

Chronophotograph of a standing jump, c. 1882.

Etienne-Jules Marey



The Genesis of the Individual

Gilbert Simondon

When the living being is considered as an individual, there are two ways in which it can be conceived. There is the substantialist viewpoint, which conceives the unity of living being as its essence, a unity that it has provided for itself, is based on itself and is created by itself; a unity that will vigorously resist anything that is not itself. There is also the hylomorphic viewpoint, which regards the individual as having been created from the conjunction of a form and some matter. If we compare these two approaches, we can see there is a clear opposition between the self-centered monism of substantialist metaphysics and the bipolarity depicted by hylomorphism. But despite this opposition, these two ways of analyzing the real nature of the individual have something in common: in both cases, there is the assumption that we can discover a principle of individuation, exercising its influence before the actual individuation itself has occurred, one that is able to explain, produce and determine the subsequent course of individuation. Taking the constituted individual as a given, we are then led to try to recreate the conditions that have made its existence possible.

However, when the problem of individuation is formulated in terms of the existence of individuals, we find that a presupposition has emerged warranting further explanation. This presupposition points to an important aspect of the solutions that have been given to this problem, and it has surreptitiously determined the course of research dealing with the principle of individuation: that it is the individual qua the already constituted individual that is the most noteworthy reality, the one to be explained. Where this

attitude prevails, the principle of individuation is sought only insofar as it is able to account for the characteristics of the individual exclusively, without allowing for this principle's necessary relation to other influences on the being as a whole, which could be equally important to the emergence of this individuated being. *Research carried out under these assumptions accords an ontological privilege to the already constituted individual.* Such research may well prevent us from adequately representing the process of ontogenesis, and from accurately according the individual its proper place in the actual system that results in individuation. *The idea that individuation might have a principle at all is a crucial postulate in the search for a principle of individuation.* The very idea of a "principle" suggests a certain quality that prefigures the sort of constituted individual at which we will arrive, and the properties it will have once the process of constitution is complete.

To a certain extent, the idea of a *principle of individuation* has been derived from a genesis that works backward, an ontogenesis "in reverse," because in order to account for the genesis of the individual and its defining characteristics one must assume the existence of a first term, a principle, which would provide a sufficient explanation of how the individual had come to be individual and account for its singularity (haecceity) — but this does not prove that the essential precondition of ontogenesis need be anything resembling a first term. Yet a term is itself already an individual, or at least something capable of being individualized, something that can be the cause of an absolutely specific existence (haecceity), something that can lead to a proliferation of many new haecceities. Anything that contributes to establishing relations already belongs to the same mode of existence as the individual, whether it be an atom, which is an indivisible and eternal particle, or prime matter, or a form. The atom interacts with other atoms through the *clinamen*, and in this way it can constitute an individual (though not always a viable one) across the entire expanse of the void and the whole of endless becoming. Matter can be impressed with a form, and the source of ontogenesis can be derived from this matter–form relation. Indeed, if haecceities were not somehow inherent within the atom, or matter, or indeed form, it would be impossible to find a principle of individuation in any of the above-mentioned realities. *To seek the principle of individuation in something that preexists this same individuation is tantamount to reducing individuation to nothing more than ontogenesis.* The principle of individuation here is the source of haecceity.

It is clear that both atomist substantialism as well as the theory of hylomorphism avoid giving a direct description of ontogenesis itself. *Atomism* describes the genesis

of the complex unit, such as a living body, enjoying only a precarious and transitory unity; it is considered to be the result of a purely chance association, one that will break up into its original elements when overtaken by a force more powerful than the one currently holding it together as a complex unity. Those cohesive forces themselves, which may be taken as the principle of individuation of the complex individual, are in fact negated by the finer structure of the eternal elementary particles, which are the real individuals here. For atomism, the principle of individuation is rooted in the very existence of an infinity of atoms; it is always already there as soon as thought seeks to grasp their essential nature. Individuation is a fact: for each atom it is its already given nature, and for the complex unit it is the fact that it is what it is by virtue of a chance association.

