compatible. It is the structure of compatibility and viability, it is the invented dimensionality following which there is compatibility without degradation.<sup>14</sup> The notion of *Form* deserves therefore to be replaced by that of *information*. In the course of this replacement, the notion of information must not be associated with that of the signals or supports [supports] or vehicles of information, *as the technological theory of information tends to do, derived by abstraction as it is in the first instance from transmission technology*. The pure notion of form must therefore be retrieved twice over from the evils resulting from a superficial use of a technological paradigm: in the first place, in relation to the culture of the ancients, due to the reductive use made of this notion in the *hylomorphic schema*; in the second place, where it exists as a notion of information, in order to save information as meaning from the *technological theory* of information in modern culture. For in the successive theories of hylomorphism, it is indeed the same aim that we find in the case of the True Form, and then information: the effort to discover the inherence of the given meanings in the *being*. My object is to discover this inherence in the process of individuation.

In this way, an investigation concerning individuation can lead to a reform of our fundamental philosophical notions, because it is possible to consider individuation as that which has to be understood before all else in the case of a given being. Even before one asks to what extent it is legitimate or otherwise to make judgments about any being whatsoever, the being can be seen as expressing itself in two senses: the first,



fundamental, that the being *is* insofar as it is; but in a second sense, which is always superimposed on the first in the theory of logic, that the being is a being insofar as it is individuated. If it were true that logic is not applicable to any affirmations concerning the being until after individuation has occurred, then a theory of being as it exists previous to any logic ought to be developed. This theory could in fact serve as a foundation for logic, since nothing proves in advance that there is only one possible way for the being to be individuated. If many types of individuation existed, similarly there ought to be many types of logic, each one corresponding to a definite type of individuation. The classification of ontogeneses would allow us to *pluralize logic* relying on a valid basis of plurality. As for the axiomatization of our knowledge of the preindividual being, it cannot be restricted to one of the previously established logics because it is impossible to define any norm or system without taking its content into account. Only the individuation of thought coming to fruition can accompany the individuation of beings that are not thought. Therefore, we cannot have either an immediate or a mediated knowledge of individuation, but only one that is a process parallel to the process with which we are already familiar. We cannot *know individuation* in the common sense of the phrase; we can only individuate, individuate ourselves and in ourselves. On the margins of knowledge proper, this comprehension is an analogy between two processes, which is a specific mode of communication. Individuation of the reality beyond the subject as grasped by the subject thanks to the analogous individuation of knowledge within the subject. But it is *by means of the individuation of knowledge* and not knowledge alone that the individuation of beings that are not subjects is grasped. Beings can be known by means of the knowledge of the subject, but the individuation of beings cannot be understood except by the individuation of the knowledge of the subject.

#### NOTES

1. Moreover, it is quite possible that the milieu is not to be thought of as a simple, homogeneous and uniform phenomenon, but something that, from its very inception, is characterized by a tension in force between two extreme orders of magnitude that mediatize the individual when it comes into being.
2. And constitution, between the two extremes, of a mediate order of magnitude; in a certain sense, ontogenetic development (*devenir*) itself can be considered as mediation.
3. Normative and intuitive equivalents of the notion of metastability did exist in the ancient world; but since the notion of metastability generally requires the simultaneous existence of two orders of magnitude and the absence of interactive communication between them, this concept owes much to the discoveries made by scientific advance.



disregard potentialities, does not allow itself to be subordinated to geometry. Being elastic, mass gives some spring to things; one cannot simply swallow it up in a kinematics as Descartes did. This is probably what Leibniz most reproaches him for: having reduced the Galilean project to a description of impacts and transference of impulses. This project certainly had the ambition of conceiving the world of bodies as a geometric *universum*, but also, and before all else, of grasping in a single intuition the emergence of the concepts of geometry and that of the acts of material filling and connections of causality. This last requirement certainly does not imply – quite the contrary – the elimination of all potentiality. It is nonetheless this that Descartes points to as carrying suspect 'metaphysical' connotations, because they are always suspected of not giving themselves up bound hand and foot to the clarity of the extension.

