In his 1966 review of Simondon’s book Individuation and its Physical-Biological Genesis, Gilles Deleuze points out the “wealth and originality” of the new concepts created by Simondon (Desert Islands 89). He particularly highlights the category of the “problem,” which “acquires in Simondon’s thought tremendous importance in so far as the category is endowed with an objective sense: it no longer designates a provisional state of our knowledge, an undetermined subjective concept, but a moment of being, the first pre-individual moment” (88).

For Simondon, there are biological, perceptual, affective and psychosocial problems. As a preliminary definition one can say that “problem” designates a structural moment in the dynamic process of individuation: a moment of metastability, of disparity between different orders of magnitude, followed by the event of coupling between these different orders, a state of internal resonance of the entire dynamic system, and eventually the resolution of the tension by amplification, that is, the leap to a higher, functional ensemble. Simondon seems to use the notion of the problem also as an ontological category, inasmuch as it operates as the precondition or motor of “ontogenesis,” i.e., his theory of non-identical being that successively dephases itself through various processes of individuation.

Deleuze praises Simondon’s “profoundly original theory of individuation implying a whole philosophy” (86) and it appears that in his own book Difference and Repetition, published only two years after he reviewed Simondon’s Individuation and its Physical-Biological Genesis, Deleuze precisely spells out the implications of Simondon’s theory, in particular with regard to the notion of the problem or the problematic. At the same time, Deleuze mainly credits Kant as a source for his notion of problematic Ideas: “Kant never ceased to remind us that Ideas are essentially ‘problematic’. Conversely, problems are Ideas” (Difference 168). Other influences on his theory of problematic Ideas, or indeed meta-calculus of problematic Ideas, are also apparent, such as the writings of Albert Lautman and Salomon Maimon, as well as “the old so-called barbaric or pre-scientific interpretations of the differential calculus” (170). The various influences are blended together into
Deleuze’s conception of the problem or problematic Idea as a system of ideal differential relations and corresponding pre-individual singularities. While this definition makes explicit use of mathematical concepts (“differential,” “singularities”), this association is already present in his 1966 review of Simondon when he compares the latter’s problematic element of pre-individual being with the role of singularities in differential equations:

The importance of Simondon’s thesis is now apparent. By discovering the prior condition of individuation, he rigorously distinguishes singularity and individuality. Indeed the metastable, defined as pre-individual being, is perfectly well endowed with singularities that correspond to the existence and the distribution of potentials. (Is this not the same as in the theory of differential equations, where the existence and the distribution of “singularities” are of another nature than the “individual” forms of the integral curves in their neighbourhood?) (Desert Islands 87)

In *Difference and Repetition* Deleuze recasts Simondon’s pre-individual being as “a virtual-ideal field, made up of differential relations” and the distribution of singularities (246). While Deleuze’s concepts are certainly inspired by Simondon, he nevertheless takes a further step, not least by isolating differential calculus as a way of theorising his notion of problematic Ideas. For Deleuze, the problematic Idea is virtual and possesses its own reality; it actualises itself by means of spatio-temporal dynamisms.

Simondon’s use of the notion of the problem is very different. It is first of all evident that Simondon uses the notion of the problem throughout the book mainly in reference to living beings. The essential characteristic of life is its ability to solve problems through acts of invention: “the living being solves problems not only by adaptation, that is, by modifying its relation to the milieu (as a machine can), but by modifying itself, by inventing new internal structures, by inserting itself completely in the axiomatic of vital problems” (ILFI 28). For Simondon, the living being is nothing but the perpetual resolution of problems. With regard to the individuation of non-living, physical systems, Simondon uses other terms drawn from physics and especially thermodynamics (such as metastability, polarisation, transduction) in order to explain the process of individuation. We will see that this happens for a good reason: Simondon is careful to distinguish non-living from living systems, in response to what he takes to be the blurring of differences among certain cyberneticians. Non-living systems differ from living beings in terms of their temporal and topological structures, as well as with regard to their capacity to receive information and the power of invention. Yet there is no substantial difference between living and non-living systems, since they are developments within a plural, multi-phased evolutionary process.

The concepts of metastability, polarisation and transduction play a central role in Simondon, because they constitute his paradigm example of individuation: the growth of a crystal. The difficulty that he then faces is to justify how this physical paradigm can be applied to other domains of individuation, and indeed to what extent he wishes to generalise it. This is how he himself describes his method:

we have tried to draw a paradigm from the physical sciences, thinking that it can be transposed to the domain of the living individual: […] Presupposing that there are diverse degrees of individuation, we used the physical paradigm without effectuating a reduction of the vital to the physical. (ILFI 309)

At first glance, this method seems paradoxical. The paradigm example and central notions are derived from the physical sciences, yet by these conceptual means Simondon wants to analyse structures and functions proper to living beings (and human beings in particular), without reducing the living to the physical. The transposition of the physical paradigm is only possible if there is “an operative and functional analogy between the original domain and the domain of application of the paradigm” (ibid.). It is important to note, however, that analogy here does not mean an identity of
general principles or a resemblance between already fully structured domains, but rather between the specific operations of individuation. As Muriel Combes points out, “we cannot claim to study individuation in general. We are always dealing only with singular cases of individuation, which complicates the task of a global theory of individuation” (12). This is why Simondon, who had a profound knowledge in physics, mineralogy, psychophysiology, technology and engineering, spends so much effort on the analysis of his examples, pointing out the differences and particularities of each case. He puts his thesis of the physical paradigm and his analogical method to the test, but he hesitates to go much further. We can identify a central tension of Simondon’s work around this question of the generalisability of the paradigm; its problematic status between singular and universal is arguably not resolved, but remains in a productive indeterminacy.

In the Conclusion to his doctoral thesis Individuation in the Light of the Notions of Form and Information Simondon says that

physical individuation is the resolution of a primary problem in progress, and the vital individuation inserts itself into it, in the wake of the emergence of a new problematic; there is a pre-physical problematic and a pre-vital problematic; physical individuation and vital individuation are modes of resolution; they are not absolute points of departure. (310)

This is a very rare occasion when Simondon does indeed speak of physical individuation as the resolution of a problem. Yet the problematic conditions are always specific and, for Simondon, we cannot study the problematic in general. We might surmise that it is Deleuze’s own achievement to stipulate a universal structure of the problem or problematic Idea. He “universalises” the notion of the problem by defining the structure of problems through differential relations and singularities; these are then placed outside chronological time in a realm of virtual becoming, coexistent with actual processes of individuation. Simondon, on the contrary, conceives a plural, multi-phased evolutionary process, which involves a sequence of various problematic structures and resolutions, each case differing from the others. There is no overarching unity since evolution is nothing but an ensemble of genetic processes. Evolution, for Simondon, is an open process, which harbours an indefinite possibility of progress, in particular for the human being who can act in accordance with technological objects and thus increase its power to resolve problems. We always encounter new problems and need to apply our power of imagination and invention in pursuit of solutions that lead to new individuations. Simondon focuses all his attention on the particularities of the different processes of individuation. One could perhaps say that this is his way of approaching “universality,” by directing his attention to the wealth of details of actual problems and declining to generalise or push one paradigm too far.