In opposition to this, *hylomorphic theory* decrees that the individuated being is not already given when one comes to analyze the matter and form that will become the *sunolos* (the whole): we are not present at the moment of ontogenesis because we have always placed ourselves at a time before this process of ontogenetic formation actually takes place. The principle of individuation, then, is not grasped at the point where individuation itself occurs as a process, but in that which the operation requires before it can exist, that is, a matter and a form. Here the principle is thought to be contained either in the matter or the form, because the actual process of individuation is not thought to be capable of *furnishing* the principle itself, but simply of *putting it into effect*. Thus, the search for the principle of individuation is undertaken either before or after individuation has taken place, according to whether the model of the individual being used is a physical one (as in substantialist atomism) or a technological and vital one (as in hylomorphic theory). In both of these cases, though, there remains a *region of uncertainty* when it comes to dealing with the process of individuation, for this process is seen as something that needs to be explained, rather than as something in which the explanation is to be found: whence the notion of a principle of individuation. Now, if this process is considered as something to be explained, this is because the received way of thinking is always oriented toward the successfully individuated being, which it then seeks to account for, bypassing the stage where individuation takes place, in order to reach the individual that is the result of this process. In consequence, an assumption is made that events follow a certain chronology: first, the principle of individuation; then, this principle at work in a process that results in individuation; and finally, the emergence of the constituted individual. On the other hand, though, were we able to see that in the process of individuation other things were produced besides the indi-

break up into its original elements when overtaken by a force more powerful than the one currently holding it together as a complex unity. Those cohesive forces themselves, which may be taken as the principle of individuation of the complex individual, are in fact negated by the finer structure of the eternal elementary particles, which are the real individuals here. For atomism, the principle of individuation is rooted in the very existence of an infinity of atoms; it is always already there as soon as thought seeks to grasp their essential nature. Individuation is a fact: for each atom it is its already given nature, and for the complex unit it is the fact that it is what it is by virtue of a

vidual, there would be no such attempt to hurry past the stage where individuation takes place in order to arrive at the ultimate reality that is the individual. Instead, we would try to grasp the entire unfolding of ontogenesis in all its variety, and *to understand the individual from the perspective of the process of individuation rather than the process of individuation by means of the individual.*

It is my intention to demonstrate the need for a complete change in the general approach to the principle governing individuation. The process of individuation must be considered primordial, for it is this process that at once brings the individual into being and determines all the distinguishing characteristics of its development, organization and modalities. Thus, the individual is to be understood as having a relative reality, occupying only a certain phase of the whole being in question — a phase that therefore carries the implication of a preceding preindividual state, and that, even after individuation, does not exist in isolation, since individuation does not exhaust in the single act of its appearance all the potentials embedded in the preindividual state. Individuation, moreover, not only brings the individual to light but also the individual–milieu dyad.¹ In this way, the individual possesses only a relative existence in two senses: because it does not represent the totality of the being, and because it is merely the result of a phase in the being's development during which it existed neither in the form of an individual nor as the principle of individuation.

Thus, individuation is here considered to form only one part of an ontogenetic process in the development of the larger entity. Individuation must therefore be thought of as a partial and relative resolution manifested in a system that contains latent potentials and harbors a certain incompatibility with itself, an incompatibility due at once to forces in tension as well as to the impossibility of interaction between terms of extremely disparate dimensions.

The meaning of the expression “ontogenesis” will be given its full weight here if, instead of being understood in the more limited and secondary sense of the genesis of the individual (as opposed to a more extensive idea of genesis, such as that involving the whole species), it is made to designate the development of the being, or its becoming — in other words, that which makes the being develop or become, insofar as it is, as being. The opposition holding between the being and its becoming can only be valid when it is seen in the context of a certain doctrine according to which substance is the very model of being; but it is equally possible to maintain that becoming exists as one of the dimensions of the being, that it corresponds to a capacity beings possess of falling out of step with themselves [*se déphaser par rapport à lui-même*], of