To Descartes, who claims to grasp the physical being-in-the-world under the determinations of length, breadth and depth only, Leibniz responds that the bare size does not exist alone and that 'the points weigh nothing'. He does not accept that the quantity of motion is the sole determination that is not completely geometric, which actualizes itself when impacts occur. In fact, the impact is the privileged type of physical event in Cartesian mechanics, which denies the body all latent power of action and seems consumed by an impatience of actualization. Leibniz saw that the complete staging of mathematical physics involved the construction of imposing infrastructures which could not help but implicate metaphysics. In particular, he is convinced that these notions of potentiality and of internal mobility, suitably interpreted, make it possible to conceive the profound identity between mathematics and physics without resort to the ontological subordination proposed by Aristotle.

To give elasticity to mass, to assert its irreducible difference from geometric size, is to confer an ontological dignity on it and to associate it with the active potentiality of which Aristotle had already had an inkling. It is elasticity that gives spring to mass (which for Descartes is a simple factor of inertia) and that makes it possible for the Understanding to grasp the progressive reception of degrees of velocity.

Is there any danger of this plasticity of mass 'sully'ing' the new mechanics? Is it not the corruptible wing of the edifice? Quite the opposite, for Leibniz states:

Although I am convinced that everything is done mechanically in corporeal Nature, I nevertheless also believe that the very principles of mechanics, that is to say the first laws of motion, have a more sublime origin than pure mathematics can furnish ... There is in matter something other than the purely geometric, that is, than the extension and its alteration, and its bare alteration ... One realizes that some superior or metaphysical notion, that is, of substance, action and force, must be added; and these notions mean that everything that suffers an action must in turn act, and everything that acts must suffer some reaction ... I remain persuaded that all bodies

are naturally extended, and that there is no extension without body. Nonetheless, we must not confuse the notions of place, space or pure extension with the notion of substance, which, in addition to the extension, also contains the opposition, that is to say, the action and the reaction.<sup>13</sup>

It is not enough to dismiss Aristotle's definition as 'obscure and metaphysical'; it is necessary to acknowledge that it was able to see motion as a way of knitting act and power together.

I had penetrated deeply into the land of the Scholastics, when mathematics and modern authors made me withdraw from it while I was still young. Their beautiful ways of explaining Nature mechanically charmed me, and with good reason I despised the method of those who use only forms or faculties of which nothing is understood. But later, after trying to explore the principles of mechanics itself in order to account for the laws of Nature which we learn from experience, I perceived that the sole consideration of extended mass was not enough but that it was necessary, in addition, to use the concept of force, which is fully intelligible, although it falls within the sphere of metaphysics.<sup>14</sup>

[T]he concept of forces or powers, ... for whose explanation I have set up a distinct science of dynamics, brings the strongest light to bear upon our understanding of the true concept of substance. Active force differs from the mere power familiar to the Schools, for the active power or faculty of the Scholastics is nothing but a close possibility of acting, which needs an external excitation or a stimulus, as it were, to be transferred into action. Active force, in contrast, contains a certain action or *entelechia* and is thus midway between the faculty of acting and the action itself and involves a *conatus*. It is thus carried into action by itself and needs no help but only the removal of an impediment.<sup>15</sup>

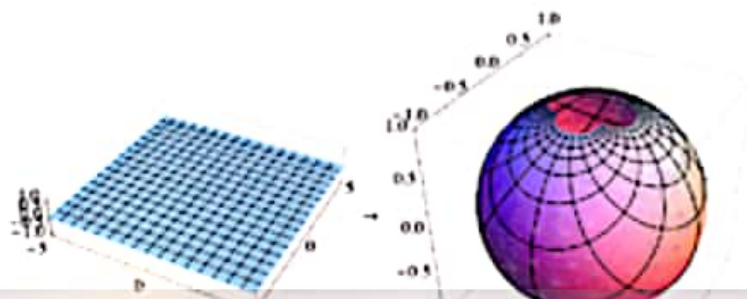
[The] whole nature of body does not consist solely in extension, that is to say in size, figure and motion, but that there must necessarily be recognized in it something which is related to souls and which is commonly called substantial form.<sup>16</sup>

It is therefore a matter of radically extending the Galilean project: live force carries off the world of the boundary forms of pure geometry, above figures and identities, to meet the causal connections of the world of bodies. In Leibniz, a new type of mathematical being, the differential, escapes being trapped between identity and absolute otherness,<sup>17</sup> its emergence is completely contemporaneous with the idea of the live force element, which allows the *conatus* (acceleration) to be grasped prior to any impetuous actualization. The integral of the elements of live force makes it possible to connect the past of the body at the same time as enveloping its future: this is what permits the peculiarly physico-mathematical notion of the parametrage of trajectories. Quantity and extension have no power to act and are therefore not integral to the constitution of physical space.