This paper will outline Simondon’s analyses of physical, vital and psychosocial individuations. It will introduce the physical paradigm of crystallisation and clarify the way in which life and the psychosocial world emerge from pre-individual nature as their condition. The living will essentially be described as a “problematic being” (ILFI 29): it is simultaneously an “element in a problematic greater than its own being” (ibid.), inasmuch as it maintains a “charge” of pre-individual reality within itself, and at the same time the agent and theatre of an “interior problematic” (ibid.), which requires a solution through the invention of new internal structures. A unicellular or multicellular organism manifests its specific power of invention through the operation of the polarised membrane, which creates new chrono-topological structures. The more complex psychic individual enacts its capacity of invention by resolving the perceptual problematic and the affective problematic through the creation of and participation in a higher dimension: the social dimension of the transindividaul.

I the paradigm of the crystal and the notion of information

Simondon’s interest in individuation is motivated by what he sees as an essential
misunderstanding in the history of philosophy. Philosophers have failed to answer the question of how we should think the genesis or constitution of individuals. They have taken individual entities for granted and looked for an explanation in an anterior principle of individuation. The individuating process itself, that is, the actual operations that take place, were not considered capable of providing any explanation. Simondon, on the contrary, suggests what he calls an “ontogenetic” perspective: if we want to understand the emergence of individuals (and here “individual” has to be taken in the broad sense of physical individuals, biological individuals, psychic and collective individuals), then we have to investigate the process of individuation itself.

Simondon discovers this misunderstanding in a variety of places. For instance, he criticises substantialism, in particular substantialist atomism that assumes that all individual beings are composed of atoms, i.e., indefinitely small and indivisible particles that are ultimate simple. These atoms already presuppose what they are supposed to explain: an individual entity. Another of his targets is hylomorphism, be it the Aristotelian hylomorphic model of matter and form or modern versions of it. Hylomorphism, according to Simondon, seeks the principle of individuation either in form or in matter. If form is taken to be the principle of individuation, then the individual is explained as the result of a process of formation, by which form is imposed upon inert matter. If matter is taken to be the principle, the individual is explained by materialisation of a pre-existing form (ILFI 58). Either way, whether the principle of individuation is identified with form or with matter, the doctrine of hylomorphism presupposes that the individual can be individuated by a principle that pre-exists its genesis (61). It does not take account of the discrete operations by which an individual takes shape. According to Simondon, it is only within a material, energetic system under the condition of metastability that processes of individuation can take place and an individual emerge.

In the second chapter of the first part of Individuation in the Light of the Notions of Form and Information, entitled “Form and Energy,” Simondon deals with individuation in dynamic physical systems that contain a potential energy, which is actualised under specific conditions. There he elucidates the example of crystallisation in an amorphous substance, which depends on the energetic conditions of the system, in particular temperature and pressure. When a modification of these conditions makes the system pass a certain threshold, then a transition takes place from an amorphous state to a crystalline structure. In this case, the potential energy contained in the amorphous substance is actualised by a change of the energy state of the system, that is, by effectuating a series of phase-shifts from a stable equilibrium to a metastable equilibrium and the beginning of crystallisation. The condition for the emergence of a crystalline structure is the metastability of the system, which can be defined as the maintenance of an energy state that is different from the resting state in that it allows for processes of transformation under certain energetic conditions.

Simondon considers a variation of this example: the crystallisation of a supersaturated solution through the insertion of a seed, which breaks the stable equilibrium and shifts the system into a different energetic process. In this case, the seed initiates the process of crystallisation and propagates it through the whole system. Departing from this initial point, the individual crystal takes shape through an iterative progression expanding in all directions: each already constituted molecular layer serves as the structural base for the constitution of another molecular layer (ILFI 33). Simondon calls this structuring operation transduction. Transduction is thus defined as the propagation of a structure within a milieu by passing from one state of energy to another. The structuration goes on until the energy potential of the solution is exhausted.

This case, in which a phase-shift takes place through the insertion of a seed from outside the system, will become the prime example for Simondon. What is most important is that the beginning of crystallisation is marked by an event: the introduction of a seed, which plays
the role of a singularity. A singularity acts as information, that is, it provokes the polarisation and internal resonance of the system, which leads to the constitution of the individual (the crystal): “The constituted individual encloses within itself a synthesis of the material and energetic conditions as well as a principally non-immanent, informational condition” (79; my emphasis). The key term here is that of information, which according to Simondon has to replace the traditional notion of form (35). Simondon borrows the term from cybernetics but modifies it considerably.

Cybernetics is an interdisciplinary science, which aims to explain the organisation and functioning of systems (be they linguistic, biological, psychological, sociological or technological) through universal principles and formal operations. The cybernetic project was established in the 1940s by the mathematician-engineers Norbert Wiener and Claude Shannon, and soon became prominent in communication and coding theories, linguistics and cryptography, as well as in the biological sciences. The major concern was the modelling of the behaviour of systems by means of theories of feedback mechanisms and information.

Shannon’s theory of information conceived a system as consisting of a sender and a receiver that both use the same set of possible messages. Information was defined as a string of symbols belonging to a set of possible messages that can be extracted from noise, i.e., random distortions occurring while the message travels through the channel from the sender to the receiver. While Shannon was interested primarily in the application of information theory to problems of communication in engineering, Wiener considered information as negentropy in material systems in physics and biology (Mills 18). Negentropy or negative entropy is the reverse of entropy and describes the tendency towards orderliness and organisation in systems. By means of the thermodynamic notion of negentropy, he thus linked information with the production of form.13

Although Simondon is greatly inspired by cybernetics, he criticises it harshly. First of all he argues that information can only secondarily be considered as a coded message passing from a sender to a receiver. Such a view already presupposes the emitter and the receiver as entities and begs the question how these individuals were constituted in the first place. The cybernetic notion of information relies on a more fundamental operation, which Simondon calls “primary information” (ILFI 31 n. 10). Primary information prompts the emergence of transductive operations within energy systems, but it should not be conceived simply as the source for the production of form, since this would amount to a recasting of hylomorphism. Rather, information has to be understood as the event of releasing a structuring operation, which propagates within a metastable system.

More precisely, to take the example of crystallisation again, the act of information consists in breaking the equilibrium of the supersaturated substance and setting off an internal resonance between the energy potential of the liquid and the crystalline structure taking shape. The information does not pre-exist in the seed as something given which is then released to inform the matter. Rather, information is the event of polarisation between two disparate “orders of magnitude,”14 or the relation between two disparate series (the liquid and the crystal). For Simondon, a relation is not an external relation between already constituted individuals, but the reality that first of all constitutes individuation. “The relation has the same rank of reality as the terms themselves,” Simondon insists. “The relation is not an accident vis-à-vis a substance but a constitutive, energetic and structural condition which extends itself into the existence of constituted beings” (ILFI 83; see also 28–29, 128).