resolving themselves by the very act of falling out of step. *The preindividual being is the being in which there are no steps* [phases]. The being in which individuation comes to fruition is that in which a resolution appears by its division into stages, which implies becoming: becoming is not a framework in which the being exists; it is one of the dimensions of the being, a mode of resolving an initial incompatibility that was rife with potentials.² *Individuation corresponds to the appearance of stages in the being, which are the stages of the being.* It is not a mere isolated consequence arising as a by-product of becoming, but this very process itself as it unfolds; it can be understood only by taking into account this initial supersaturation of the being, at first homogeneous and static [*sans devenir*], then soon after adopting a certain structure and becoming — and in so doing, bringing about the emergence of both individual and milieu — following a course [*devenir*] in which preliminary tensions are resolved but also preserved in the shape of the ensuing structure; in a certain sense, it could be said that the sole principle by which we can be guided is *that of the conservation of being through becoming*. This conservation is effected by means of the exchanges made between structure and process, proceeding by quantum leaps through a series of successive equilibria. In order to grasp firmly the nature of individuation, we must consider the being not as a substance, or matter, or form, but as a tautly extended and supersaturated system, which exists at a higher level than the unit itself, which is not sufficient unto itself and cannot be adequately conceptualized according to the principle of the excluded middle. The concrete being or the full being, which is to say, the preindividual being, is a being that is more than a unit. Unity (characteristic of the individuated being and of identity), which authorizes the use of the principle of the excluded middle, cannot be applied to the preindividual being — which explains why one cannot recreate the world out of monads after the fact, even if one introduces other principles, such as that of sufficient reason, to allow oneself to organize them into a universe. Unity and identity are applicable only to one of the being's stages, which comes after the process of individuation. Now these notions are useless in helping us discover the actual process of individuation itself. They are not valid for understanding ontogenesis in the full sense of the term, that is, for the becoming of the being insofar as it doubles itself and falls out of step with itself [*se déphaser*] in the process of individuating.

Individuation has resisted thought and description until now because we have recognized the existence of only one form of equilibrium: stable equilibrium. The idea of “metastable equilibrium” had not been recognized. A being was implicitly presumed to be in a state of stable equilibrium at all times. Stable equilibrium excludes the idea

fruition is that in which a resolution appears by its division into stages, which implies becoming: becoming is not a framework in which the being exists; it is one of the dimensions of the being, a mode of resolving an initial incompatibility that was rife with potentials.² *Individuation corresponds to the appearance of stages in the being, which are the stages of the being.* It is not a mere isolated consequence arising as a by-product of becoming, but this very process itself as it unfolds; it can be understood only by taking into account this initial supersaturation of the being, at first homogeneous and static [*sans devenir*], then soon after adopting a certain structure and becoming — and

of becoming because it corresponds to the lowest level of potential energy possible; it is the sort of equilibrium that is attained in a system when all the possible transformations have been achieved and no other force remains to enact any further changes. With all the potentials actualized, and the system having reached its lowest energy level, it can no longer go through any more transformations. The ancients recognized only the states of instability and stability, movement and rest, but they had no clear and objective idea of metastability. In order to define metastability, it is necessary to introduce the notion of the potential energy residing in a given system, the notion of order and that of an increase in entropy. In this way it is possible to define the being in its metastable state, which is very different from stable equilibrium and rest. The ancients were not able to introduce such a concept into their search for the principle governing individuation because no clear physical paradigm could be enlisted to reveal how such notions were to be used.³ So first I shall attempt to present *physical individuation as a case of the resolution of a metastable system*, beginning with one of the system's *states*, such as those of superfusion or supersaturation, which preside over the genesis of crystals. Crystallization has at its disposal an abundant fund of notions that are well understood, which can be employed as paradigms in other domains; but it does not provide us with an exhaustive analysis of physical individuation.

Now, it can also be presumed that the phenomenon [*la réalité*], in its primitive state, in itself, is like the supersaturated solution and, a fortiori in the preindividual stage, *is something beyond a unity and an identity*, something capable of being manifested as either wave or corpuscle, matter or energy — because any process, and any relation within a process, is an individuation that doubles the preindividual being, pushing it out of step with itself, all the while correlating the extreme values and orders of magnitude without the refinements of mediation. The resulting complementarity, then, would be the epistemological effect of preserving the original and primitive metastability of the phenomenon [*le réel*]. Neither *mechanism* nor *energetism*, both theories of identity, can account for this reality in a comprehensive manner. Field theory, when combined with the theory of corpuscles, and even the theory of the interaction between fields and corpuscles, is still partially dualist, but is well on the way to formulating a theory of the preindividual. By another route, the theory of quanta has perceived the existence of this preindividual *regime*, which goes beyond unity: an exchange of energy is brought about in elementary quantities, as if there had been an individuation of energy in the relation between the particles, which one can consider to be physical individuals in a sense. It would perhaps be in this sense

Serra Pelada gold mine in Para, Brazil.
Sebastiao Salgado



that one could foresee how the two theories (of quanta and of wave mechanics), which had up to now remained impenetrable to each other, might finally converge. They could be envisaged as *two ways of expressing the preindividual state* by means of the various manifestations exhibited when it appears as a preindividual. Underlying the continuous and the discontinuous, it is the quantum and the metastable complementarity (that which is beyond unity) that is the true preindividual. The necessity both of correcting and of coupling the basic concepts in physics expresses, perhaps, the fact that *the concepts are only an adequate representation of individuated reality*, and not preindividual reality.