The projection is not defined at the projection point  $N = (0, 0, 1)$ . Small neighborhoods of this point are sent to subsets of the plane far away from  $(0, 0)$ . The closer  $P$  is to  $(0, 0, 1)$ , the more distant its image is from  $(0, 0)$  in the plane. For this reason it is common to speak of  $(0, 0, 1)$  as mapping to "infinity" in the plane, and of the sphere as completing the plane by adding a **point at infinity**. This notion finds utility in **projective geometry** and complex analysis. On a merely **topological** level, it illustrates how the sphere is homeomorphic to the one-point compactification of the plane.

In **Cartesian coordinates** a point  $P(x, y, z)$  on the sphere and its image  $P'(X, Y)$  on the plane either both are **rational points** or none of them:

$$P \in \mathbb{Q}^3 \iff P' \in \mathbb{Q}^2$$







# infinity

7 of 11



The problem of aesthetics is a difficult one. I've written about it somewhat<sup>15</sup>, but I must confess that the elaboration of a satisfactory theory would be extremely difficult. I've the impression that at the root of "the aesthetic" one finds "the sacred". What is "the sacred"? It was this question that led me to my theory of *pregnances and saliences*<sup>16</sup>. The original idea is that all behavior, starting with that of animals, is controlled by the fact that when the animal

95 PHILOSOPHICAL POSITIONS

perceives a form in its presence, reactions of attraction and repulsion are released with regard to that form, whether they be visual, auditory, olfactory, and so on. In even the most rudimentary cases, one finds these reactions of attraction and repulsion.

I believe that the sense of the sacred in human beings is characterized by the fact that this axis of attraction/repulsion can, in some sense, become self-referencing

through being compactified by a point at **infinity**. This point at **infinity** is precisely what we call the sacred. Stated differently, a sense of the sacred is aroused every time we find ourselves in the presence of a form which appears to be endowed with infinite power, and which is simultaneously attractive and repulsive. As these two infinities are in opposition, one becomes immobilized relative to this form: Its fascination causes motion to cease. Because such a situation is intolerable for very long, certain accommo-



plays a role in problematics similar to that played by "undecidability" in axiomatics.

2. The second domain Deleuze utilizes is the calculus itself, and on this score Deleuze's analyses are based to a large extent on the interpretation proposed by Albert Lautman in his *Essay on the Notions of Structure and Existence in Mathematics*.<sup>85</sup> Lautman's work is based on the idea of a fundamental difference in kind between a problem and its solution, a distinction that is attested to by the existence of problems *without* solution. Leibniz, Deleuze notes, "had already shown that the calculus...expressed problems that could not hitherto be solved, or indeed, even posed."<sup>86</sup> In turn Lautman establishes a link between the theory of differential equations and the theory of singularities, since it was the latter that provided the key to understanding the nature of *nonlinear* differential equations, which could not be solved because their series diverged. As determined by the equation, singular points are distinguished from the ordinary points of a curve: the singularities mark the points where the curve changes direction (inflections, cusps, etc.), and thus can be used to distinguish between different *types* of curves. In the late 1800s, Henri Poincaré, using a simple nonlinear equation, was able to identify four types of singular points that corresponded to the equation (foci, saddle points, knots, and centers) and to demonstrate the topological behavior of the solutions in the neighborhood of such points (the integral curves).<sup>87</sup> On the basis of Poincaré's work, Lautman was able to specify the nature of the difference in kind between problems and solutions. The conditions of the *problem* posed by the equation is determined by the existence and distribution of singular points in a differentiated topological field (a field of vectors), where each singularity is inseparable from a zone of objective indetermination (the ordinary points that surround it). In turn, the *solution* to the equation will only appear with the integral curves that are constituted the neighborhood of these singularities, which mark the beginnings of the differentiation (or actualization) of the problematic field. In this way, the ontological status of the problem as such is detached from its solutions: in itself, the problem is a multiplicity of singularities, a nested field of directional vectors which define the "virtual" trajectories of the curves in the solution, not all of which can be actualized. Non-linear equations can thus be used to model objectively problematic (or indeterminate) physical systems, such as the weather (Lorenz): the equations can define the virtual "attractors" of the system (the intrinsic singularities toward which the trajectories will tend in the long-term), but they cannot say in advance which trajectory will be actualized



a purely intrinsic or immanent manners, without any recourse to the One or the Whole or a Unity. The real *differend* must be located in the difference between axiomatics and problematics, major and minor science.