Hence, the individuation of a system requires the consonance of three conditions: in addition to a material or structural condition and an energetic condition, there must be a compatibility between the latent structure of the amorphous substance and the structure of the crystalline seed. Simondon calls this third type of condition an “analogical relation” (87), adding that “this relation is information” (88). In terms of energy, the three conditions can be summarised as follows:
In every operation of modulation, three energies are present: the strong potential energy of the amorphous substance in a metastable state, the weak energy supplied by the crystalline seed (modulating energy, information), and finally, a coupling energy between the amorphous substance and the crystalline seed which complies with the fact that the amorphous substance and the seed form a physical system. (87 n. 11)

Although, in this quote, Simondon explains the crystalline seed as “modulating energy, information,” it should be clear that the seed does not simply provide the form. The coupling energy or the relation between the solution and the seed is the necessary condition for the information to unfold and the process of individuation to take place. In Simondon’s words: “The relation between the seed and the amorphous substance is a process of information of the system” (90 n. 13).

2. the difference between physical and vital individuation

Simondon’s paradigm case of crystallisation provides him with an image for conceiving processes of individuation in the absence of any anterior, pre-existing principle of individuation and for explaining the emergence of an individual and its associated milieu. He aims to think vital individuation through a transfer of terms from the elementary paradigm of the crystal (terms such as metastability, polarisation, transduction, information, internal resonance, threshold, etc.) to the domain of the living. His intent is to find similar operations in vital individuation without reducing the living to the physical or supposing that the processes are precisely the same in each case. To the concepts drawn directly from the paradigm he will thus add certain others, developing the notion of the problem to think the distinguishing characteristics of vital as opposed to physical individuation. A careful reading will show that he refrains from universalising the paradigm, and from bestowing upon it a metaphysical reality (as Deleuze arguably does by rendering the metastable field “transcendental” and turning Simondon’s disparate orders of magnitude into a virtual reality of pure differences).

As has been shown, the growth of a crystal in a supersaturated solution depends on potential energy, which becomes actualised in the transductive process of individuation. The crystal can grow until the potential energy of the solution is exhausted. If this crystal is introduced into another supersaturated solution with which it is compatible, the growth will continue according to the same pattern. The process of individuation is never fully accomplished, in the sense that it is always possible to extend it. Simondon says that “the perfect, totally individuated, substantial individual that is deprived of and emptied of its potentials is an abstraction” (ILFI 149). This is even more so the case for vital individuation:

a being is never completely individualised; in order to exist, it needs to be able to continue individualising itself by resolving problems in the milieu surrounding it, which is its milieu; the living is a being that perpetuates itself by performing acts of resolution relating to the milieu; it brings with itself rudiments of solution [amorces de résolution] because it is living. (257)

In the living being, the process of individuation survives in the form of an associated milieu. In other words, individuation that has arisen from an originally primary or pre-individuated set of conditions does not simply result in a complete individual but always in the association of individual and milieu, which then continues the process of individuation through the further encounter with and resolution of problems. The individual always carries a certain “charge” of pre-individual reality, which is conceived as the source of metastability. What is encountered as disparity, tension and incompatibility then has to be resolved through a new functional structure. For Simondon, life is thus characterised through successive structurings and the invention of new amplified functions. In his own words, “life has to be conceived as a transductive sequence of operations of individuation, or as a chain of successive resolutions whereby every previous
resolution is taken up and incorporated by following resolutions” (213).

It is important to note that Simondon defines as “pre-individual” the dimension of being which provides the material and energetic conditions for processes of individuation. This is being in a metastable state, rich in potentials, but not being as substance, as self-identical. Simondon likes to say that pre-individual being is more than unity and more than identity (26). It is more and other because it lacks stability, as in the state of polarisation in the case of the supersaturated solution; the “relation to itself” is not one of identity or coherence but one of disparity between two heterogeneous orders (e.g., the liquid and the crystal) that a singular event of information can modulate and resolve. Yet there is no ultimate “resolution” of such disparity. Pre-individual reality is “untotizable”: it cannot be considered as a single “creative reservoir of phenomena or an unlimited source of giveness” (Toscano 155). It does not contain any pre-given forms or structures and cannot anticipate the outcome of every singular process of individuation. Pre-individual being is anterior to the succession of phase-shifts but, as Simondon says, it contains them energetically, not in terms of forms or structures that can occur – just as the position of a problem contains in a certain sense its possible solutions, under the form of tension toward a signification, which incorporates the givens of the problem, yet without preformation of the effective lines of solution, which only occur through the real becoming of a resolvatory invention [invention résolutive] and which are its becoming. (ILFI 314)

Toscano argues that the pre-individual has to be conceived as “a real condition” of particular cases of individuation, inseparable from the variety and specificity of transductive operations (155). It is the metastable field or the supersaturated solution in the case of the crystal. It is preserved in the associated milieu of the living being. Since it is always related to particular cases and transductive operations, “it would therefore be more accurate to speak in the plural of predindividual fields – determinable energetic and material conditions modulated by events of information – and to consider being as nothing other than the untotizable plane that these fields populate” (ibid.). Toscano thereby seeks to avoid the danger of speaking of the pre-individual “as such,” which would turn it into an obscure notion, serving only “a cosmogonic narrative moving from the undifferentiated to the individual” (ibid.). Although Simondon’s theory sometimes seems to carry elements of just such a cosmic narrative, he himself emphasises in the Conclusion of his book that his ontogenetic theory of individuation is simply “a study of the conditions” under which individuals and their associated milieus are produced (ILFI 318). It is the study of the structural and energetic conditions of various problems of individuation. Again we can detect here a certain vacillation in Simondon: he indeed uses the notion of the “pre-individual” tentatively as an ontological category, yet the concept is hollow unless we are dealing with concrete cases of individuation under specific conditions. The concept is but a general hypothesis, which cannot absolve us of actual empirical-scientific research.

Vital individuation is specific because living beings are able to resolve their primary problematic through a self-constitutive activity: the invention of new (topological and temporal) structures. According to Simondon, the genesis of the [living] individual corresponds to the resolution of a problem, which cannot be resolved according to anterior givens, because they have no common axiomatic; the individual is self-constitution of a topology of being that resolves an anterior incompatibility through the apparition of a new systematic; what was tension and incompatibility becomes functional structure. (ILFI 256–57)

It is precisely the self-constitution of a “topology” of being, the invention of a new systematic that is characteristic for the living being. Although Simondon transfers physical concepts to the domain of the living, he remains attentive to the differences between the diverse domains
of individuation. He argues that thought discovers an analogy of operations between physical and living systems, but this analogy has nothing to do with an identity of principles. In fact, Simondon shows that physical and living beings have different topologies and chronologies; they also differ with regard to their capacity to receive information and the capacity of invention. The essential traits are four:

1. **Topology.** The operation of individuation of the crystal departs from the initial seed and proceeds continuously in relation to the outer layer of the crystalline structure, precisely at those points that are in contact with the supersaturated solution. Only the outer layer disposes of the power to create growth (ILFI 90). In other words, the individuating activity occurs at the limit of the crystal. Although this limit concerns the surface between the domain of interiority and the domain of exteriority, Simondon makes clear that “the words ‘interiority’ and ‘exteriority’ do not apply in their usual sense to this reality which is the crystal” (95).