Consequently, the exemplary value of the study of the crystal's genesis as a process of individuation would become all the more comprehensible. It would allow us to grasp, on the macroscopic level, a phenomenon that is rooted in those states of the system belonging to the microphysical domain, molecular and not molar. It would manage to grasp that activity which is *at the very boundary* of the crystal in the process of formation. Such an individuation is not to be thought of as the meeting of a previous form and matter existing as already constituted and separate terms, but a resolution taking place in the heart of a metastable system rich in potentials: *form, matter and energy pre-exist in the system*. Neither form nor matter are sufficient. The true principle of individuation is mediation, which generally presumes the existence of the original duality of the orders of magnitude and the initial absence of interactive communication between them, followed by a subsequent communication between orders of magnitude and stabilization.

At the same time that a quantity of potential energy (the necessary condition for a higher order of magnitude) is actualized, a portion of matter is organized and distributed (the necessary condition for a lower order of magnitude) into structured individuals of a *middle* order of magnitude, developing by a mediate process of amplification.

It is the organization of energy in a metastable system that leads to crystallization and subtends it, but the form of the crystals expresses certain molecular or atomic characteristics of the constituent chemical types.

In the domain of living things, the same notion of metastability can be employed to characterize individuation. But individuation is no longer produced, as in the physical domain, in an instantaneous fashion, quantumlike, abrupt and definitive, leaving in its wake a duality of milieu and individual — the milieu having been deprived of the individual it no longer is, and the individual no longer possessing the wider dimensions

of the milieu. It is no doubt true that such a view of individuation is valid for the living being when it is considered as an absolute origin, but it is matched by a perpetual individuation that is life itself following the fundamental mode of becoming: *the living being conserves in itself an activity of permanent individuation*. It is not only the result of individuation, like the crystal or the molecule, but is a veritable theater of individuation. Moreover, the entire activity of the living being is not, like that of the physical individual, concentrated at its boundary with the outside world. There exists within the being a more complete regime of *internal resonance* requiring permanent communication and maintaining a metastability that is the precondition of life. This is not the sole characteristic of the living being, and it cannot be seen as an automaton that maintains a certain number of equilibria or that seeks to find compatibilities between its various requirements, obeying a formula of complex equilibrium composed of simpler ones. The living being is also the being that results from an initial individuation and amplifies this individuation, not at all the machine to which it is assimilated functionally by the model of cybernetic mechanism. In the living being, *individuation is brought about by the individual itself*, and is not simply a functioning object that results from an individuation previously accomplished, comparable to the product of a manufacturing process. The living being resolves its problems not only by adapting itself — which is to say, by modifying its relationship to its milieu (something a machine is equally able to do) — but by modifying itself through the invention of new internal structures and its complete self-insertion into the axiomatic of organic problems.⁴ *The living individual is a system of individuation, an individuating system and also a system that individuates itself*. The internal resonance and the translation of its relation to itself into information are all contained in the living being's system. In the physical domain, *internal resonance* characterizes the limit of the individual in the process of individuating itself. In the domain of the living being, it becomes the criterion of any individual qua individual. It exists in the system of the individual and not only in that which is formed by the individual vis-à-vis its milieu. The internal structure of the organism is brought to completion not only as a result of the activity that takes place and the modulation that occurs at the frontier between the interior domain and the exterior — as is the case with a crystal; rather, the physical individual — perpetually ex-centric, perpetually peripheral in relation to itself, active at the limit of its own terrain — cannot be said to possess any genuine interiority. But the living individual does possess a genuine interiority, because individuation does indeed take place within it. In the living individual, moreover, the interior plays a constitutive role, whereas only the frontier

plays this role in the physical individual; and in the latter case, whatever is located on the inside in topological terms must also be thought of as genetically prior. The living individual is its own contemporary with regard to each one of its elements; this is not the case with the physical individual, which contains a past that is radically "past," even when it is in the throes of growth. The living being can be considered to be a node of information that is being transmitted inside itself — it is a system within a system, containing *within itself* a mediation between two different orders of magnitude.⁵