Badiou's thesis concerning Deleuze's "vitalism," by contrast, comes closer to articulating a real difference. (Badiou recognizes, to be sure, that Deleuze uses this biological term in a somewhat provocative manner, divorced from its traditional reference to a semi-mystical life-force.) Although Deleuze's formal theory of multiplicities is drawn from mathematical models, it is true that he appeals to numerous non-mathematical domains in describing the intensive processes of *individuation* through which multiplicities are actualized (biology, but also physics, geology, etc.). "Vitalism" enters the picture, in other words, at the level of individuation—hence the distinction, in *Difference and Repetition*, between the fourth chapter on "The Ideal Synthesis of Difference" (the theory of multiplicities, which appeals to mathematics) and the fifth chapter on "The Asymmetrical Synthesis of the Sensible" (the theory of individuation, which appeals to biology). But this distinction is neither exclusive nor disciplinary. Even in mathematics, the movement from a problem to its solutions constitutes a process of actualization: though formally distinct, there is no ontological separation between these two instances (the complex Deleuzian notion of "differen *t/c* ation"). As Deleuze explains, "we tried to constitute a philosophical concept from the *mathematical* function of differentiation and the *biological* function of differentiation, in asking whether there was not a statable relation between these two concepts which could not appear at the level of their respective objects.... Mathematics and biology appear here only in the guise of technical models which allow the exposition of the virtual [problematic multiplicities] and the process of actualization [biological individuation]." <sup>105</sup> Deleuze thus rejects Badiou's reduction of ontology to mathematics, and would no doubt have been sympathetic to Ernst Mayr's suggestion that biology might itself be seen as the highest science, capable of encompassing and synthesizing diverse developments in mathematics, physics, and chemistry. <sup>106</sup>

Badiou's resistance to this "vitalism" can be accounted for by his restricted conception of ontology. For Badiou, the term ontology refers uniquely to the discourse of "Being-as-being" (axiomatic set theory), which is indifferent to the question of

### Mathematics and the Theory of Multiplicities

existence. For Deleuze, by contrast, ontology encompasses Being, beings, and their ontological difference (using Heideggerian language), and the determinations of "Being-as-such" must therefore be immediately related to beings in their existence. This is why the calculus functions as a powerful test case in comparing Deleuze and Badiou. The calculus has been rightly described as the most powerful instrument ever invented for the mathematical exploration of the physical universe. In its initial formulations, however, as we have seen, the calculus mobilized notions that were unjustified from the viewpoint of

# ^ Influence

Simondon's theory of individuation through transduction in a metastable environment was an important influence on the thought of Gilles Deleuze, whose *Différence et répétition* (1968), *Logique du sens* (1969) and *L'île déserte* (2002) make explicit reference to Simondon's work. *Gilbert Simondon: une pensée de l'individuation et de la technique* (1994), the proceedings of the first conference devoted to Simondon's work, further charts his influence on such thinkers as François Laruelle, Gilles Châtelet, Anne Fagot-Largeau, Yves Deforge, René Thom, and Bernard Stiegler (the latter having placed Simondon's theory of individuation at the very heart of his ongoing and multi-volume philosophical project). Another contributor to *Gilbert Simondon: une pensée de l'individuation et de la technique*, Simondon's friend John Hart, was the instigator of the very first translation—from French into English c.1980—of Simondon's work (this at University of