The physical individual, perpetually decentred, perpetually at the periphery, active at the limit of its domain, has no veritable interiority; the living individual, on the contrary, has a veritable interiority, because the individuation accomplishes itself inside; the interior is thus constitutive in the living individual, while in the physical individual only the limit is constitutive. (28)

Already the most basic living being, a unicellular organism, has a true interiority, which is separated from the exterior milieu through a semipermeable membrane. The membrane allows only certain elements to pass through, not others. This selective porosity depends on the fact that the membrane is polarised:

The membrane of the living [...] is characterised as that which separates a region of interiority from a region of exteriority: the membrane is polarised; it lets one element pass in a centripetal or centrifugal direction, while opposing the passage of another element. (224)

The polarised membrane, because of its selective activity, differentiates the interior from the exterior and thereby literally creates an interiority, a topology which is necessary to produce the living. According to Sauvagnargues, “the membrane thus defines the leap from the chemical to the living, and promotes the emergence of this new property: the difference between exterior and interior, the result of its differentiating action” (67).

A multicellular organism equally has an interiority but is more complicated, as it contains in fact several layers of relative interiority and exteriority (ILFI 225). For instance, in the human body the digestive cavities are a milieu of exteriority for the cells of the surface area that absorb the nutrients and water from digested food and transfer these substances to blood in nearby blood vessels. The blood in its turn is an exterior milieu for the glands that discharge their secretions in the bloodstream (ibid.). Interiority and exteriority are everywhere in the complex living being (191).

Thus we could say that the structure of a complex organism is not only integration and differentiation; it is also an instauration of a transductive mediation of interiorities and exteriorities, which goes from an absolute interiority to an absolute exteriority through different mediating levels of interiority and relative exteriority. (225)

While the interior of a crystal is inert and has no role to play in the transductive operations of individuation, the interiority of the living being is active and co-present with the processes of transduction. A simple organism “lives at the limit, on its borders” (224), that is, at its membrane. As Simondon says:

life’s characteristic polarity is at the level of the membrane; there life essentially exists as an aspect of a dynamic
topology, which maintains the metastability through which it exists. Life maintains metastability by itself – a metastability that requires a topological condition: structure and function are inherently linked because the most primitive and the most complex vital structure is topological. (225)

Living beings are thus defined through “a certain topological arrangement,” a “topology of the living” (224), which they create and maintain.

(2) Chronology. The chronological dimension is closely related to the topology of the system. The crystal, according to Simondon, is an individual that is in the present only at its limit (90). Its inner structure consists of layers that represent a past activity; it is a past that is “radically past” (28) in the sense that these layers cannot be brought to the surface. They cannot be made to resonate with the metastable milieu, the supersaturated solution, which is the source of future structurations.

The living being, on the contrary, establishes an internal resonance between the interior and the exterior, where “internal” refers to the fact that both interior and exterior are part of a single system of conditions. “At the level of the polarised membrane, the interior past and the exterior future confront one another” (227). The polarised membrane separates those substances that can pass from those that are refused; it establishes a relation between interiority and exteriority, past and future. The interiority of the living is the organic memory and the affective inner world; the milieu of exteriority is the perceptual world and the future affective encounters anticipated by habit. The whole interior is in contact with the exterior; there is no unbridgeable distance within the topology of the living. “The living individual is contemporary with all its elements, which is not the case for the physical individual, which includes a past, which is radically past, even if it is still growing” (28). This contemporaneity, which is typical for the living being, is a modality of the present, but it differs from the iterative instantaneity that characterises the physical system. The time of the living being is “a complex and phased temporality, producer of its own past and its own capacity for the future” (Sauvagnargues 70). Simondon did not provide a particular concept for this temporality but he acknowledges that it would be necessary to define, in addition to a topology of the living, a chronology of the living associated with that topology, one that is equally elementary as well as different from the physical conception of time as topology is different from the structure of Euclidean space. (ILFI 226)

(3) Capacity to receive information. The physical system, as in the case of crystallisation, receives information only once. This is the introduction of the seed into the supersaturated solution, which marks the beginning of an indefinite process of individuation without self-limitation.

If the system is capable of receiving successively several bits of information, to integrate several singularities instead of reiterating through a cumulative effect and transductive amplification the initial and unique singularity, the individuation belongs to the vital, self-limited and organised type. (ILFI 152)

The living being is able to receive and respond to several pieces of information, such as sensations and affections. Let us take Uexkühl’s example of the tick, which fascinated a number of philosophers, among them Canguilhem, Deleuze and Agamben. In the essay “Spinoza and Us,” Deleuze says that the tick knows only three affects:

the first has to do with light (climb to the top of a branch); the second is olfactive (let yourself fall onto the mammal that passes beneath the branch); and the third is thermal
One can imagine that the more complex the organism, the greater is its capacity to be affected. Simondon explains this increasing capacity of the organism through a “slowing down” of the process of individuation. “In this view, vital individuation would insert itself in physical individuation while suspending and slowing down its development” (ILFI 152). This view is inspired by the idea of “neoteny,” a term used in developmental biology and theories of evolution to describe a process in which the development of an organism is slowed down or delayed. Instead of a constant amplifying structuration as with the crystal, the living being slows down its development: this prolonged maturation allows the individual “to devote itself to a longer formation through apprenticeship, during a period in which the nervous system is still receptive, that is, before adulthood” (173).

(4) Invention. Another difference exists between physical and living systems, which has already been mentioned in relation to the polarised membrane of the living being: through folding and mechanisms of selection the membrane creates its own chrono-topology; it invents new internal structures. The crystal’s possibility of growth is restrained to a particular crystal lattice, which repeats itself over and over again. Crystalline solids can be distinguished according to their periodic structure (ILFI 95), that is, the characteristic interatomic spacing and spatial arrangement that constitute the lattice. By contrast, the process of structuration or transduction in the living being is much more open, irregular and inventive:

the living being is characterised by the fact that it discovers within its own field of reality structural conditions that allow it to solve its own incompatibilities, the distance between the orders of magnitude of its reality, while inert matter does not have this power of autogenesis of structures; a singularity is needed for the supersaturated solution to crystallise. (151)

The capacity of invention characteristic of the living being can be described as a capacity for selection of its conditions as well as the power of autogenesis and reproduction of its structures. For Simondon, distancing himself from cybernetics, this capacity of invention is much more than the feedback mechanism of a system. A machine endowed with a recurrent causality can adapt to its environment by progressively reducing the gap between its performance and the agreed goal. The living being can invent goals in the course of its action (161); it is not limited by predetermined conditions.