In conclusion, I can put forward the hypothesis — analogous to that of quanta in physics and also to that concerning the relativity between the levels of potential energy — that it is fair to assume that the process of individuation does not exhaust everything that came before (the preindividual), and that a metastable regime is not only maintained by the individual, but is actually borne by it, to such an extent that the finally constituted individual carries with it a certain inheritance associated with its preindividual reality, one animated by all the potentials that characterize it. Individuation, then, is a relative phenomenon, like an alteration in the structure of a physical system. There is a certain level of potential that remains, meaning that further individuations are still possible. The preindividual nature, which remains associated with the individual, is a source of future metastable states from which new individuations could eventuate. According to this hypothesis, it would be possible *to consider every genuine relation as having the status of a being, and as undergoing development within a new individuation*. A relation does not spring up between two terms that are already separate individuals, rather, it is an aspect of the *internal resonance of a system of individuation*. It forms a part of a wider system. The living being, which is simultaneously more and less than a unity, possesses an internal problematic and is capable of being an element in a problematic that has a wider scope than itself. As far as the individual is concerned, participation here means *being an element in a much larger process of individuation by means of the inheritance of preindividual reality that the individual contains* — that is, due to the potentials it has retained.

Thus, it now becomes feasible to think of both the internal and external relationship as one of participation, without having to adduce new substances by way of explanation. Both the psyche and the collectivity are constituted by a process of individuation supervening on the individuation that was productive of life. *The psyche represents the continuing effort of individuation in a being that has to resolve its own problematic through its own involvement as an element of the problem by taking action as a subject*. The subject can be thought of as the unity of the being when it is thought of as a living indi-

vidual, and as a being that represents its activity to itself in the world both as an element and a dimension of the world. Problems that concern living beings are not just confined to their own sphere: only by means of an unending series of successive individuations, which ensure that ever-more preindividual reality is brought into play and incorporated into the relation with the milieu, can we endow living beings with an open-ended axiomatic. Affectivity and perception are seen as forming a single whole in both emotion and science, forcing one to take recourse to new *dimensions*. However, the psychic being is not able to resolve its particular problematic within its own orbit. Its inheritance of preindividual reality allows collective individuation — which plays the role here of one of the preconditions of psychic individuation — to contribute to resolution, at the same time as this preindividual reality is individualized as a psychic being that goes beyond the limits of the individuated being and incorporates it in a wider system of the world and the subject. Individuation in its collective aspect makes a group individual, one that is associated with the group through the preindividual reality it carries within itself, conjoining it to all other individuals; *it individuates as q collective unit*. The two individuations, psychic and collective, have a reciprocal effect on each other; they allow us to define a transindividual category that might account for the systematic unity of internal individuation (psychic) and external individuation (collective). The psychosocial world of the transindividual is neither the social in its raw immediacy nor the interindividual state. It requires that one postulate the previous influence of a veritable process of individuation rooted in a preindividual reality, associated with individuals and capable of constituting a new problematic with its own metastability. It expresses a quantum condition, correlative to a plurality of orders of magnitude. The living being is presented as a *problematic being*, at once greater and lesser than the unit. To say that the living being is problematic means considering its becoming as forming one of its dimensions, and thus that it is determined by its becoming, which affords the being mediation. The living entity is both the agent and the theater of individuation: its becoming represents a permanent individuation or rather *a series of approaches to individuation* progressing from one state of metastability to another. The individual is thus no longer either a substance or a simple part of the collectivity. The collective unit provides the resolution of the individual problematic, which means that the basis of the collective reality already forms a part of the individual in the form of the preindividual reality, which remains associated with the individuated reality. In general, what we consider to be a *relation*, due to the substantialization of the reality of the individual, in fact forms a dimension of the process of

A battalion of farmer-militia prior to its departure for the Chinese front, 1895.
Suzuki Shinichi



individuation by which the individual becomes. In other words, the relation to both the world outside and to the collective is in fact a *dimension of the individuation* in which the individual participates due to its connection with the preindividual reality that undergoes gradual individuation.