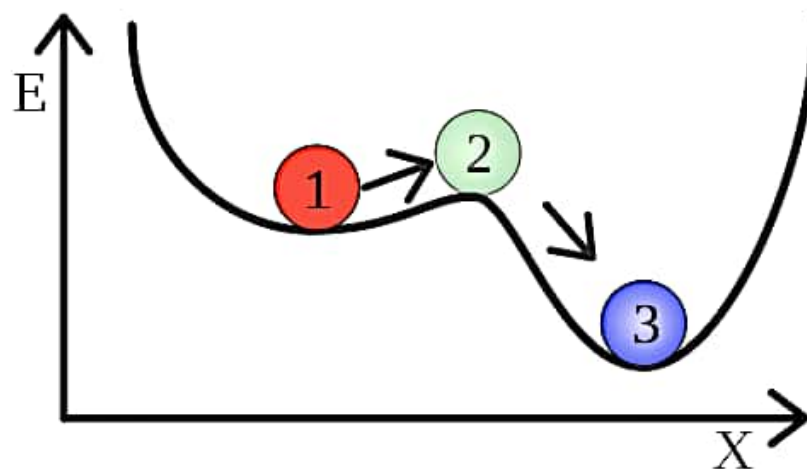
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For metastability in digital electronics, see [Metastability \(electronics\)](#).

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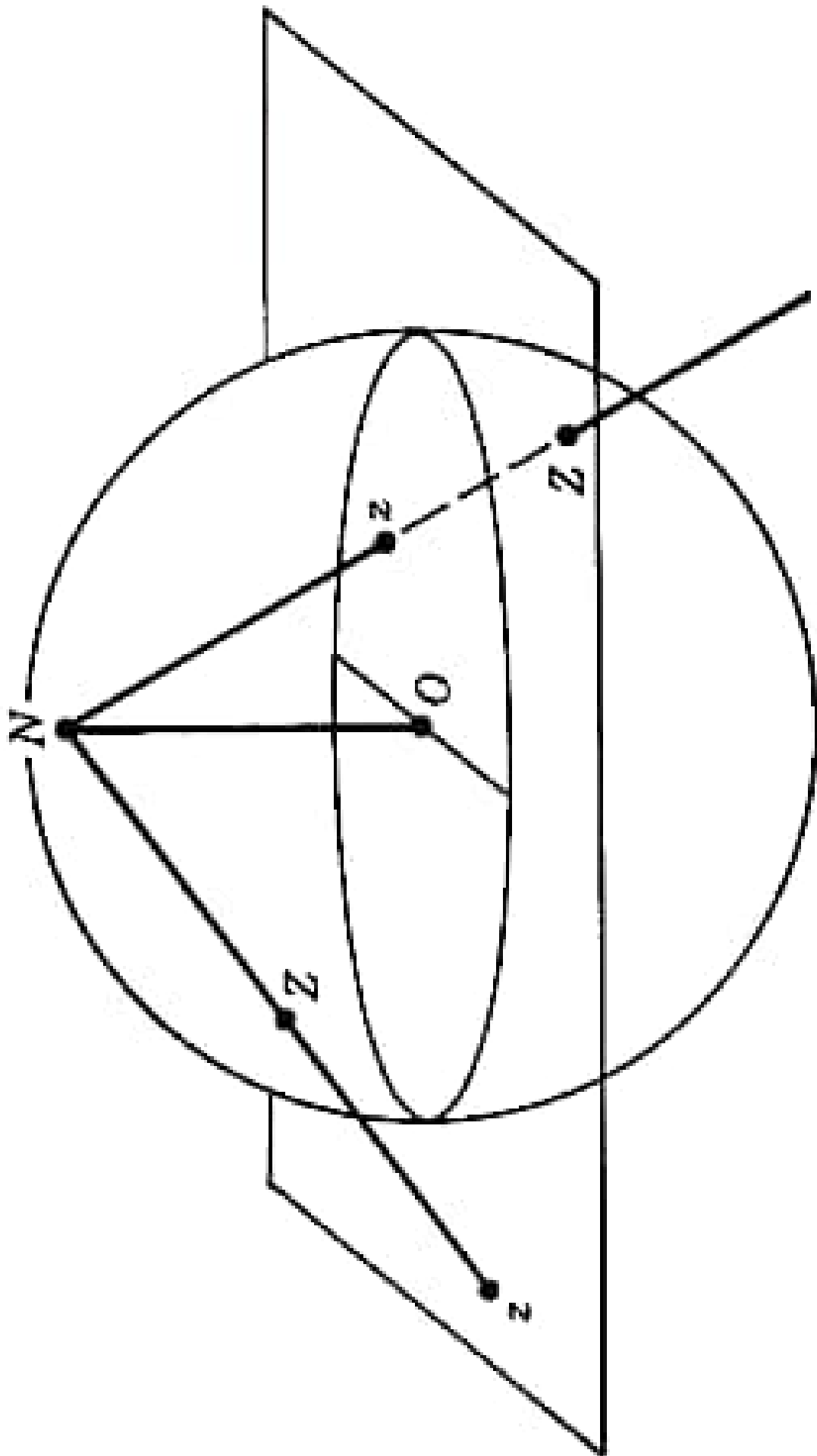
A metastable state of weaker bond (1), a transitional 'saddle' configuration (2) and a stable state of stronger bond (3).