Hence, contrary to many cyberneticians, Simondon defends a distinction between physical systems and living beings as regards the dimensions of topology, chronology, information and invention. But he does not claim that there is a substantial difference between them; there is a difference in terms of the regime of structuration or transduction. “The individual would thus always be a system of transduction, but while this transduction is direct and occurs at only one level in the physical system, it is indirect and hierarchical in the living being” (160). The essential coordinates of individuation are the same in both domains: the condition of a pre-individual reality, which is the bearer of energetic and structural conditions, the reception of information, the internal resonance between disparate orders of magnitude. However, the notion of the problem, as a correlate of the notion of invention, is rather specific to Simondon’s conception of the living being. To put it more bluntly, crystals have no problems that they need to resolve.

The physical and the living, then, are different processes of individuation, whereby vital
individualization inserts itself into physical individuation: there is both a continuity and a quantum leap between inert systems and living beings, depending, it seems, on the perspective that one takes:

Among the macrophysical forms of individuation we can well distinguish between the living and the non-living: while an organism assimilates itself by means of diversification, the crystal grows by reiterating the adjunction of ordered layers in indefinite number. But on the level of macromolecules, it is hard to tell whether the infiltrating virus is living or non-living. (152)

If a continuity exists between the living and the non-living, it must be sought on the level of the macromolecules that organic chemistry deals with.

3 psychosocial individuation: the perceptive and the affective problematic

According to Simondon, psychic individuation is not distinguished from vital individuation in terms of any kind of substantial difference or difference in nature. It should rather be seen as a “continuation [poursuite]” of vital individuation (ILFI 29), or a subsequent individuation that “intervenes into the living as a slowing down of individuation, as a neotenic amplification of the first state of this genesis” (165). Simondon made this same move previously with regard to the distinction between physical systems and vital beings, when he put forward the idea of neoteny. And again Simondon resists not only a substantialist approach but also a hylomorphic model: “When the psychic arises, there exists a relation between the vital and the psychic that is not one of matter to form, but one of individuation to individuation; psychic individuation is a dilation, a premature expansion of vital individuation” (166).

The psychic individual is not a new type of individual but rather a living being with psychic problems.15 There is no difference in kind between the living and the psychic but rather a difference of degree. What distinguishes the living being from the psychic individual is to be found mainly at the level of their capacity of being affected and their power of action. In the living being, perceptions and affections are extended in motor response, that is, in forms of action. Affectivity has a simple transductive function; it regulates the relation between the perceptive mode and the mode of action: “in the living, affectivity has a regulating value; it surmounts the other functions and ensures this permanent individuation, which is life itself” (165). However, in psychic life, affectivity is overflowing; it poses problems instead of solving them, and it leaves the perceptive–active functions unresolved. The advent of psychic existence manifests itself essentially in the apparition of a new, higher and more difficult problematic, which cannot find any veritable solution in the properly defined interior of the living being. (Ibid.)

Simondon argues that in the psychic individual affectivity no longer fulfils a regulating function; it actually causes additional problems because of its “overflowing” dynamic. The problems that the psychic individual encounters are of a perceptive–active and affective–emotive nature and cannot be solved by the individual alone: “Psychic reality is not closed upon itself. The psychic problematic cannot be resolved in an intra-individual manner” (166). According to Simondon,

a psychic life that only remains on the intra-individual level would not be able to overcome a fundamental disparity [disparation]16 between the perceptive problematic and the affective problematic. The psychic being, that is, the one that accomplishes as completely as possible the operations of individuation and does not restrict individuation to its previous vital stage, resolves the disparity of its internal problematic only in the manner that it participates in the individuation of the collective. (167)

Participation in the social dimension of life is thus crucial for Simondon and inseparable from psychic individuation. For this reason,
he sometimes speaks of psychosocial individuation rather than of psychic individuation and collective individuation. However, before turning to the social dimension of life, let us first ask what motivates the emergence of the collective. It is not easy to understand what the “fundamental disparity” or tension between the perceptive and the affective problematic that generates this inseparability is: why should there be any disparity between perception and affectivity at all and why does it necessitate a resolution in the domain of the collective? In a first step, we will look at the so-called perceptive problematic.

The main problem that Simondon addresses is that of explaining how the subject perceives separate objects and not a confused continuum of sensations. He criticises Gestalt theory for not being able to provide a sufficient explanation: “It is not sufficient to say that perception consists in seizing organised wholes” (239). The theory of the Good Form, as Simondon calls it, sees structural unities, totalities and does not take into account the energetic condition of the system, that is, its metastability, potential energy and the “relational activity of information” (230 n. 1). “Perception is not the seizure of a form but the solution of a conflict, the discovery of a compatibility, the invention of a form” (231).

Simondon does not hesitate to use the physical paradigm of a metastable supersaturated solution for his theory of perception. The perceptive problematic, which includes the subject and the perceptual field, consists of an intensive diversity, which makes the subject-world system comparable to a supersaturated solution; perception is the resolution that transforms the tensions that affect this supersaturated system into an organised structure; one could say that each veritable perception is the resolution of a problem of compatibility. (240)

According to Simondon, perception is the resolution of a problematic and this problematic essentially consists of intensities and thresholds of intensity. “What the human being perceives in the objects, when he seizes them as individuals, is […] a reality of certain thresholds of intensity and of quality maintained by the objects” (235).

The theory of the Good Form, according to Simondon, focuses only on the quality of information, namely the good (orderly, regular, simple and geometrical) form. The technological theory of Information relies on the quantity of information: technical media such as the tape recorder, photography, or film register reality as an indefinite source of signals. For these recording devices, there is no difference between a heap of sand or the irregular surface of a granite rock on the one hand, and the image of an orderly infantry formation or of the columns of the Parthenon on the other (237). Simondon argues that “neither the concept of ‘Good Form’ nor that of the pure quantity of information is appropriate for defining the reality of information. Beyond information as quantity and information as quality there exists what one can call information as intensity” (238; my emphasis). Intensive information refers to the relational and perceptive polarity in the sensorial world: cold and hot, heavy and light, dark and bright, etc. “This existence of a perceptive polarity plays a preponderant role in the segregation of perceptive unities; neither the Good Form nor the quantity of signals can give an account of the segregation” (239). Sensation, for Simondon, is of an intensive and differential nature: “Sensation is the seizure of a direction, not of an object; it is differential […] Thermic qualities, tonal or chromatic qualities are differential qualities, centred around a medial state, a maximum of differential sensibility” (253; my emphasis).17

This “medial state” is a gradient of differentials that corresponds to the optimal state for the perceiving living being, that is, the state that achieves a provisional stabilisation of the differential tensions and dynamisms of sensation. It is important to note that the living being is an element of the perceptive problematic; after all, it is the act of perception that organises the wholes. Simondon quotes Norbert Wiener, who writes that “perceiving is fighting against the entropy of the system, it is organising, maintaining or inventing an organisation” (ILFI 239).
The perceiving subject solves the perceptive problematic of sensory differentials through an act of invention, but we should not think of this as being a matter of an ingenious and creative subject confronted with a problem externally — rather, the subject is itself a part of the problematic. Its affective states play an important role: “fear, intense desire give perception a great intensity, even if the clarity of this perception is weak” (240). A theory of perception has to take affectivity into account. As Simondon notes, “we have to consider the entire subject in a concrete situation, endowed with tendencies, instincts, passions, and not the subject in a laboratory, in a situation which generally has only a poor emotive valuation” (238).