Moreover, psychology and group theory are connected, since ontogenesis reveals the nature of the contribution made to the collective unit and also to that of the psychic process conceived as the resolution of a problematic. When we consider individuation to be life itself, then it can be seen as a discovery, in a situation of conflict, of a new axiomatic incorporating and unifying all the various elements of this situation in a system that embraces the individual. In order to understand the role played by psychic activity in the theory of individuation as that which resolves the conflictual character of a metastable state, it is necessary to uncover the true paths by which metastable systems are constructed in life. In this sense, both the notion of an *adaptive relation of the individual to its milieu*⁶ and the critical notion of the *relation of the knowing subject to the object known* must be modified. Knowledge is not built up through abstraction from sensations, but through a problematic deriving from a *primary tropistic unity, a coupling of sensation and tropism, the orientation of the living being in a polarized world*. Here once again it is necessary to distance ourselves from the hylomorphic schema. There is no such thing as a sensation that would be the matter constituting a given a posteriori for the a priori forms of the sensibility. The a priori forms are in fact a first resolution, utilizing the discovery of an axiomatic of tensions resulting from the confrontation of *the primary tropistic unities*. The a priori forms of the sensibility are not obtained either a priori or a posteriori by abstraction, but rather must be understood as the structures of an axiomatic that appears in a process of individuation. The world and the living being are already contained in the tropistic unity, but the world here only serves as a direction, as a polarity of a gradient that locates the individuated being in an *indefinite dyad* at whose median point it can be found, and upon which it bases its further exfoliation. Perception, and later Science itself, continue to resolve this problematic, not only with the invention of spatiotemporal frameworks, but also with the constitution of the notion of an object, which then becomes the "source" of the original gradients and organizes them among themselves as if they were an actual *world*. The distinction between the a priori and the a posteriori, an echo of the hylomorphic schema in the theory of knowledge, obscures, with its dark central zone, the true process of individuation that is the seat of knowledge. The very idea of a qualitative or intensive series would do well to be thought along the lines of a theory of *phases* or steps through which

a being passes. This theory is *nonrelational* and is not maintained by preexisting polar terms; rather, it develops from a primitive median state that localizes the living being and inserts it in the gradient that confers meaning on the tropistic unity. The series is an abstract vision of meaning by means of which the tropistic unity orients itself. We must begin with individuation, with the being grasped at its center and in relation to its spatiality and its becoming, and not by a realized [*substantialisé*] individual faced with a *world* that is external to it.

What I mean by this is that the *a priori* and the *a posteriori* are not to be found in knowledge itself.⁷ They represent neither the form nor the matter of knowledge — since they themselves are not knowledge — but the extreme poles of a preindividual dyad, and are consequently prenoetic. The illusion that there are *a priori* forms derives from the preexistence of *prior conditions of totality* in the preindividual system, whose dimensions are greater than that of the individual undergoing ontogenesis. On the other hand, the illusion that the *a posteriori* applies can be explained by the existence of a reality whose order of magnitude is inferior to that of the individual seen in the light of spatiotemporal modifications. A concept is neither *a priori* nor *a posteriori* but *praesenti*, because it is an informative and interactive communication between that which is larger than the individual and that which is smaller.

The same method outlined above can be used to explore the affectivity and the emotivity that constitute the resonance of the being in relation to itself, and that connect the individuated being to the preindividual reality associated with it in the same way that the tropistic unity and perception put it in relation with the milieu. The psyche is composed of successive individuations, which allow the being to resolve its problematic states by effectuating permanent communications between that which is larger than it and that which is smaller.

Resolution of the psyche, though, cannot take place at the level of the individuated being alone. It forms the basis of participation in a wider individuation, that of the collectivity. If the individual being puts itself, but nothing else, into question, then it will not be able to move beyond the limits of anxiety, for anxiety is a process without action, a permanent emotion that does not succeed in resolving affectivity, a challenge in which the individuated being explores the dimensions of its being without being able to progress beyond them. *To the collective understood as an axiomatic that resolves the psychic problematic corresponds the notion of the transindividual.*