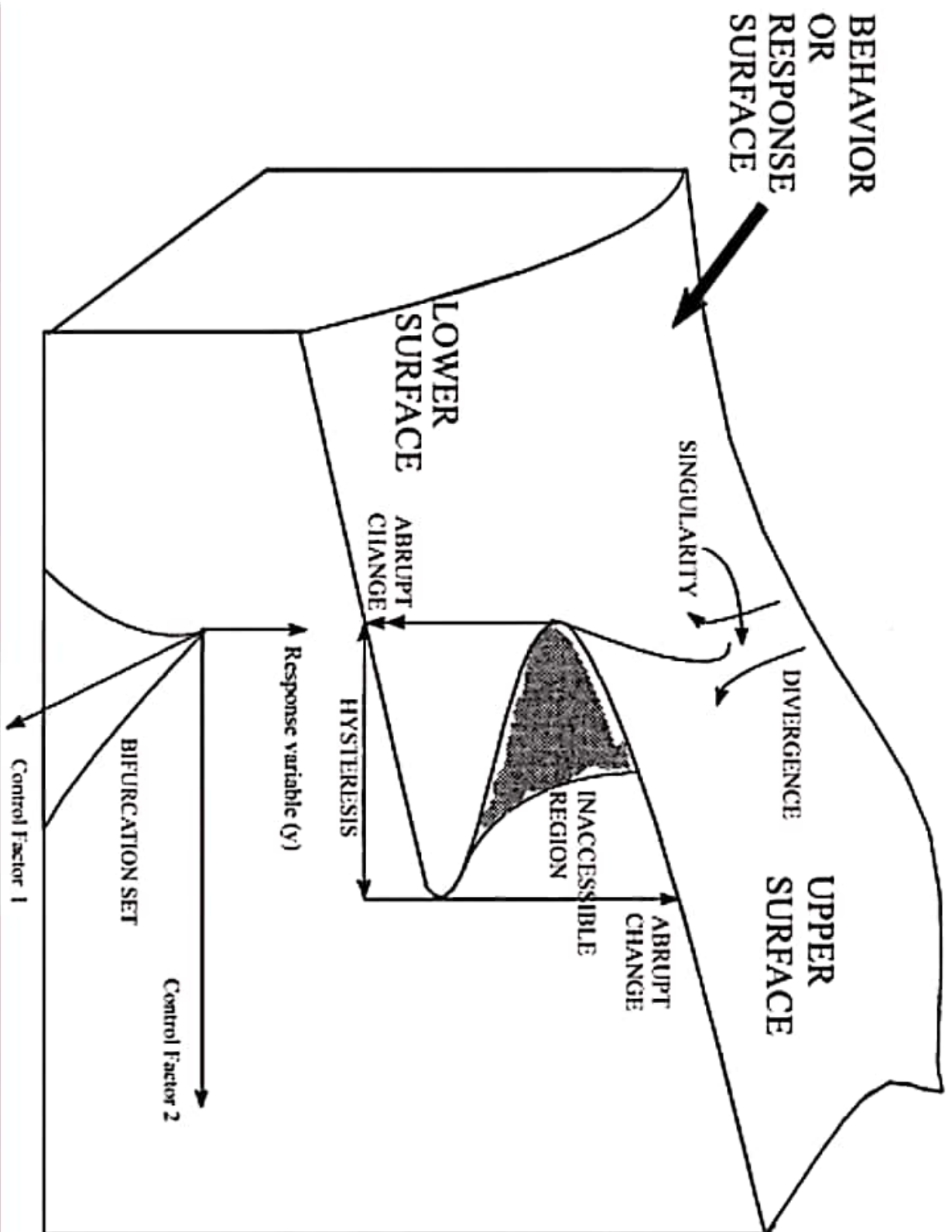
In [physics](#), **metastability** is a stable state of a dynamical system other than the system's [state of least energy](#). A ball resting in a hollow on a slope is a simple example of metastability. If the ball is only slightly pushed, it will settle back into its hollow, but a stronger push may start the ball rolling down the slope. Bowling pins show similar