Given that affectivity takes part in the perceptive problematic, it is more accurate to speak of inextricably affective-perceptive-motor relations by which the subject is connected with its milieu. Yet in several places Simondon points to the tension, the “fundamental disparity” (167) between affectivity and perception and even “a hiatus, which is impossible to close” (248). We thus return to the problem: what is this tension and when does it occur? It seems to arise only when affectivity has lost its regulative function and has become “overflowing” (165), when the problems of perception can no longer be extended into motor action. According to Simondon,

action begins through a resolution of problems of perception; action is a solution to problems of mutual coherence of perceptive universes; there has to be a certain disparity [disparation] between these universes so that action is possible; if this disparity is too big, action is impossible […] Pure perception and action are the extreme terms of a transductive series oriented from perception to action. (210)

Simondon points to a situation in which the perceptual worlds can no longer be integrated into a systematic unity of perception. The possible perspectives or viewpoints no longer converge to a hodological, that is, oriented and meaningful space that incites action. Instead, the subject is lost between multiple perceptual universes that are no longer superimposed onto each other — universes of sound, of colour, of tactile impressions that can no longer be synthesised to a concrete signification. Simondon uses a Spinozist term to characterise the cause of this deregulation of the senses, this disagreement of perceptual worlds: “The fluctatio animi that precedes [the stage of] determined action is not a hesitation between several objects or even several pathways, but a shifting overlap of incompatible ensembles, almost similar and yet disparate” (ibid.). For Spinoza, fluctatio animi describes a fluctuation or vacillation of mind that arises from two contrary affects, for instance fear and hope or love and hate, that we might feel for the same object (Spinoza 164). Apparently, for Simondon, affectivity has not only a regulative function but can also be the decisive factor leading to the interruption of the sensori-motor or perceptive-active scheme. It can cause a destabilisation and disorientation of the psychic individual, perhaps even a dissolution of the unity of the world of perception and consequently an inability to act.

What does the affective problematic according to Simondon consist of? Affections such as pleasure and pain are integrated into emotions. This is to say that affections are the differentials of emotion just as sensations are the differentials of perception. Like a perception, an emotion is always synthetic or, as Simondon prefers to say, a “sub-ensemble.” However, there is something specific about affectivity, which is not the case for perception: affectivity is bound up with becoming, more precisely with the becoming of the individual being in relation to itself over time:

affectivity is a self-constitutive integration of temporal structures. Desire, increasing fatigue, overwhelming cold are all aspects of affectivity. Affectivity is far from being only pleasure and pain; for the instantaneous being, it is a manner of situating itself in a vaster becoming; affection is the sign of becoming, as sensation is the sign of a gradient; […] And just as the different dimensions for orienting oneself in the world do not necessarily coincide with each other, so
do the different affective aspects effect con-
tinuations in sub-ensembles of becoming of
the living, not in a unique becoming. There
remains an affective problem as there
remains a perceptive problem. (ILFI 254)
The affective problematic consists of tensions
between heterogeneous sub-becomings,
between incompatible emotions. It is this
tension that can disrupt the metastable equili-

brum, once it has crossed a certain threshold.
Sticking with the thermodynamic paradigm,
Simondon uses the term “relaxation,” which
originally designates a thermal or chemical
mechanism that first presupposes the accumu-
lation of a certain quantity of potential energy
and then produces a discharge in a disruptive,
non-continuous manner (203). This discharge-
phase can mean a moment of destabilisation
and disorientation for the subject; it is certainly
a moment of becoming or, in Spinozist terms, a
*fluctuatio animi*. As Simondon says:

perception and emotion are of a metastable
nature: a perception hangs on to the present,
resists other possible perceptions, is exclusive;
an emotion equally hangs on to the present,
resists other possible emotions; by disrupting
this metastable equilibrium, a perception
replaces another; an emotion succeeds
another emotion only in the wake of a sort
of interior break [*cassure interne*]. Relaxation
prevails between one emotion and another.
What disorganises the living being in the
emotion is not the emotion itself, which is
an organisation of affections, but the passage
from one emotion to another. (255)

Hence, perception and emotion are not them-
selves causing any disruption. On the contrary,
“emotion is the discovery of the unity of the
living, as perception is the discovery of the
unity of the world; these are two psychic indivi-
duations, which extend, supplement and perpe-
tuate the individuation of the living” (ibid.).
However, affectivity can be the cause of disor-
ganisation or disindividuation, precisely when
an interior break undoes the prevailing
emotion, that is, the dynamic organisation of
affections, and leads to a provisional reversal
of the process of individuation. Simondon
admits that “perception also operates a disor-
ganisation: but this disorganisation is less dis-
turbing because it is only a break between two
successive perceptive organisations, relating to
the world” (255–56). A true break of interiority
can turn the individual itself into a problem and
dissolve it into pre-individual reality. Simondon
claims that if the individual merely surrenders
to the pre-individual reality, while remaining a
lone subject, that is, in the absence of any
other subject, this submersion in the pre-indi-
vidual dimension becomes catastrophic. The
individual then becomes engulfed by anxiety
(*angoisse*) (31):

In anxiety, the subject feels its existence as a
problem posed to itself, feeling itself divided
into pre-individual nature and individuated
being: […] the subject becomes aware of
itself as indeterminate nature [*apeiron*], which
it will never be able to actualise *hic et nunc*,
which it will never be able to live; […] in
anxiety the subject wants to resolve this
tension itself without passing through the col-
llective; […] anxiety is an emotion without
action, a feeling without perception. (250)

Simondon will argue that the subject in anxiety
loses its interiority and expands itself indefi-
nitely; individuality drowns, so to speak, in its
associated pre-individual nature: “the pre-indi-
vidual overwhelms the individuated” (ibid.).
In this psychic problematic, the collective
offers a solution:

In the situation of solitude, emotion is like an
incomplete being that can only structure itself
according to a collective that is about to indi-
viduate itself. Emotion is of the pre-individual
which arises within the subject […] [*emotion*] is exchange within the subject,
between the charge of nature and the stable
structures of the individuated being;
exchange between the pre-individual and the
individuated; it anticipates the collective. It
[*emotion*] puts being as individual into ques-
tion, because it is the power to arouse an indi-
viduation of the collective, which recovers and
attaches the individuated being. (305)

Thus the subject’s psychic problematic can only
be resolved through amplification, that is, by
participating in collective individuation. In the social, psychic operations are prolonged and continued as collective and cultural processes. For instance, “science is technical perception, which extends vital perception” (265). In general, the human being is able to extend and amplify biological functions through technology, such as tools and machines. Affectivity and emotions can be integrated in religion.