This set of revised notions is supported by the hypothesis stating that a piece of information is never relative to a unique and homogeneous reality, but rather to two

orders that are in the process of “disparation.” The piece of information, whether it be at the level of the tropistic unity or at the level of the transindividual, is never delivered in a format that can be given in a simple way. It is the tension between two disparate realities, it is *the signification that emerges when a process of individuation reveals the dimension through which two disparate realities together become a system*. If this is the case, then the piece of information acts in fact as an instigation to individuation, *a necessity to individuate*; it is never something that is just given. Unity and identity are not inherent in the information because the information is itself not a term. For there to be information presupposes that there is a tension in the system of the being: the information must be inherent in a problematic, since it represents *that by which the incompatibility within the unresolved system becomes an organizing dimension in its resolution*. The information implies a *change of phase in the system* because it implies the existence of a primitive preindividual state that is individuated according to the dictates of the emerging organization. The information provides the formula that is followed by individuation, and so the formula could not possibly preexist this individuation. One could say that the information always exists in the present, that it is always contemporary, because it yields the meaning according to which a system is individuated.⁸

The conception of being that I put forth, then, is the following: a being does not possess a unity in its identity, which is that of the stable state within which no transformation is possible; rather, a being has a *transductive unity*, that is, it can pass out of phase with itself, it can — in any area — break its own bounds in relation to its *center*. What one assumes to be a *relation* or a *duality of principles* is in fact the unfolding of the being, which is more than a unity and more than an identity; becoming is a dimension of the being, not something that happens to it following a succession of events that affect a being already and originally given and substantial. Individuation must be grasped as the becoming of the being and not as a model of the being which would exhaust its signification. The individuated being is neither the whole being nor the primary being. *Instead of grasping individuation using the individuated being as a starting point, we must grasp the individuated being from the viewpoint of individuation, and individuation from the viewpoint of preindividual being, each operating at many different orders of magnitude.*

I intend therefore to study the *forms, modes and degrees of individuation* in order to situate accurately the individual in the wider being according to the three levels of the physical, the vital and the psychosocial.⁹ Instead of presupposing the existence of substances in order to account for individuation, I intend, on the contrary, to take the dif-

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.¹⁰ 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.¹¹ 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 resonance¹² 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*.¹³

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.¹⁴ 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.

4. It is by means of this self-insertion that the living being can be seen as the product of informational exchange, by becoming a node of interactive communication between an order of reality dimensionally superior to its own, and an inferior order whose organization it undertakes.

5. This internal mediation can occur as a continuance of the external mediation that is accomplished by the living individual, thereby allowing the living being to bring two different orders of magnitude into relation with one another: that of the cosmic level (as in the luminous energy of the sun, for example) with that of the intermolecular level.

6. Specifically, the relation to the milieu cannot be envisaged, either before or during individuation, as relation to a unique and homogeneous milieu. The milieu is itself a *system*, a synthetic grouping of two or more levels of reality that did not communicate with each other before individuation.

7. This paragraph appeared as a footnote in the original French — TRANS.

8. This statement is not meant to contest the validity of quantitative theories of information and of orders of complexity, but it works under the assumption that there is a fundamental state — that of the preindividual being — that precedes any duality of sender and receiver, thus any transmitted message. The residue of this fundamental state in the classic example of information transmitted in the form of a message is not the source of the information but the primordial precondition without which there is no information-effect, which means no information. This precondition is the metastability of the receiver, whether it be that of a technical being or the living individual. This information could be called “primary information.”

9. *L'Individu et sa genèse physico-biologique: L'Individuation à la lumière des notions de forme et d'information* (Paris: P.U.F., 1964). The present essay forms the introduction to that work — TRANS.

10. Above all, it should be noted that the multiplicity of orders of magnitude and the primordial absence of interactive communication between them forms an integral part of any such understanding of the being.

11. On the contrary, it expresses the primordial heterogeneity of the two levels of reality, one larger than the individual — the system of metastable totality — the other smaller than it, such as a piece of matter. Between these two primordial orders of magnitude the individual develops through a process of amplifying communication of which transduction is the most primitive form, one already present in the physical individuation.

12. Internal resonance is the most primitive form of communication between realities of different orders. It is composed of a double process of amplification and condensation.

13. This process is paralleled by that of vital individuation. A plant institutes a mediation between a cosmic order and an inframolecular order, classifying and distributing the different chemicals contained in the soil and the atmosphere by means of the solar energy obtained from photo-synthesis. It is an interelemental focal point and it develops as an internal resonance of this preindividual sys-

tem composed of two layers of reality that originally had no contact with each other. The interelementary focal point effects an infraelementary function.

14. In this way, the form appears as an active communication, the internal resonance that effects individuation — it appears with the individual.

Translated from the French by Mark Cohen and Sanford Kwinter