The philosophical program Thom had in mind for CT was the geometrization of thought and linguistic activity. His Natural Philosophy aspirations were centered "on the necessity of restoring by appropriate minimal metaphysics some kind of intelligibility to our world." [*Semiophysics*, p. ix] On pages 218-220 of his *Semiophysics*, he writes: "Modern science has made the mistake of foregoing all ontology by reducing the criteria of truth to pragmatic success. True, pragmatic success is a source of pregnancy and so of signification. But this is an immediate, purely local meaning. Pragmatism, in a way, is hardly more than the conceptualized form of a certain return to animal nature. Positivism batted on the fear of ontological involvement. But as soon as we recognize the existence of others and accept a dialogue with them, we are in fact ontologically involved. Why, then, should we not accept the entities suggested to us by language? Even though we would have to keep a check on abusive hypostasis, this seems the only way to bring a certain intelligibility to our environment. Only some realist metaphysics can give back meaning to this world of ours."

Thom is the first human being to give the first rigorously monistic model of the living being, and to reduce the paradox of the soul and the body to a single geometrical object. This is one of his greatest accomplishments. Even if some aspects of his model are incomplete or wrong, he has opened up a conceptual universe by this. As he says on page 320 of his *SSM*: "But in a subject like mankind itself, one can only see the surface of things. Heraclitus said, 'you could not discover the limits of the soul, even if you traveled every road to do so; such is the depth of its form.'" And so it is with Thom's work. Its importance is, as C. H. Waddington says, "the introduction, in a massive and thorough way, of topological thinking as a framework for theoretical biology. As this branch of science gathers momentum, it will never in the future be able to neglect the











dyad. Brassier in his dissertation on non-philosophy does a very good job of characterizing it in particular Kantian terms, terms otherwise recognized as scheme vs. content (Davidson).

Philosophy is said to make a core, axiomatic choice which divides the Real into some “transcendent” a priori “faktum” (scheme) and some “immanent” empirical “datum”:

This philosophical faith in sufficient determination finds expression in the two basic structural features of a Decision: it is self-positing (auto-positional) and self-giving (auto-donational). All philosophising, Laruelle insists, begins with a Decision, with a division traced between an empirical (but not necessarily perceptual) datum and an *a priori* (but not necessarily rational) faktum, both of which are *posited as given* in and through a synthetic unity wherein empirical and *a priori*, datum and faktum, are conjoined. Thus, the philosopher posits a structure of articulation which is simultaneously epistemological and ontological, one which immediately binds and distinguishes a given empirical datum, whether it be perceptual, phenomenological, linguistic, social, or historical; and an *a priori* intelligible faktum through which that datum is given: e.g. Sensibility, Subjectivity, Language, Society, or History.

*“Alien Theory” [click for larger image]*

We can certainly see the strong Kantian nature of the decision in this telling by



Brassier opens up the distinction into its simplest form, that of the knower and the known, the perceiver and the perceived, but I still cannot find the traction point in Spinozist philosophy, largely because these elemental dyads are refused in a great number of ways which generally foreclose an essential materialist/idealist reading.

“Thus for any philosophical distinction between two terms (or Dyad), as such, in the...”

simplest possible case, knower and known, or perceiver and perceived, the distinction is simultaneously intrinsic and immanent to the identity of the distinguished terms, *and* extrinsic and transcendent insofar as it is supposed to remain genetically constitutive of the difference between the terms themselves. For the division is inseparable from a moment of indivision (–One) guaranteeing the unity-in-differentiation of the Dyad of distinguished terms. The result is a composite structure wherein the condition that guarantees the coupling of the related terms –e.g. (and again in the simplest possible case) the knowing that binds knower and known, or the perceiving that binds perceiver and perceived– remains irrevocably co-constituted by the two terms it is supposed to condition and so implicitly contained within both. And because it is posited as given in and through the immediate distinction between empirical datum and *a priori* faktum which it is supposed to constitute, this structure ends up presupposing itself empirically in and through the datum which it constitutes, and positing itself *a priori* in and through the faktum which is posited by it<sup>171</sup>.