However, Simondon emphasises that the collective dimension is not simply an interindividual relation characterised by reciprocal exchange between separate individual entities. In order to mark the difference from interindividuality, Simondon speaks of a transindividual collective that actually penetrates and crosses the participating individuals, turning them into “group-individuals” (290):

The transindividual action makes it possible for individuals to exist together as elements of a system that contains potentials and metastability, expectations and tension, and then the discovery of a functional structure and organisation, which integrates and resolves the incorporated, immanent problematic. (294)

Again, Simondon makes use of the paradigm of a metastable system, rich in potential.

The emergence of transindividuality is a solution to a primary problematic that is constituted by the heterogeneity between the individuated and the pre-individual reality, a domain that is not divided and distributed among separate individuals. On the contrary, “all individuals together have a sort of non-structured ground from which new individuation may be produced” (295). The pre-individual connects each psychic being to other psychic beings through a “relation of participation” (166). Therefore, Simondon can say that “the basis of the collective reality is already partially contained in the individual, under the form of the pre-individual reality that remains associated with the individuated reality” (29).

A complete account of collective individuation cannot abstract from psychic individuation that brings about a “provisional disindividuation in order to participate in a vaster individuation” (167). The transindividual thus describes a temporal relation, with two moments: the psychic individual has to undergo a provisional disindividuation, a return to the pre-individual condition, in order to participate in a collective individuation and emerge as a group individual.

However, this is still a simplification because, for Simondon, it is not the case that the individual is directly confronted with society. Social integration does not happen without mediation, and the question is not how an already constituted individual can become part of a pre-existing collective. Rather, as Simondon says enigmatically, “the individual enters into relation with the social only through the social” (287).

Borrowing from North American psychology the terms “in-group” and “out-group,” he claims that the in-group mediates between the individual and society. Except for certain pathological cases, an individual belongs to an in-group with which it shares implicit and explicit beliefs and, more generally, which functions as the individual’s social body (286). By means of the in-group or, as Simondon also calls it, “group of interiority,” the individual is able to transcend its psychic individuation and extend its personality up to the limits of the in-group. The out-group or “group of exteriority,” on the contrary, contains all those whom the individual does not identify with. Nevertheless, the divisions between in-group and out-group are not rigid. Processes of transduction mediate between the two orders: “The social operation is rather situated at the limit between in-group and out-group than at the limit between the individual and the group” (ibid.).

Furthermore, Simondon associates the relation between in-group and out-group with temporal dimensions:

the individual has to find a social individuation that resumes its personal individuation; its relation to the in-group and relation to the out-group are as to future and past; the in-group is a source of virtualities and tensions just like the individual future. (287)

Belonging to this group means participating in a “non-structured tendency” (ibid.). The
encounter with the out-group, on the contrary, is a confrontation with the past of society, that is, with symbolic structures and norms that society inculcates in us. Society only opens the way to a “reticulated future” (avenir réticulé), that is, a ready-made network of social roles and goals through which the individual must pass (285). However, even what appears as permanent and static in society is subject to a becoming. By assigning a temporal dimension to the system of relations between in-group and out-group, Simondon avoids organicism, or attributing a pre-existing and natural substantiality to society: “But the veritable social is not substantial, because the social is not a term of relation: it is a system of relations, a system that entails a relation and feeds it” (287).

4 conclusion

From the formation of the crystal to the psychosocial formation of the transindividual, we are dealing with a series of individuations; yet there is no one identical principle of individuation. As we have seen, vital individuation is distinct from physical individuation in terms of its spatio-temporal dimensionality. The specificity of life refers to the ability “to produce the topology of the living, its particular space, the relation between a milieu of interiority and a milieu of exteriority” (ILFI 224). It is through the operations of the polarised membrane that life essentially begins.

With the appearance of psychic reality, the “implicit link” between the living being and the world is palpably broken. The affective–perceptive–motor relations that connect the individual with its milieu are disrupted and the individual experiences the tension between the perceptive and the affective problematic. This disparity creates problematic cases that the psychic individual cannot solve by itself: for instance, an affective dynamism or fluctuation of emotions (fluctuatio animi) can actually dissolve the individual’s organisation and make it enter a reverse process of disindividuation, which is the case with anxiety. Anxiety is the condition for the subject’s feeling that it is not given a fixed, individuated identity; rather, it is open to processes of disindividuation and becoming.23 Psychosocial individuation is the solution to the experience of this instability and tension: it permits (although does not guarantee) the emergence of transindividual relations.

What we find, then, in Simondon is a genetic story of individuation, which does not proceed in a linear, teleological way. Instead, there are complex, multilayered processes of individuation, some of which lead to the emergence of an amplified structure, while others remain on the fringes as preliminary impasses of evolution. The category of the problem allows one to defend Simondon from the accusation of a teleological philosophy of nature: the solution to a problem is never predetermined but requires an act of invention, or autopoietic structuration, the outcome of which is partially indeterminate. As Simondon says in On the Mode of Existence of Technical Objects, limited finalities might determine certain processes, such as the search for food or defence against destructive forces (169), but there is no overarching finality.

The notion of the problem is thus indeed crucial to an understanding of Simondon, but its significance is not that of a universal category that serves as an ontological foundation for individuation in general. On the contrary, it allows one to differentiate the individuation of non-living and living beings and, what is more, to attribute a degree of indeterminacy (or “freedom”) in particular to psychosocial beings (though not exclusively, as living systems admit their own factors of indeterminacy). If there is to be a transcendental reading of the notion of the problem (as Deleuze suggests), then it has to function within its proper domain of vital and psychosocial individuation.

disclosure statement

No potential conflict of interest was reported by the author.
on the notion of the problem

notes

1 The book entitled L’Individu et sa genèse physico-biologique [Individuation and its Physical-Biological Genesis] is only the first part of Simondon’s main doctoral thesis. It was published by Presses universitaires de France in 1964. The second part, L’Individuation psychique et collective [Psychic and Collective Individuation], was published by Aubier in 1989. Both books were finally collected in a single volume and published by Jérôme Millon in 2005. The following quotes are taken from the second edition of L’Individuation à la lumière des notions de forme et d’information (Millon, 2013); hereafter this work will be cited in the text as ILFI, followed by the page number. Since there is no English translation available at this time, all translations are mine.

2 See chapter 4 of Difference and Repetition, and also the “Ninth Series of the Problematic” in The Logic of Sense, published in 1969.

3 I discuss Deleuze’s notion of the problem in greater detail in my book Conditions of Thought: Deleuze and Transcendental Ideas, especially chapter 3: “Ideas as Problems.”

4 See also the following quotation from Simondon’s book On the Mode of Existence of Technical Objects, where he describes problem-solving as a “vital function,” characteristic of a temporal living being:

To solve a problem is to be able to step over it, to be capable of recasting the forms that are given within the problem and in which it consists. The solution of real problems is a vital function presupposing a recurrent mode of action that cannot exist in the machine: the recurrence of the future with respect to the present, of the virtual with respect to the actual. (156)

5 Jean-Hugues Barthélémy argues that “the theme of the living being contains the hidden unity of Simondon’s work, even beyond that first surface unity presented by the transversal theme of individuation” (19).

6 See section 2 of this article.

7 Anne Sauvagnargues ascribes to the concept of metastability a crucial, metaphysical function:

the concept of metastability intertwines the theory of information and the physics of

phase shifts in matter, which Simondon gives a metaphysical extension by applying it to every field of individuation; metastability thus qualifies the conditions of every actualization. Metastable being, in disequilibrium, involves this state of asymmetrical disequilibrium which accounts for tension and the production of the new. (58)

Indeed, Simondon says in the concluding chapter: “we would like to say that the original state of being is a state that goes beyond coherence with itself, that exceeds its proper limits: original being is not stable, it is metastable” (ILFI 316).

8 To give the reader an impression of the detailed scale of Simondon’s analyses, here are a few examples that he discusses, with corresponding page ranges: the moulding of a brick (ILFI 39–45); crystallisation (85–97); particle physics (99–153) (this was not included in the 1964 publication of the first part); and marine organisms such as coral reefs (167–89).

9 In his complementary thesis On the Mode of Existence of Technical Objects, Simondon seems bolder in asserting the generalisability of the genetic schema of individuation:

The very notion of genesis, however, deserves to be made more precise: the word genesis is taken here in the sense defined in the study on Individuation in the Light of the Notions of Form and of Information, as the process of individuation in its generality. (168)

However, he immediately steps back by calling “the notion of the individuation of oversaturated systems, conceived as successive resolutions of tensions through the discovery of structures at the heart of a system rich in potentials” a “general hypothesis” (ibid.) that may replace previous explanatory models such as those of adaptation and Bergson’s élan vital. “This is why it is not forbidden to call upon a hypothesis that intervenes with a more primitive genetic schema than that of opposed aspects of adaptation and élan vital” (169).

10 It has to be emphasised, though, that Deleuze conceives of a new kind of universality: “Ideas are concrete universals” (Difference 176). For instance, the idea of white light is a concrete universal and not simply an abstract generality; white light includes the variety of colours within its differential structure.

12 Simondon will extend the application of the notion of transduction to other domains, such that he finally comes to the following definition: “We understand by transduction a physical, biological, mental, social operation through which an activity propagates gradually within a domain, by founding this propagation on a structuration of the domain that is realised from one place to the next” (ILFI 32). What becomes evident here is Simondon’s analogical transfer of categories. However, it would be too hasty to conclude that there is one identical operation at work in each and every domain. Rather, the way that a structure actually propagates within a domain will be the object of a detailed study.

13 For a more detailed description of the cybernetic project and Simondon’s relation to it, see Mills 9–33.

14 The term “order of magnitude” actually refers to a whole number (i.e., a factor of 10) and is used (for instance, in physics) as part of a scaling method to estimate the size of a number. Here, it seems that Simondon wants to point to the utterly unequal “scales” of the terms of a relation. He provides the example of a plant, which establishes a communication between a superior and an inferior order of reality with regard to its own dimension. In this case, the two disparate orders of magnitude are an order of cosmic scale (sunlight energy and carbon dioxide from the atmosphere) and an order of infra-molecular scale (water molecules in the soil) (ILFI 34–35 n. 12). These two orders of magnitude communicate in the process of photosynthesis, in which light energy is transformed into chemical energy that fuels the organism’s activities.

15 For Simondon, there is no simple distinction between living beings, on the one hand, and beings that also think, on the other. Animals similar to humans could equally be confronted with psychic problems:

It is probable that animals sometimes find themselves in psychic situations. Only these situations that lead to acts of thought are less frequent among animals. Humans have available more extended psychic possibilities, in particular due to the resources of symbolism, and more frequently call on the psyche [...] But it is not a matter of nature, an essence serving to found an anthropology; it is simply that a threshold is crossed. The animal is better equipped to live than to think, and the human to think than to live. But both of them live and think, in an ordinary or an exceptional manner. (ILFI 165 n. 7)

16 The notion of “disparation” is borrowed from the theory of perception. It refers to the binocular disparity between the left and right retinal images. The problem of binocular vision is resolved only by the construction of a new dimension. Without cancelling out the parallax difference, the left and right retinal images form a system that is superior to the separate images inasmuch as it integrates all the elements in a new and higher dimension, the dimension of depth (see also ILFI 207). Simondon uses the term “disparation” as one of the key terms to describe the tensions between two different disparate series within a metastable field.

17 In *Difference and Repetition* (1968), and then again in *The Fold: Leibniz and the Baroque* (1988), Gilles Deleuze takes up this idea of sensations as differentials. For him as for Simondon, conscious perception is the crossing of a certain threshold of intensity. However, Deleuze’s main points of reference that he mentions explicitly are Leibniz, Kant and Maimon. Perhaps what motivates his preference is also the fact that he wishes to bestow a transcendental status on differentials: differentials or pure differences are virtual, that is, “real without being actual, ideal without being abstract,” to use Proust’s formula that Deleuze appreciates so much. For Simondon, the differential nature of sensations is simply their intensive physicality: he does not point to anything beyond the empirical.

18 The term “hodological space” (ILFI 210) is borrowed from the *Gestalt* psychologist Kurt Lewin.

19 Spinoza defines the *fluctuation animi* as follows: “This constitution of the mind which arises from two contrary affects is called vacillation of mind, which is therefore related to the affect as doubt is to the imagination” (Ethics, Part 3, Proposition 17, Scholium).

20 If participation in the collective is denied through external constraints, for instance in the case of the prolonged solitary confinement of...
prisoners on death row, the psychic effects are indeed, as Simondon suggests, perceptual disturbances (perceptual distortions, inability to focus, illusions and hallucinations) among others.

21 For a detailed interpretation of this remark, see Xavier Guchet’s article “Technology, Sociology, Humanism.”

22 One extreme would be the case in which the extension of the in-group equals zero and the social dimension of one’s personality has shrunk to one’s own existence, for instance in some cases of mental alienation or delinquency. The other extreme would be the indefinite expansion of the in-group such that it also comprises the out-group. Simondon refers to rare cases of charity, such as Christ or Francis of Assisi, for whom animals also belonged to the in-group (ILFI 286–87).

23 The temptation here is to conceive anxiety as a sort of “ontological feeling” (as in, for instance, Heidegger’s use of anxiety in Being and Time or Sartre’s conception of shame), which reveals to us our ontological condition, in Simondon’s case the heterogeneity between the individuated and the pre-individual reality. However, while this reading is possible it would run against Simondon’s cautious analogical method, which obliges him to look at particular cases and their specific conditions of individuation. Following this line of interpretation, anxiety designates here simply a fundamental problem of psychic individuation.

bibliography


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